

2026-2027

Graduate and Professional Studies Catalog

Academic Calendar

University of Pittsburgh

ACADEMIC CALENDAR • 2026-27

Dates highlighted in yellow apply to all schools on all University campuses. Those in blue apply only to the Pittsburgh campus.

Official dates for degrees awarded apply to all schools on all University campuses. Specific dates affecting the professional programs in the Schools of Dental Medicine, Law, Medicine, Pharmacy, Health and Rehabilitation Sciences, and the Joseph M. Katz Graduate School of Business may be obtained from the appropriate Dean's Office.

* Employees covered by the collective bargaining agreements will be governed by the terms of those agreements.

NOTE: THE UNIVERSITY RESERVES THE RIGHT TO MAKE SUCH CALENDAR CHANGES AS IT DEEMS NECESSARY

☑ **All Campus Dates** ☑ **Pittsburgh Campus Only** Mix-in: All, None

August 2026

Begins			Ends		Campus
8/10/2026	Monday	International Student Welcome Week	8/17/2026	Monday	Pittsburgh Campus
8/12/2026	Wednesday	Summer 12-WEEK, 6-WEEK-2, 4-WEEK-3 Sessions Grades Must Be Approved by Instructors by 11:59 p.m.	8/12/2026	Wednesday	Pittsburgh Campus
8/15/2026	Saturday	Official Date for Awarding Degrees	8/15/2026	Saturday	All Campuses
8/15/2026	Saturday	Summer Term Ends: Final Examinations Scheduled During Last Class Meeting	8/15/2026	Saturday	All Campuses
8/15/2026	Saturday	Residence Halls Open for Fall Term	8/15/2026	Saturday	Pittsburgh Campus
8/16/2026	Sunday	Residence Halls Close for Summer Term	8/16/2026	Sunday	Pittsburgh Campus

8/17/2026	Monday	New First-Year and Transfer Undergraduate Student Convocation	8/17/2026	Monday	Pittsburgh Campus
8/17/2026	Monday	Welcome Week	8/23/2026	Sunday	Pittsburgh Campus
8/18/2026	Tuesday	New Graduate and Professional Student Orientation	8/18/2026	Tuesday	Pittsburgh Campus
8/19/2026	Wednesday	Summer Term Grades Must Be Approved by Instructors by 11:59 p.m.	8/19/2026	Wednesday	Pittsburgh Campus
8/19/2026	Wednesday	Staff Council	8/19/2026	Wednesday	Pittsburgh Campus
8/20/2026	Thursday	New Faculty Orientation	8/20/2026	Thursday	Pittsburgh Campus
8/21/2026	Friday	New Teaching Assistant Orientation, Virtual	8/21/2026	Friday	Pittsburgh Campus
8/24/2026	Monday	Fall Term Enrollment Period Ends for All Students	8/24/2026	Monday	All Campuses
8/24/2026	Monday	Fall Term Classes Begin	8/24/2026	Monday	All Campuses

September 2026

Begins			Ends		Campus
9/4/2026	Friday	Fall Term Add/Drop Period Ends	9/4/2026	Friday	All Campuses
9/5/2026	Saturday	Fall Term Extended Drop Period begins (Undergraduate Students Only)	9/5/2026	Saturday	All Campuses **(Guidelines)**
9/7/2026	Monday	Labor Day (University closed)	9/7/2026	Monday	All Campuses
9/9/2026	Wednesday	Faculty Assembly	9/9/2026	Wednesday	Pittsburgh Campus
9/11/2026	Friday	Fall Term Extended Drop Period Ends (Undergraduate Students Only)	9/11/2026	Friday	All Campuses
9/17/2026	Thursday	Constitution Day	9/17/2026	Thursday	Pittsburgh Campus
9/17/2026	Thursday	Senate Council	9/17/2026	Thursday	Pittsburgh Campus

9/24/2026	Thursday	Homecoming	9/26/2026	Saturday	Pittsburgh Campus

October 2026

Begins			Ends		Campus
10/7/2026	Wednesday	Faculty Assembly	10/7/2026	Wednesday	Pittsburgh Campus
10/9/2026	Friday	Fall Break for Students	10/11/2026	Sunday	All Campuses
10/9/2026	Friday	Family Weekend	10/11/2026	Sunday	Pittsburgh Campus
10/15/2026	Thursday	Senate Council	10/15/2026	Thursday	Pittsburgh Campus
10/23/2026	Friday	Spring Term Enrollment Appointments Begin (Veteran Students)	10/23/2026	Friday	All Campuses
10/23/2026	Friday	Final Exam Conflict Form Submission Deadline	10/23/2026	Friday	All Campuses **(Final Exam Conflict...**
10/23/2026	Friday	Fall Term Deadline for Students to Submit Monitored Withdrawal Forms to Dean's Office	10/23/2026	Friday	All Campuses
10/26/2026	Monday	Spring Term Enrollment Appointments Begin (Non-Veteran Students)	10/26/2026	Monday	All Campuses

November 2026

Begins			Ends		Campus
11/3/2026	Tuesday	Election Day – flexible course engagement encouraged, as appropriate	11/3/2026	Tuesday	All Campuses
11/4/2026	Wednesday	Faculty Assembly	11/4/2026	Wednesday	Pittsburgh Campus
11/6/2026	Friday	Last Day for Spring Term Enrollment Appointments	11/6/2026	Friday	All Campuses
11/7/2026	Saturday	Spring Term Open Enrollment Begins	11/7/2026	Saturday	All Campuses
11/12/2026	Thursday	Senate Council	11/12/2026	Thursday	Pittsburgh Campus
11/22/2026	Sunday	Thanksgiving Recess for Students (No Classes), All Schools	11/29/2026	Sunday	

					All Campuses
11/26/2026	Thursday	Thanksgiving Recess for Faculty and Staff (University Closed)	11/27/2026	Friday	All Campuses
11/30/2026	Monday	Classes Resume (All Schools)	11/30/2026	Monday	All Campuses

December 2026

Begins			Ends		Campus
12/2/2026	Wednesday	Faculty Assembly	12/2/2026	Wednesday	Pittsburgh Campus
12/4/2026	Friday	Fall Term: Last Day for Undergraduate Day Classes	12/4/2026	Friday	All Campuses
12/5/2026	Saturday	Reading Day	12/5/2026	Saturday	All Campuses
12/5/2026	Saturday	CGS classes, Saturday Only classes, Graduate classes, and Evening classes meet; final exams held during last class	12/12/2026	Saturday	Pittsburgh Campus
12/7/2026	Monday	Final Examination Period for Undergraduate Day Classes	12/11/2026	Friday	Pittsburgh Campus
12/10/2026	Thursday	Senate Council	12/10/2026	Thursday	Pittsburgh Campus
12/12/2026	Saturday	Fall Term Ends: Official Date for Degrees Awarded in Fall Term	12/12/2026	Saturday	All Campuses
12/13/2026	Sunday	Winter Recess for Students (No Classes), All Schools	1/10/2027	Sunday	All Campuses
12/13/2026	Sunday	December Commencement Convocation	12/13/2026	Sunday	Pittsburgh Campus
12/13/2026	Sunday	Residence Halls Close	12/13/2026	Sunday	Pittsburgh Campus
12/15/2026	Tuesday	Fall Term Grades Must Be Approved by Instructors by 11:59 p.m.	12/15/2026	Tuesday	Pittsburgh Campus
12/24/2026	Thursday	Thursday Winter Recess for Faculty and Staff. Designated University offices staffed as necessary	1/3/2027	Sunday	All Campuses

January 2027

Begins			Ends		Campus
12/13/2026	Sunday	Winter Recess for Students (No Classes), All Schools	1/10/2027	Sunday	All Campuses

12/24/2026	Thursday	Thursday Winter Recess for Faculty and Staff. Designated University offices staffed as necessary	1/3/2027	Sunday	All Campuses
1/4/2027	Monday	All University Offices and Buildings Reopen	1/4/2027	Monday	All Campuses
1/9/2027	Saturday	Residence Halls Reopen	1/9/2027	Saturday	Pittsburgh Campus
1/11/2027	Monday	Spring Term Enrollment Period Ends for All Students	1/11/2027	Monday	All Campuses
1/11/2027	Monday	Spring Term Classes Begin	1/11/2027	Monday	All Campuses
1/18/2027	Monday	Dr. Martin Luther King's Birthday Observance (University Closed)	1/18/2027	Monday	All Campuses
1/22/2027	Friday	Spring Term Add/Drop Period Ends	1/22/2027	Friday	All Campuses
1/23/2027	Saturday	Spring Term Extended Drop Period Begins (Undergraduate Students Only)	1/23/2027	Saturday	All Campuses **(Guidelines)**
1/29/2027	Friday	Spring Term Extended Drop Period Ends (Undergraduate Students Only)	1/29/2027	Friday	All Campuses

February 2027

Begins			Ends		Campus
2/12/2027	Friday	Summer Term Open Enrollment Begins (Veteran Students)	2/12/2027	Friday	All Campuses
2/15/2027	Monday	Summer Term Open Enrollment Begins (Non-Veteran Students)	2/15/2027	Monday	All Campuses

March 2027

Begins			Ends		Campus
3/7/2027	Sunday	Spring Recess for Students (No Classes); University officesremain open during Spring Recess except on Spring Holiday	3/14/2027	Sunday	All Campuses
3/12/2027	Friday	University's Observance of Spring Holiday (University Closed)	3/12/2027	Friday	All Campuses
3/15/2027	Monday	Final Exam Conflict Form Submission Deadline	3/15/2027	Monday	All Campuses **(Final Exam Conflict Guide...**
3/19/2027	Friday	Fall Term Enrollment Appointments Begin (Veteran Students)	3/19/2027	Friday	All Campuses
3/19/2027	Friday	Spring Term Deadline for Students to Submit Monitored	3/19/2027	Friday	

		Withdrawal Forms to Dean's Office			All Campuses
3/22/2027	Monday	Fall Term Enrollment Appointments Begin (Non-Veteran Students)	3/22/2027	Monday	All Campuses

April 2027

Begins			Ends		Campus
4/2/2027	Friday	Last Day for Fall Term Enrollment Appointments	4/2/2027	Friday	All Campuses
4/3/2027	Saturday	Fall Term Open Enrollment Period Begins	4/3/2027	Saturday	All Campuses
4/23/2027	Friday	Spring Term: Last Day for Undergraduate Day Classes	4/23/2027	Friday	All Campuses
4/24/2027	Saturday	Reading Day	4/24/2027	Saturday	All Campuses
4/24/2027	Saturday	CGS classes, Saturday Only classes, Graduate classes, and Evening classes meet; final exams held during last class	5/1/2027	Saturday	Pittsburgh Campus
4/26/2027	Monday	Final Examination Period for Undergraduate Day Classes	4/30/2027	Friday	Pittsburgh Campus
4/30/2027	Friday	Senior Distinguished Awards Convocation	4/30/2027	Friday	Pittsburgh Campus

May 2027

Begins			Ends		Campus
4/24/2027	Saturday	CGS classes, Saturday Only classes, Graduate classes, and Evening classes meet; final exams held during last class	5/1/2027	Saturday	Pittsburgh Campus
5/1/2027	Saturday	Spring Term Ends: Official Date for Degrees Awarded in Spring Term	5/1/2027	Saturday	All Campuses
5/2/2027	Sunday	Residence Halls Close (except for graduating seniors)	5/2/2027	Sunday	Pittsburgh Campus
5/2/2027	Sunday	Annual Undergraduate Commencement Convocation	5/2/2027	Sunday	Pittsburgh Campus
5/4/2027	Tuesday	Spring Term Grades Must Be Approved by Instructors by 11:59 p.m.	5/4/2027	Tuesday	Pittsburgh Campus
5/9/2027	Sunday	Summer Term Residence Halls Open	5/9/2027	Sunday	Pittsburgh Campus
5/10/2027	Monday	Summer Term Enrollment Period Ends and Classes Begin	5/10/2027	Monday	All Campuses

5/17/2027	Monday	Summer 12-WEEK, 6-WEEK-1, 4-WEEK-1 Sessions Enrollment Period Ends and Classes Begin	5/17/2027	Monday	All Campuses
5/19/2027	Wednesday	Summer 4-WEEK-1 and 6-WEEK-1 Sessions Add/Drop Period Ends	5/19/2027	Wednesday	All Campuses
5/21/2027	Friday	Summer Term Add/Drop Period Ends	5/21/2027	Friday	All Campuses
5/24/2027	Monday	Summer 12-WEEK Session Add/Drop Period Ends	5/24/2027	Monday	All Campuses
5/29/2027	Saturday	Official Date for Degrees Awarded in the School of Law, School of Dental Medicine, and School of Medicine	5/29/2027	Saturday	Pittsburgh Campus
5/31/2027	Monday	Memorial Day (University Closed)	5/31/2027	Monday	All Campuses

June 2027

Begins			Ends		Campus
6/2/2027	Wednesday	Summer 4-WEEK-1 Session Deadline for Students to Submit Monitored Withdrawal Forms to Dean’s Office	6/2/2027	Wednesday	All Campuses
6/11/2027	Friday	Summer 6-WEEK-1 Session Deadline for Students to Submit Monitored Withdrawal Forms to Dean’s Office	6/11/2027	Friday	All Campuses
6/12/2027	Saturday	Summer 4-WEEK-1 Session Ends: Final Examinations Scheduled During Last Class Meeting	6/12/2027	Saturday	All Campuses
6/14/2027	Monday	Summer 4-WEEK-2 Session Enrollment Period Ends and Classes Begin	6/14/2027	Monday	All Campuses
6/16/2027	Wednesday	Summer 4-WEEK-2 Session Add/Drop Period Ends	6/16/2027	Wednesday	All Campuses
6/16/2027	Wednesday	Summer 4-WEEK-1 Session Grades Must Be Approved by Instructors by 11:59 p.m.	6/16/2027	Wednesday	Pittsburgh Campus
6/18/2027	Friday	Juneteenth Observed (University Closed)	6/18/2027	Friday	All Campuses
6/26/2027	Saturday	Official Date for Awarding of Degrees	6/26/2027	Saturday	All Campuses
6/26/2027	Saturday	Summer 6-WEEK-1 Session Ends: Final Examinations Scheduled During Last Class Meeting	6/26/2027	Saturday	All Campuses
6/28/2027	Monday	Summer 6-WEEK-2 Session Enrollment Period Ends and Classes Begin	6/28/2027	Monday	All Campuses
6/30/2027	Wednesday	Summer 6-WEEK-2 Session Add/Drop Period Ends	6/30/2027	Wednesday	All Campuses
6/30/2027	Wednesday	Summer 6-WEEK-1 Session Grades Must Be Approved by Instructors by 11:59 p.m.	6/30/2027	Wednesday	Pittsburgh Campus

6/30/2027	Wednesday	Summer 4-WEEK-2 Session Deadline for Students to Submit Monitored Withdrawal Forms to Dean's Office	6/30/2027	Wednesday	All Campuses

July 2027

Begins			Ends		Campus
7/5/2027	Monday	Independence Day Observed (University Closed)	7/5/2027	Monday	All Campuses
7/9/2027	Friday	Summer Term and 12-WEEK Session Deadline for Students to Submit Monitored Withdrawal Forms to Dean's Office	7/9/2027	Friday	All Campuses
7/10/2027	Saturday	Summer 4-WEEK-2 Session Ends: Final Examinations Scheduled During Last Class Meeting	7/10/2027	Saturday	All Campuses
7/12/2027	Monday	Summer 4-WEEK-3 Session Enrollment Period Ends and Classes Begin	7/12/2027	Monday	All Campuses
7/14/2027	Wednesday	Summer 4-WEEK-3 Session Add/Drop Period Ends	7/14/2027	Wednesday	All Campuses
7/14/2027	Wednesday	Summer 4-WEEK-2 Session Grades Must Be Approved by Instructors by 11:59 p.m.	7/14/2027	Wednesday	Pittsburgh Campus
7/23/2027	Friday	Summer 6-WEEK-2 Session Deadline for Students to Submit Monitored Withdrawal Forms to Dean's Office	7/23/2027	Friday	All Campuses
7/28/2027	Wednesday	Summer 4-WEEK-3 Session Deadline for Students to Submit Monitored Withdrawal Forms to Dean's Office	7/28/2027	Wednesday	All Campuses

August 2027

Begins			Ends		Campus
8/7/2027	Saturday	Summer 12-WEEK, 6-WEEK-2, 4-WEEK-3 Sessions End: Final Examinations Scheduled During Last Class Meeting	8/7/2027	Saturday	All Campuses
8/9/2027	Monday	International Student Welcome Week	8/9/2027	Monday	Pittsburgh Campus
8/10/2027	Tuesday	International Student Welcome Week	8/10/2027	Tuesday	Pittsburgh Campus
8/11/2027	Wednesday	Summer 12-WEEK, 6-WEEK-2, 4-WEEK-3 Sessions Grades Must Be Approved by Instructors by 11:59 p.m.	8/11/2027	Wednesday	Pittsburgh Campus
8/11/2027	Wednesday	International Student Welcome Week	8/11/2027	Wednesday	Pittsburgh Campus
8/12/2027	Thursday	International Student Welcome Week	8/12/2027	Thursday	Pittsburgh Campus
8/13/2027	Friday	International Student Welcome Week	8/13/2027	Friday	Pittsburgh Campus
8/14/2027	Saturday	Official Date for Awarding Degrees	8/14/2027	Saturday	All Campuses
8/14/2027	Saturday	Summer Term Ends: Final Examinations Scheduled During Last Class Meeting	8/14/2027	Saturday	All Campuses
8/18/2027	Wednesday	Summer Term Grades Must Be Approved by Instructors by 11:59 p.m.	8/18/2027	Wednesday	Pittsburgh Campus

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Catalog Home

University of Pittsburgh Nondiscrimination Policy Statement

The University of Pittsburgh, as an educational institution and as an employer, does not discriminate on the basis of disability, race, color, religion, national origin, ancestry, genetic information, marital status, familial status, sex, age, sexual orientation, veteran status or gender identity and expression in its programs and activities.

The University does not tolerate discrimination, harassment, or retaliation on these bases and takes steps to ensure that students, employees, and third parties are not subject to a hostile environment in University programs or activities.

The University responds promptly and equitably to allegations of discrimination, harassment, and retaliation. It promptly conducts investigations and takes appropriate action, including disciplinary action, against individuals found to have violated its policies, as well as provides appropriate remedies to complainants and the campus community. The University is committed to taking prompt action to end a hostile environment if one has been created, prevent its recurrence, and remedy the effects of any hostile environment on affected members of the campus community.

Please note that the University's Nondiscrimination, Equal Opportunity, and Affirmative Action Policy also covers discrimination based on ethnicity. Although not listed explicitly, the University interprets discrimination based on ethnicity as being prohibited based on the policy's inclusion of race, color, national origin, and ancestry as prohibited bases for discrimination. If you experience any discrimination on the basis of ethnicity, you should report such discrimination and it will be investigated in accordance with University policy and procedure.

For complete details on the University's Nondiscrimination, Equal Opportunity, and Affirmative Action Policy (CS 07) and Sexual Misconduct Policy (CS 20), please visit the Policies, Procedures, and Practices page.

Clyde Wilson Pickett Vice Chancellor for Institutional Engagement and Wellbeing Cathedral of Learning 4200 Fifth Ave. Pittsburgh, PA 15260 tys80@pitt.edu 412-648-7860	**Leigh Culley** Director Disability Resources and Services 140 William Pitt Union 3959 Fifth Ave. Pittsburgh, PA 15260 lculley@pitt.edu 412-648-7890	**Tonia Suber** Assistant Vice Chancellor Employee and Labor Relations 200 Craig Hall 200 S Craig St Pittsburgh, PA 15260 tys80@pitt.edu 412-624-6801
Handles and coordinates responses to inquiries regarding discrimination, harassment, or retaliation based on sex, sexual orientation, gender, and gender identity or expression.	Handles and coordinates responses to inquiries regarding discrimination, harassment, or retaliation based on disability, race, color, religion, national origin, ancestry, genetic information, marital status, age, and veteran status.	Handles and coordinates responses to inquiries regarding discrimination, harassment, or retaliation based on disability, race, color, religion, national origin, ancestry, genetic information, marital status, age, and veteran status, for cases involving staff members.

About the University of Pittsburgh

The University of Pittsburgh is an internationally respected center of learning and research, offering exceptional educational opportunities in the humanities, sciences, and professions. A state-related, coeducational institution, the University of Pittsburgh's Pittsburgh campus offers a multitude of degree-granting and other programs housed in 16 undergraduate, graduate, and professional schools. The University system includes the Pittsburgh campus and four regional campuses at Bradford, Johnstown, Greensburg, and Titusville; the regional campuses offer undergraduate programs only.

Mission

The University of Pittsburgh, founded in 1787, is one of the oldest institutions of higher education in the United States. As one of the nation's distinguished comprehensive universities, the resources of the University constitute an invaluable asset for the intellectual, economic, and social enrichment of Pennsylvania, while the international prestige of the University enhances the image of Pennsylvania throughout the world.

The University's mission is to:

• Provide high-quality undergraduate programs in the arts and sciences and professional fields, with emphasis upon those of special benefit to the citizens of Pennsylvania;

• Offer superior graduate programs in the arts and sciences and the professions that respond to the needs of Pennsylvania, as well as to the broader needs of the nation and the world;

• Engage in research, artistic, and scholarly activities that advance learning through the extension of the frontiers of knowledge and creative endeavor;

• Cooperate with industrial and governmental institutions to transfer knowledge in science, technology, and health care;

• Offer continuing education programs adapted to the personal enrichment, professional upgrading, and career advancement interests and needs of adult Pennsylvanians; and

• Make available to local communities and public agencies the expertise of the University in ways that are consistent with the primary teaching and research functions and contribute to social, intellectual, and economic development in the Commonwealth, the nation, and the world.

The trustees, faculty, staff, students, and administration of the University are dedicated to accomplishing this mission, to which they pledge their individual and collective efforts, determined that the University shall continue to be counted among the prominent institutions of higher education throughout the world.

History

The University began in the Pennsylvania wilderness as the Pittsburgh Academy in 1787, the year the U.S. Constitution was adopted. Thirty-two years later, the Pittsburgh Academy became the Western University of Pittsburgh, and in 1908, the school changed its name to the University of Pittsburgh.

The recognition of graduate study at the University of Pittsburgh began with the awarding of Master of Arts degrees in 1836. By 1870, over 30 MA degrees had been awarded. These degrees were conferred for study beyond the Bachelor of Arts degree. In 1884, Chancellor Milton Goff set up a two-year professional study program leading to either a Master of Philosophy (predecessor of the Master of Science degree) or a Master of Arts degree and a three-year program leading to a Doctor of Philosophy degree. Before admission to these programs, each student was required to show proficiency in three areas of study. Both master's and doctoral candidates were required to prepare and defend theses.

In 1906, new rules were formulated for graduate study, requiring students to be in residence and requiring the completion of one year of study or 30 credits for the master's degree and three years or 90 credits for the doctoral degree. The catalogs of 1908 and 1909 announced

the establishment of the Graduate School with five departments offering courses for the Doctor of Philosophy degree. These departments, plus five others, offered courses for the Master of Arts degree.

In 1910, a faculty committee drafted proposals, adopted by the board of trustees in 1913, making the Graduate School an independent administrative unit of the University and authorizing the selection of a Graduate Council. The Graduate School was grouped into three divisions (Humanities, Social Sciences, and Natural Sciences) in 1947. Until 1956, the administration of graduate study was the responsibility of the dean of the Graduate School and the Graduate Council. At that time, the individual schools and the three divisions were given direct administrative responsibility for their graduate programs in accord with the regulations established by the University Council on Graduate Study-formerly the Graduate Council. In 1968, the dean of the Graduate School retired from his administrative role, and the position he had held was discontinued. General responsibility for the University's graduate programs was assigned to the provost pending reorganization of the University's graduate structure. The University Council on Graduate Study, the University administration, and members of the Graduate Faculty cooperated in drafting a proposed reorganization of graduate study, which was approved by written ballot by the entire Graduate Faculty and, in turn, accepted by Chancellor Wesley Posvar. This organizational structure became effective July 1, 1971, and is still the official structure.

Thus, during the 200-plus year history of the University, graduate education has grown to encompass the Dietrich School of Arts and Sciences and all 13 of the professional schools, which share a commitment to meet the nation's need for well-educated researchers, scholars, and leaders of professions and the tri-state region's need for trained professionals.

A private institution for most of its past, the University of Pittsburgh became state-related in 1966, establishing a relationship with the Commonwealth of Pennsylvania that continues to benefit both partners. Today, as an elected member of the prestigious Association of American Universities, the University of Pittsburgh claims its place among the top public research universities in the nation.

Accreditation

The University of Pittsburgh is accredited by the Middle States Commission on Higher Education, 3624 Market Street, Philadelphia, PA 19104, (267) 284 - 5000. In addition, programs may be accredited by discipline-specific accrediting bodies. See Schools, Departments, and Programs section of this catalog for this information.

Web Address

For more information on the University of Pittsburgh, see the University's Web site at www.pitt.edu.

Organization of Graduate and Professional Education at the University

While the University Council on Graduate Study (www.provost.pitt.edu/about/committees/university-council-graduate-study), acting for the Graduate Faculty, develops minimum standards for graduate work throughout the University, the immediate responsibility for developing and administering graduate programs is assigned to the deans and Graduate Faculty members of the several schools and the Dietrich School of Arts and Sciences. This responsibility applies both to the traditional MA, MS, and PhD programs and to programs leading to advanced professional degrees, except for first-professional degrees (i.e., the MD, JD, LLM, PharmD, and DMD). The provost has responsibility for the general supervision of graduate and professional programs, including first-professional degree programs, throughout the University, giving leadership to the deans and faculties in maintaining high standards of instruction and research.

Faculty are appointed to the Graduate Faculty by the provost upon recommendation by the dean on the basis of an appraisal by the faculty of a department or other appropriate faculty group. Graduate Faculty are competent in graduate instruction and in supervision of student research at all levels and are active in advancing knowledge through their own research.

Administrative Officers, Schools, and Campuses

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Source: Office of the Secretary, July 1, 2025

University of Pittsburgh Board of Trustees

The Board of Trustees is responsible for advancing the purposes of the University; promoting and protecting its independence, academic freedom, and integrity; and enhancing and preserving its assets for the benefit of future students and society at large. In addition, because the University of Pittsburgh is a state-related institution, the trustees ensure that Pitt meets its obligations both to the Commonwealth of Pennsylvania and to society generally.

General administrative, academic, and management authority is delegated to the chancellor. However, the board retains ultimate responsibility for all University affairs.

There are three or more regular meetings of the Board of Trustees each year, including an annual meeting. Special meetings also may be called. Much of the board's work is carried out by committees; many of these committees include faculty, staff, and students as non-voting representatives.

John J. Verbanac, Chairperson

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Michael A. Bryson	John H. Pelusi, Jr.
Mary Ellen Callahan	Robert P. Randall
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Conomikes George A.	Jack D. Smith
Davidson, Jr. Catherine	Emil M. Spadafore, Jr.
C. DeAngelis	Charles M. Steiner
D. Michael Fisher	William E. Strickland, Jr.
E. Jeanne Gleason	John A. Swanson
J. Roger Glunt	A. David Tilstone
Robert M. Hernandez	Stephen R. Tritch
Earl F. Hord	Thomas J. Usher
S. Jeffrey Kondis	Thomas L. VanKirk
Robert G. Lovett	Marna Cupp Whittington
Roberta A. Luxbacher	Sam S. Zacharias

Source: Office of the Secretary, July 1, 2025

Deans, and Presidents of the University of Pittsburgh

Deans - Pittsburgh Campus

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Bruce Childers, PhD, Dean, School of Computing and Information

Jerry Dickinson, JD, Dean, School of Law

Elizabeth Farmer, PhD, Dean, School of Social Work

Nicola Foote, PhD, Dean, David C. Frederick Honors College

Christine Kasper, PhD, RN, Dean, School of Nursing

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Marnie Oakley, DMD, Dean, School of Dental Medicine

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Jem Spectar, PhD, President, University of Pittsburgh at Johnstown

Pittsburgh Campus Schools

College of General Studies

David C. Frederick Honors College

Kenneth P. Dietrich School of Arts and Sciences

School of Computing and Information

School of Dental Medicine

School of Education

School of Health and Rehabilitation Sciences

School of Law

School of Medicine

School of Nursing

School of Pharmacy

School of Public and International Affairs

School of Public Health

School of Social Work

Swanson School of Engineering

University of Pittsburgh School of Business (Pitt Business)

Pitt Business - Undergraduate Program

Joseph M. Katz Graduate School of Business

Regional Campuses

University of Pittsburgh at Bradford

University of Pittsburgh at Greensburg

University of Pittsburgh at Johnstown

University of Pittsburgh at Titusville

Regulations Governing Graduate Study at the University of Pittsburgh

Note for AY 2026-27: The Graduate Catalog and several Office of the Provost Academic Regulations are undergoing a multiyear review and update process. Differences may exist between the Academic Regulations referenced on this page and statements found in individual School or Program Catalog pages. The Office of the Provost has approved a limited number of School- and Program-specific exceptions. Unless a School or Program Catalog page notes an explicit approval by the Office of the Provost, the Academic Regulations listed on this page supersede any conflicting statements in School or Program Catalog pages.

Responsibility

Each department or school with a graduate program is expected to: (1) establish and maintain a high quality graduate program appropriate for its discipline and in accord with the regulations established by the University Council on Graduate Study; (2) provide each graduate student with a copy of the regulations concerning graduate study and the requirements for advanced degrees; and (3) designate a faculty member (or a committee) to advise each graduate student concerning all aspects of the graduate program and provide for a thesis or dissertation adviser and the appropriate committees.

Each graduate student is expected to become familiar with the general regulations concerning graduate study and with the specific regulations of his or her major department of graduate study and to accept responsibility for the completion of degree requirements as prescribed.

Any program desiring an exception to these academic regulations must receive approval from the Office of the Provost.

Introduction

Academic policies and regulations establish the shared framework that makes graduate study at the University of Pittsburgh clear, fair, and navigable across all of the University's graduate and professional programs. This resource is designed to help graduate students, faculty, staff, and advisors find the regulations and policies most relevant to graduate study at the University of Pittsburgh, organized thematically and linked to their authoritative sources.

This index is maintained by the Office of the Provost, which is responsible for its organization, interpretation, and ongoing revision.

The regulations and policies collected here originate from several sources, reflecting the University's administrative structure:

- **University-wide policies** are promulgated by the Office of Policy Development and Management.
- **Academic regulations** governing instruction, grading, and student academic progress are issued by the Office of the Provost.
- **Student conduct standards** are established and administered by the Division of Student Affairs.
- **School-specific requirements** - such as detailed graduation requirements, program prerequisites, and school-level academic standards - are maintained within individual schools and documented in each school's section of this Catalog.

These regulations apply to all graduate and professional students at the University of Pittsburgh. Unless an academic program has a documented exception on file with the Office of the Provost, the regulations in this index govern.

If you have questions about a specific policy or regulation, the office or unit listed as the source is the appropriate first point of contact.

Admissions

- ## Application for Admission

Information about admissions to all graduate and professional programs must be clearly defined and easily accessible via the school's website as well as the Graduate Catalog. The applicant is expected to:

- Complete the online application and submit the application fee through the online payment system. The application fee is required of all applicants, unless waived by the program, and is non-refundable. It does not apply toward the payment of tuition.
- Provide a copy of the transcript of all undergraduate and graduate schools attended. An official transcript with degree posted must be sent prior to enrollment in the graduate program.
- Submit any additional material required by the department or school and, if available, other evidence of academic and personal qualifications for graduate study. These materials may include any or all of the following: scores achieved on standardized examinations accepted by the University of Pittsburgh such as, but not limited to, the Graduate Record Examination, letters of recommendation, term papers written during previous study, evidence of relevant work/life experience, evidence of motivation for graduate study, and a statement of career objectives.
- Arrange for a personal interview if requested by the department or school. Interviews may take place virtually or in person at the School's discretion.

No action should be taken on an application for admission to graduate study until the department or school has received: (1) the completed application form; (2) the application fee; (3) unofficial transcripts of all work done in undergraduate and graduate schools; and (4) supporting materials as required by the department or school. (Under the Admission Status section below, see Special Status for circumstances in which a student may be granted temporary admission.)

Each department or school has the responsibility to establish deadline dates both for receipt of application for admission and for application for fellowships, scholarships, or other forms of aid and to notify prospective applicants of these dates. A department or school may limit admission to a specific term only or may allow admission in any of the three terms. Each department or school is obligated both to act promptly on completed applications, if submitted on or before the established deadline date, and to give a thorough and fair review of each completed application. It is at the school's discretion as to whether applications received after the deadline will be reviewed.

Decisions regarding admission should be based on an overall evaluation of all the credentials submitted by the candidate, and be in accord with the availability of faculty, facilities, and student support necessary to meet the applicant's expressed academic and research needs and interests. Applicants should be notified promptly of decisions concerning their applications. Many departments or programs have a limited number of places available. In cases where the number of qualified applicants exceeds the number of places available, applicants should be judged competitively.

If a department or school so approves, a student may defer admission for one year without having to complete any additional applications. If approved, the student is sent a new admission letter for the new term of matriculation. Additional coursework taken during the deferred year and a new affidavit of financial support should also accompany any financial aid request. The deferral of admission is independent of financial aid.

Officially, admission may be granted or denied only by the dean of the school, and the issuance of visa documents may be granted or denied for non-academic reasons only by the Office of International Services. Registration is permitted only after admission is granted.

Changing Graduate Programs

A student already admitted to graduate study and desiring to change a major department of graduate study must file an application for such a change in the office of the dean of the school the student wishes to enter. The application for admission to the new program should be evaluated in the same manner as an application from a new student.

Admission Status

Acceptable students are admitted to graduate study in a specific department or school with "full," "provisional," or "special" graduate status depending on their qualifications and objectives. The qualifications described below represent the minimum standards of the University. These may be made more stringent or specific at the option of the department or school.

Full Graduate Status: For admission to full graduate status, an applicant must be a graduate of an accredited U.S. college or university and must be considered qualified for advanced study by the department or school. International applicants must meet the admissions guidelines described under "International Students". Qualification for advanced study normally is demonstrated by a B average (a grade point average of 3.00 on a 4.00 scale) or better in the total undergraduate program. If students with less than a B average present alternative evidence

(such as completion of an advanced degree or successful relevant work experience) of superior ability, they may be considered for full graduate status on the recommendation of the department of proposed graduate study. Only students with full graduate status may be considered for the award of an advanced degree.

Provisional Graduate Status: Applicants who are graduates of a recognized college or university, but who do not qualify for admission to full graduate status because of deficiencies in either their undergraduate course program or their scholastic achievement, may be considered for provisional graduate status if strong supporting evidence of their ability to complete a graduate program is provided. Courses taken to remove deficiencies do not contribute toward completion of graduate degree requirements. Transfer from provisional to full graduate status is initiated and recommended by the department and is possible only after removal of deficiencies and other conditions noted at the time of admission and satisfactory progress in graduate work.

Special Status: Students may be granted temporary admission as "special status" under the following circumstances:

- Individuals who are seeking advanced degrees but who are unable to meet the deadline for filing all required credentials for admission may be granted temporary admission provided they present acceptable evidence concerning their qualifications for graduate study. Regular admission must be accomplished within the first term of registration.
- Individuals not seeking an advanced degree but with specific qualifications for one or more courses, including courses required for licensing or certification, may register for such courses subject to review by the department and the dean. Schools providing such an opportunity may specify the number of credits or courses for which an individual may enroll while in this status and should also clearly specify the limitations on transfer of such credits toward a graduate degree if the individual is subsequently admitted to a graduate degree program.

International Students

The University of Pittsburgh welcomes applications from students in other countries. International students are expected to apply the same way as domestic applicants and provide the same supporting documentation with two additional requirements:

- An international degree (or combination of degrees) must be equivalent to a four-year bachelor's degree earned in the U.S. It is at the school's discretion to require a formal evaluation of the international credentials by a third party such as World Education Services. Certified translations must accompany credentials which are not in English.
- Each international applicant must provide clear evidence of proficiency in English. (See the English Language Proficiency section below.) The Office of International Services (OIS) will issue, as appropriate, the Form I-20 Certificate of Eligibility for Non-Immigrant "F-1" Student Status or Form DS-2019 Certificate of Eligibility for Exchange Visitor "J-1" Status.

The University reserves the right, even after the arrival and enrollment of a student from another country, to require, at his or her own expense, individual curricular adjustments whenever particular deficiencies or needs are found. This could include enrollment without credit in additional course work in English as a foreign language or in courses prerequisite to his or her regular course of study. New students from abroad should be encouraged to use the services of OIS to help them in their adjustment to the United States and to facilitate their total educational experience.

English Language Proficiency

Graduate students must possess sufficient knowledge of English to study without being hindered by language problems, to understand lectures, and to participate successfully in class discussion. The determination that the applicant has sufficient proficiency is made by the admitting department or school, subject to University-wide minimum standards determined by the University Council on Graduate Study. The University's full policy on Assessment for English Language Proficiency for Admission can be found here: https://www.policy.pitt.edu/ac-07-assessment-english-language-proficiency-admission-formerly-09-02-01. Any exceptions to this policy must be approved by the Provost or Provost's delegate after review of the entire record and consultation with the Office of International Services.

Admission Decisions

When a program has completed its evaluation of the credentials of an applicant, they should be notified as to whether they are academically qualified for admission. The letter to the applicant must state that the applicant will receive either a visa document or further instructions from the Office of International Services. In all cases, a duplicate copy of the letter of admission and award of financial aid, if any, must be sent to the Office of International Services as must copies of all rejection letters.

- # Readmission

A student who has not registered for at least one credit during a 12-month period will be transferred automatically to inactive status and must file an application for readmission to graduate study (and pay the application fee) before being permitted to register again. While on inactive status, a student is not eligible to use University facilities and should not expect to receive counseling by the faculty or active supervision by his/her adviser and committee. Readmission is not automatic, nor does it necessarily reinstate the student in the academic status enjoyed prior to becoming inactive. When readmitted, the student must be prepared to demonstrate proper preparation to meet all current admission and degree requirements.

- # Early Admissions and Accelerated Pathway Programs

Exceptionally able undergraduate University of Pittsburgh students may be admitted to full graduate status as outlined under Early Admissions Programs.

Accelerated Bachelors/Graduate (for example, "4+1") programs allow students to complete two sequential degrees on an accelerated timeline per regulations.

Registration

The Office of the Provost publishes the University of Pittsburgh Academic Calendar, which establishes the dates for registration. These dates also appear in the Schedule of Classes for each term, which is available online through the Office of the Registrar.

- **Registering for Classes**

After being admitted to a graduate program, students may register for classes during the enrollment period. The enrollment period for a term or session is published in the University's Academic Calendar. Students registering for the first time are advised to complete the enrollment process well before the beginning of the term. More information may be found at www.registrar.pitt.edu/enrollment.

All graduate students are expected to be registered in accordance with the program of study they are carrying. Students are required to follow the registration process outlined by their school, and they must adhere to registration deadlines.

Students pursuing two independent degrees or a degree and a certificate simultaneously will have one indicated as the primary academic program with the other as a secondary academic program during the registration process. Students are billed at the tuition rate of the primary academic program. Generally, a certificate program should be listed as a secondary academic program.

After the start of classes, registration is permitted for new and continuing students only with the written approval of the dean in unusual circumstances. Students must be registered in the term in which they take preliminary and comprehensive examinations. Students must also be registered for the term in which they graduate; see AC 56 for exceptions.

The University reserves the right to change registration procedures. Current registration procedures are published each term in the Schedule of Classes.

Most students have the ability to utilize self-service enrollment tools available through PeopleSoft/HighPoint CX. Continuing students with the ability to utilize self-service enrollment will be assigned an enrollment appointment during the first two weeks of the enrollment period.

Once students have enrolled, they may view their class schedules online via PeopleSoft/HighPoint CX. For additional registration information, visit the Office of the University Registrar website: www.registrar.pitt.edu.

A student must be officially admitted, readmitted, or reinstated to the University before he or she may register for courses.

- **Student registration and enrollment are managed by the Office of the University Registrar in conjunction with the Schools and Colleges. Policies and Regulations governing registration and enrollment include the following:**

- Registration Status (AC 56) - This policy establishes the criteria used to determine registration status, including full-time/part-time and active/inactive status. This policy includes information about graduate student registration while working toward graduation. International students may have additional registration and enrollment requirements. Information can be found on the Office of International Services Resources page.
- Registration and Add/Drop (AC 54) - This policy establishes the responsibilities and regulations regarding the Registration and Add/Drop processes and applies to all campuses of the University.
- Fees and Tuition (AC 30) - This policy establishes that tuition and mandatory fees are approved by the Board of Trustees and other fees and deposits are approved by the Office of the Provost. Some mandatory fees may not be applicable to all campuses; however, if assessed, the rate must be consistent with the current approved rates established at all campuses.
- Maximum Credits Per Term (AC 30) - No student is permitted to register for more than 15 graduate credits without written permission from the dean of the academic center in which the student is pursuing a degree. Graduate students who register for more than 15 credits will be billed for each additional credit that exceeds their full-time tuition rate. Individual schools and departments may restrict the maximum program of any or all of their graduate students.
- Termination of Registration (AC 67) - This policy establishes Termination of Registration, a process that allows students to drop all their courses during the Add/Drop period, after which time a student resignation is required. It includes the resulting grade assignments, and academic and nonacademic financial adjustments associated with a Termination of Registration by the resignation process. This policy also documents administrative termination of registration resulting from disciplinary sanctions.
- Cross Registration via the Pittsburgh Council on Higher Education (PCHE) - Cross registration is a program through the Pittsburgh Council on Higher Education (PCHE) that provides an opportunity for enriched educational programs by permitting students to attend courses at any of ten participating colleges and universities.
- Full-Time and Part-Time Study - Definitions of tuition categories and limits on the number of credits for which a student can register each term.
- Registration for Full-Time Dissertation Study Course: Students so enrolled are assessed a special tuition fee but are still responsible for paying the full-time computer and network, security/transportation, wellness, and activity fees. Students must consult with the dean's office of their school for permission to register for full-time dissertation study.
- Course Withdrawal: This policy establishes regulations for course withdrawal and assignment of the Withdrawal (W) grade. This section also covers resigning from the University for a Specific Term and the Monitored Withdrawal process.
- **Registration of Undergraduate Students for Graduate Courses:** Undergraduate students with sufficient preparation are permitted to enroll in graduate courses following procedures determined by each school. The graduate credits earned may be counted toward the undergraduate degree if approved by the student's school. These may not be counted as credits toward a graduate degree except as noted below in the Credential Overlap regulation.

Undergraduate students who need fewer than 30 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final year to register for graduate courses which will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as Advanced Standing credits on the graduate transcript.

- **Specific resources related to registration and enrollment deadlines and processes include:**
  - The Office of the University Registrar maintains an Enrollment Resources website with information and tutorials related to registration, add/drop, withdrawal, and resignation.
  - The Enrollment Calendar is made up of important dates surrounding enrollment/registration into classes at the University of Pittsburgh.
- **Required Training for All Graduate and Professional Students**

Any graduate or professional student enrolled in a graduate program requiring more than 10 credits of in-person instruction or in any other graduate program designated by the Provost is required to complete training in the recognition, prevention and reporting of sexual misconduct, harassment and sexual violence (often known as Title IX training). The Title IX training program created by Pitt's Office of Institutional Engagement and Well-being satisfies this requirement. Under some circumstances, students may be allowed to complete special versions of the training designed to meet their specific needs. Requests for alternative training should be submitted to the Vice Provost for Graduate Studies. An approved version of the training must be completed in the student's first semester at the University.

Advising

The quality of education that graduate students receive is greatly enhanced with Graduate Student Mentoring. Students are encouraged to consult with the individual school for school-specific advising services.

Faculty members are responsible for advising students concerning their programs and specific course selections each term. If a student is pursuing two independent degrees or a degree and a certificate simultaneously, they should meet with advisers in both the primary and secondary academic programs. Students are required to follow the registration process outlined by their school, and they must adhere to registration deadlines. Students pursuing two degrees or a degree and a certificate simultaneously must list one as the primary academic program and may list the other as a secondary academic program during the registration process. Students are billed at the tuition rate of the primary academic program. It is recommended that such students meet with advisers in both the primary and secondary academic programs. Generally, a certificate program should be listed as a secondary academic program.

Students registering for the first time should be advised to complete registration well before the beginning of the term. After the start of classes, registration is permitted for new and continuing students only with the written approval of the dean in unusual circumstances.

No person should expect to receive guidance and direction from members of the Graduate Faculty unless they are registered in accordance with the program of study they are carrying.

Allowable Credits

There are certain limitations on credits, other than those earned as part of regular graduate courses taken at the University, that may be applied toward a degree. Those limitations are detailed in the following resources.

- Advanced Standing Credit - This regulation establishes the criteria for the acceptance of advanced standing credits, which are credits toward a University of Pittsburgh degree or credential through mechanisms other than credits earned through course registration at the University. This includes transfer credit, standardized test credit, credit by course examination, and credit for educational experiences in the armed services.
- Course Repeat - This regulation places limitations upon when students can earn credit for repeated or similar courses.
- Credential Overlap - This regulation establishes guidelines for credit overlaps occurring between multiple degrees or credentials being pursued at the University of Pittsburgh. Covers students who pursue two independent graduate degrees simultaneously in two different schools within the University or two different departments within the same school. This includes Dual, Joint, and Cooperative Programs.
- **Course Work Acceptable as Graduate Credit -**A substantial proportion of courses acceptable toward a graduate degree should be designed explicitly for graduate students. Introductory graduate level (master's level) courses are numbered 2000-2999, those at an advanced graduate level (doctoral level) are numbered 3000-3999. To be eligible for a master's degree, a student must have completed at least 30 credits at the graduate level with at least an average grade of B (3.00). A doctoral student must complete additional graduate level courses as determined by his or her department or school. No lower-level undergraduate course (numbered 0001-0999 or 7000-7999) may be applied toward a graduate degree.
- At least four courses (12 credits) or one-half the master's degree program, whichever is greater, must be at the graduate-level (the 2000 or 3000 series) and must be completed with an average grade of B (3.00). Additionally, the Commonwealth of Pennsylvania requires that master's degrees include a minimum of 30 semester credit hours beyond the baccalaureate level. The Commonwealth requires that a first professional degree, except those for the preparation of professional educators, must require the satisfactory completion of a minimum of 60 semester credit hours or 90 quarter credit hours for admission to the degree program and the satisfactory completion of a total minimum of 150 semester credit hours for the program.

Grading

Student grades are processed by Dean's Offices in conjunction with the Office of the University Registrar. Policies and Regulations governing grading and student records include the following:

- Grade Changes - This regulation establishes the responsibilities and regulations regarding the grade change process.

- Grade Point Average - This regulation establishes the University Cumulative Quality Point Average (QPA) and Grade Point Average (GPA).
- University Grading - This establishes the official University grades and symbols, including any corresponding grade points and definitions.

Records

An academic transcript serves as a permanent record of a student's academic progress. The transcript is a cumulative record of the student's GPA, as well as a record of the department, title, and grade for each course in which the student has enrolled and summary advanced standing information.

- Information on requesting and verifying transcripts can be found on the Office of the University Registrar Transcripts & Verification page.
- The academic record is not an official University transcript, but a document containing a student's complete University of Pittsburgh academic history. In addition to the information provided on the transcript, the academic record may display additional course details, certain academic events, and detailed advanced standing/placement/transfer credit information. Students can view a copy of their academic record in the Student Center at my.pitt.edu.

Academic Standing and Satisfactory Academic Progress

While enrolled at the University of Pittsburgh, students are expected to meet certain cumulative GPA standards and maintain progress towards their degree. The University of Pittsburgh makes use of multiple levels of academic standing to identify students at risk of jeopardizing successful completion of their degree and to provide multiple opportunities for intervention and coaching towards successful completion.

Note: While different from academic standing, Satisfactory Academic Progress (SAP) may impact the financial aid eligibility of students.

This is described in more detail in the following regulations:

- Academic Standing for Graduate and Professional Students: This regulation establishes the criteria for determining academic standing for graduate and professional students, and includes Academic Notice, Academic Program Change, and Academic Dismissal. Any exceptions to this policy must be approved by the Office of the Provost and posted in the University Catalog.
- Financial Aid Satisfactory Academic Progress (AC 31) - This policy establishes Satisfactory Academic Progress for students used in determining financial aid eligibility. It applies to most aid programs at the University of Pittsburgh. If a financial aid program has eligibility criteria that differ from this policy, then refer to the specific requirements of that program. The Satisfactory Academic Progress requirements for individual academic programs are separate from this policy.

Questions about the effect of unsatisfactory academic standing on financial aid should be directed to the Office of Admissions and Financial Aid.

Statute of Limitations

The purpose of the statute of limitations is to ensure that a graduate degree from the University of Pittsburgh represents mastery of current knowledge in the field of study. Individual schools within the University may adopt policies that are more, but not less, stringent than those stated here.

All requirements for MA and MS degrees must be completed within a period of four consecutive calendar years from the student's initial registration for graduate study; all requirements for professional master's degrees, in five years. Dual degrees and joint degrees that require course work in excess of 50 credit hours may be granted a longer statute of limitations by the University Council on Graduate Study.

From the student's initial registration for graduate study, all requirements for the PhD degree must be completed within a period of ten years or eight years if the student has received credit for a master's degree appropriate to the field of study. Programs for professional

doctoral degrees, for which the majority of candidates pursue part-time study while working full time within their chosen disciplines, may be granted a longer statute of limitations by the schools offering the degrees.

Under exceptional circumstances, a candidate for an advanced degree may apply for an extension of the statute of limitations. The request must be approved by the department or departmental committee (master's or doctoral) and submitted to the dean for final action. Requests for an extension of the statute of limitations must be accompanied by a departmental assessment of the work required of the student to complete the degree as well as documented evidence of the extenuating circumstances leading to the requested extension. Students who request an extension of the statute of limitations must demonstrate proper preparation for the completion of all current degree requirements.

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of two years may be granted to doctoral students or one year to master's students. The length and rationale for the leave of absence must be stated in advance, recommended to the dean by the department, and approved by the dean. If approved, the time of the leave shall not count against the total time allowed for the degree being sought by the student. Readmission following an approved leave of absence is a formality.

Regulations Pertaining to Master of Arts and Master of Science Degrees

The Master of Arts (MA) and Master of Science (MS) degree programs provide an introduction to scholarly activities and research and often serve as preparation for teaching careers. These degrees are awarded for the completion of a coherent program designed to assure the mastery of specified knowledge and skills, rather than a random accumulation of a certain number of courses. The overall form and content of the student's program of study is the responsibility of the faculty of the department. To carry out this responsibility, each student must be assigned a major advisor, who, in consultation with the student, plans a program of study and research in accordance with school and departmental guidelines.

Master of Arts (MA) degrees are awarded for completion of graduate programs in various departments within the School of Arts and Sciences, the School of Education, and the School of Public and International Affairs; the Master of Science (MS) degree is offered in departments within the School of Arts and Sciences, the Joseph M. Katz Graduate School of Business, the School of Dental Medicine, the School of Education, the John A. Swanson School of Engineering, the School of Health and Rehabilitation Sciences, the School of Medicine, the School of Public Health, the School of Pharmacy, and the School of Social Work. Some of the MA or MS degrees offered are specified as being "in" a particular discipline; e.g., Master of Science in Chemical Engineering.

- **Programs of Study**

Some master's programs may include approved areas of concentration or minors. Areas of concentration define and describe the student's training and expertise within the broader discipline. Minors represent significant course work completed in an area related to the student's specialty. Such areas of concentration or minors are added to the transcript upon the granting of the degree.

The requirement of proficiency in second languages is at the discretion of individual departments or schools.

Master's degrees are conferred only on those students who have completed all course requirements with at least a 3.00 GPA.

Departments or programs are expected to provide students with a copy of school and departmental regulations appropriate for their programs. Students are expected to become familiar with these and to satisfy all prescribed degree requirements and/or maintain current and accurate web sites covering this information. Students are expected to become familiar with these and to satisfy all prescribed degree requirements.

- **Credit Requirements**

The Master of Arts and Master of Science degrees normally require the satisfactory completion of a minimum of 30 credits of graduate study approved by the department or school. No Master of Arts or Master of Science degree program may require fewer than 24 course credits. See Advanced Standing Credits for full policy.

- **Comprehensive Examination**

MA or MS degrees are conferred only upon those students who, in one or more comprehensive examination or the equivalent, show that they have mastered the general field of their graduate study. Each department or similar unit is responsible for specifying the content and procedure for administration of the comprehensive examination and will specify for each candidate the field of his or her examination,

which may vary from student to student. Whenever a program substitutes an equivalent requirement for the comprehensive examination, the department or program should notify the University Council on Graduate Study and describe the substitution.

Students on special or provisional status are not eligible to take a comprehensive examination. These examinations must be taken at least one month prior to the last day of the term in which the degree is to be granted. The results must be reported promptly to the office of the dean but no later than the last day of the term in which the examination is administered. A student who is unable to complete all degree requirements within a two-year period after passing the comprehensive examination may be re-examined at the discretion of the department, program director, or dean.

- **Thesis Option**

The requirement of a thesis or its equivalent is at the discretion of individual departments, programs, or schools. If a thesis is submitted, its form must be in accord with specifications stipulated in the Electronic Theses and Dissertation Format Guidelines. The thesis examining committee will consist of at least three members of the faculty recommended by the major adviser and approved by the department chair or program director. The final oral examination in defense of the master's thesis is conducted by the thesis committee, and a report of this examination signed by all members of the committee must be filed in the office of the dean.

After the examination, the approved ETD must be deposited to the ETD Online System where it will be reviewed by the ETD Student Services Staff in the dean's office of the student's school. A receipt for the ETD processing/microfilming fees and any necessary paperwork must be submitted to the appropriate ETD Student Services Staff in the Office of the Dean.

- **Non-thesis Option**

It is usual for a program to require additional course work if a thesis is not required.

For the Master of Arts degree, each student must describe one or more substantial intellectual experience(s) or accomplishment(s) acceptably in writing. In programs in which a master's thesis is optional, the student must satisfy this requirement by submitting a paper (or papers), as designated by the major department, and must demonstrate competence in using the methods of scholarship.

For a Master of Science degree, a paper or research project is usually required.

Regulations Pertaining to Professional Master's Degrees

The University of Pittsburgh, through its professional schools, offers the following master's degrees in professional fields of study: Master of Business Administration, Master of Dental Science, Master of Fine Arts, Master of Education, Master of Science in Geographic Information Systems and Remote Sensing, Master of Health Administration, Master of Health Promotion and Education, Master of Science in Information Science, Master of International Business, Master of International Development, Master of Law, Master of Library and Information Science, Master of Applied Mathematics (MA and MS), Master of Science in Nursing, Master of Public Administration, Master of Public Health, Master of Public and International Affairs, Master of Public Policy and Management, Master of Social Work, Master of Arts in Teaching, and Master of Science in Telecommunications.

The professional master's degree programs are generally similar to those for the MA and MS except that they emphasize instruction in professional affairs and practice and serve as preparation for careers in the professions.

- **Programs of Study**

The professional master's degree programs are generally similar to those for the MA and MS except that they emphasize instruction in professional affairs and practice and serve as preparation for careers in the professions. Professional master's degrees are conferred upon those students who demonstrate comprehensive mastery of their general field of study. The program of study should be a coherent program designed to assure the mastery of specified knowledge and skills, rather than a random accumulation of a certain number of courses. The overall form and content of the student's program of study is the responsibility of the student's department or school. To carry out this responsibility, each student must be assigned a major adviser, who, in consultation with the student, plans a program of study and research in accordance with school and departmental guidelines.

Master's degrees are conferred only on those students who have completed all course requirements with at least a 3.00 GPA.

Most professional master's degree programs provide opportunities for theoretical studies and practical applications. Students are expected to acquire professional skills through course work, projects, internships, practica, and/or research papers as part of demonstrating their comprehensive mastery of their field of study.

Requirements vary from program to program. Departments provide students with a copy of school and departmental regulations or maintain current and accurate Web sites appropriate for their programs. Students are expected to become familiar with these and to satisfy all prescribed degree requirements.

Professional master's degrees are conferred upon those students who demonstrate comprehensive mastery of the general field of study. This includes: (a) satisfactory completion of all course requirements and (b) other performances that indicate comprehensive mastery such as examinations, internships, research projects, theses, and practica. These requirements vary from school to school; students should refer to the specific requirements of their program.

Most professional master's degree programs provide opportunities for theoretical studies and practical applications. Students are expected to acquire professional skills through course work, projects, internships, practica, and/or research papers as part of demonstrating their comprehensive mastery of their field of study.

- **Credit Requirements**

The professional master's degrees require the satisfactory completion of a minimum of 30 credits of graduate study approved by the department. See Advanced Standing Credits for full policy.

- **Additional Requirements**

Most professional master's degree programs provide opportunities for theoretical studies and practical applications. Students are expected to acquire professional skills through course work, projects, internships, practica, and/or research papers.

- **Student Assessment**

Professional master's degrees are conferred upon those students who demonstrate comprehensive mastery of the general field of study. This includes: a) satisfactory completion of all course requirements and b) other performances which indicate comprehensive mastery such as examinations, internships, research projects, theses, practica, and so forth. These requirements vary from program to program.

Regulations Pertaining to Doctoral Degrees

While the regulations governing doctoral study in this section represent University-wide policy, students should check the School section of this catalog and with their advisor for any expansions of or exceptions to these rules.

- **Doctor of Philosophy Degree**

Doctor of Philosophy degrees are awarded for completion of graduate programs in various departments within the School of Arts and Sciences, the Joseph M. Katz Graduate School of Business, the School of Dental Medicine, the School of Education, the John A. Swanson School of Engineering, the School of Health and Rehabilitation Sciences, the School of Computing and Information, the School of Medicine, the School of Nursing, the School of Pharmacy, the School of Public Health, the School of Public and International Affairs, and the School of Social Work.

- **Admission to Doctoral Study**

In some doctoral programs, the requirements for admission to graduate study and for admission to doctoral study are identical, while other programs require the completion of a master's degree or its equivalent as a prerequisite for admission to doctoral study. Admission to doctoral study does not include any implication concerning "admission to candidacy for the Doctor of Philosophy degree."

Normally, only one major department of graduate study is permitted for the PhD degree. However, a few formal interdisciplinary programs and, under some circumstances, some independently designed interdisciplinary doctoral programs are available (see Interdisciplinary Doctoral Programs).

- **Programs of Study**

All PhD programs offered at the University of Pittsburgh should provide a coherent series of courses, seminars, and discussions designed to develop in the student a mature understanding of the content, methods, theories, and values of a field of knowledge and its relation to other fields. Each program should train the student in the methods of independent research appropriate to the discipline and provide an adviser and a committee to guide the student in an extended investigation of an original and independent research project of significance in the field.

The overall form and content of each student's program is the responsibility of the Graduate Faculty of the department or program. To carry out this responsibility, departments or programs must ensure that each student has a major adviser who, in consultation with the student, plans a program of study and research in accord with school and departmental guidelines. The adviser may prescribe additional courses both within and outside the department or program that are essential and/or appropriate to the student's program.

Some doctoral programs may include approved areas of concentration used to define and describe the students' training and expertise within the broader discipline. Such an area of concentration is added to the transcript upon the granting of the degree.

Doctoral level courses are numbered in the 3000 series, but courses numbered in the 2000 series may also be appropriate for doctoral study. Normally, courses numbered below 2000 do not meet the minimum requirements for doctoral study, although they may be taken to supplement a doctoral program.

Students must maintain a minimum cumulative GPA of 3.00 in courses to be eligible to take the preliminary and comprehensive examinations as well as to be graduated.

The requirement of proficiency in the use of foreign languages or other tools of research is at the discretion of individual departments or schools.

Departments or programs are expected to provide students with a copy of school and departmental regulations appropriate for their program and, in turn, students are expected to become familiar with these and to satisfy all prescribed degree requirements.

- **Credit Requirements**

The minimum 72 credit requirement for the PhD degree is met by six terms of registration as a graduate student for 12 or more credits per term or the equivalent number of credits in a reduced load. If the school requires completion of its master's degree program prior to admission into its doctoral program, at least four terms of registration for 12 or more credits per term or the equivalent number of credits in a reduced load are required as a minimum for the PhD degree. No more than 30 credits may be accepted for a master's degree awarded by another institution to meet the minimum credit requirement. In recognition of graduate study beyond the master's degree successfully completed elsewhere. (See Advanced Standing Credits)

Graduate students already enrolled may, when approved in advance by their department or programs and the dean, spend a term or more at another graduate institution to obtain training or experience not available at the University of Pittsburgh and transfer those credits toward the requirements for an advanced degree at the University of Pittsburgh. In all cases, at least three terms, or 36 credits, of full-time doctoral study or the equivalent in part-time study must be successfully completed at the University of Pittsburgh.

Students must register each term for the number of credits of course work, independent study, or research equivalent to the anticipated use of faculty time and University facilities. A student who has not registered for at least one credit during a 12-month period will be transferred automatically to inactive status and must file an application for readmission to graduate study (and pay the application fee) before being permitted to register again.

- **Residency Requirement**

Students seeking the PhD degree are required to engage in a minimum of one term of full-time doctoral study, which excludes any other employment except as approved by their departments or programs.

- **Preliminary Evaluation**

The preliminary evaluation should be designed to assess the breadth of the student's knowledge of the discipline, the student's achievement during the first year of graduate study, and the potential to apply research methods independently. The form and nature of the evaluation should be approved at the school level and described in the school bulletin. It should be conducted at approximately the end of the first year

of full-time graduate study. The evaluation is used to identify those students who may be expected to complete a doctoral program successfully and also to reveal areas of weakness in the student's preparation. Evaluation results must be reported promptly to the dean's office, but no later than the last day of the term in which the evaluation occurs. A student on provisional, inactive, or special status or on probation is not eligible to take the preliminary evaluation.

- **Comprehensive Examination**

The Comprehensive Examination should be designed to assess the student's mastery of the general field of doctoral study, the student's acquisition of both depth and breadth in the area of specialization within the general field, and the ability to use the research methods of the discipline. In some programs, the comprehensive examination is combined with the overview or prospectus meeting. It should be administered at approximately the time of the completion of the formal course requirements and should be passed at least eight months before the scheduling of the final oral examination and dissertation defense. In no case may the comprehensive examination be taken in the same term in which the student is graduated. Examination results must be reported promptly to the dean's office but no later than the last day of the term in which the examination is administered. A student who is unable to complete all degree requirements within a five-year period after passing the comprehensive examination may be re-examined at the discretion of the department, program, or school. A student on provisional, inactive, or special status or on probation is not eligible to take the program comprehensive examination.

- **Doctoral Committee**

Before admission to candidacy for the PhD degree, the student's major adviser proposes for the approval of the doctoral program director and the dean a committee of four or more persons, including at least one from another department in the University of Pittsburgh or from an appropriate graduate program at another academic institution, to serve as the doctoral committee. The majority of the committee, including the major adviser, must be full or adjunct members of the Graduate Faculty. This committee must review and approve the proposed research project before the student may be admitted to candidacy. A published Graduate Faculty Membership Roster is updated weekly.

This doctoral committee has the responsibility to advise the student during the progress of the candidate's research and has the authority to require high quality research and/or the rewriting of any portion or all of the dissertation. It conducts the final oral examination and determines whether the dissertation meets acceptable standards.

Meetings of the doctoral candidate and his/her dissertation committee must occur at least annually from the time the student gains Admission to Doctoral Candidacy. During these meetings, the committee should assess the student's progress toward degree and discuss objectives for the following year and a timetable for completing degree requirements. It is the responsibility of the dean of each school to determine a mechanism for monitoring the occurrence of these annual reviews.

The membership of the doctoral committee may be changed whenever it is appropriate or necessary, subject to the approval of the department chair or program director and the dean.

When a doctoral committee member leaves the University, he or she must be replaced unless the dissertation is almost complete or the member has an essential role on the committee. In the latter case, the dean's approval should be obtained. When the chair of a committee leaves and cannot be conveniently replaced, a co-chair must be appointed from within the department, and the restructured committee requires the approval of the department chair or director of the school's doctoral program and the dean. If the defense takes place within a few months of the chair's departure, the requirement of the co-chair is usually waived.

A retired faculty member may remain as a member or chair of a committee if he or she is spending considerable time in Pittsburgh or its vicinity and is still professionally active. Retired faculty who meet these criteria may also be appointed as a member or as a co-chair (but not chair) of a newly-formed committee. Retired faculty who leave the Pittsburgh area and/or do not remain professionally active should be replaced on committees and the revised committee approved by the department chair or the school's director of doctoral programs and the dean.

- **Overview or Prospectus Meeting**

Each student must prepare a dissertation proposal for presentation to the doctoral committee at a formal dissertation overview or prospectus meeting. The overview requires the student to carefully formulate a plan and permits the doctoral committee members to provide guidance in shaping the conceptualization and methodology of that plan. The doctoral committee must unanimously approve the dissertation topic and research plan before the student may be admitted to candidacy for the doctoral degree. Approval of the proposal does not imply either the acceptance of a dissertation prepared in accord with the proposal or the restriction of the dissertation to this original proposal. The student is responsible for ensuring that all appropriate regulatory approvals are obtained for the proposed research. For example, if the research proposed in the overview or prospectus involves human subjects, that proposed research must be approved by the University Institutional Review Board (IRB) before it may be carried out.

- **Admission to Candidacy for the Doctor of Philosophy Degree**

Admission to candidacy for the Doctor of Philosophy degree constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to the research and the writing of the dissertation. To qualify for admission to candidacy, students must be in full graduate status, have satisfied the requirement of the preliminary evaluation, have completed formal course work with a minimum grade point average of 3.00, have passed the comprehensive examination, and have received approval of the proposed subject and plan of the dissertation from the doctoral committee following an overview or prospectus meeting of the committee. In some schools, admission to candidacy is a prerequisite to registration for dissertation credits. Students are informed of admission to candidacy by written notification from the dean, who also states the approved doctoral committee's composition.

- **Registering for Full-Time Dissertation Study Course**

Doctoral students who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for Full-Time Dissertation Study Course, which carries no credits or letter grade but provides students full-time status. Students so enrolled are assessed a special tuition fee but are still responsible for the full-time computer and network, security/transportation, student health, and activity fees. Students must consult with the dean's office of their school for permission to register for full-time dissertation study.

- **Dissertation and Abstract**

Each student must write a dissertation that presents the results of a research project carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It presents a hypothesis tested by data and analysis and provides a significant contribution or advancement in that field. It is the responsibility of the student's doctoral committee to evaluate the dissertation in these terms and to recommend the awarding of the doctoral degree only if the dissertation is judged to demonstrate these qualities.

Characteristics which a dissertation should demonstrate are: the establishment of a historical context for the presentation of an innovative and creative approach to the problem analysis and solution; a clear understanding of the problem area as revealed by analysis and synthesis of a broad literature base; a well-defined research design; clarity in composition and careful documentation; results of sufficient merit to be published in refereed journals or to form the basis of a book or monograph; sufficient detail so that other scholars can build on it in subsequent work; the preparation of the author to assume a position within the profession.

If the dissertation is the result of a collaborative research effort, the project should be structured in such a way that the student's dissertation results from one, clearly identified piece of work in which the student has supplied the unquestionably major effort. The contributions of the student and the other collaborators must be clearly identified.

Published articles authored by the student and based on research conducted for the dissertation study may be included in the dissertation, if the student's department and school have a written policy that this is acceptable. In any case, the published work must be logically connected and integrated into the dissertation in a coherent manner, and sufficient detail must be presented to satisfy the characteristics of a dissertation. The student should be the sole or primary author of the published work. If the published articles were co-authored, the contribution of the student must be clearly delineated in the introduction so the committee can ascertain that the student's own work satisfies the requirements of a dissertation. Instructions on incorporating articles into the dissertation are provided in the Format Guidelines for Electronic Thesis and Dissertation Preparation at the University of Pittsburgh. The ETD Format Guidelines gives instructions on incorporating articles into the dissertation.

Candidates for the doctoral degree must provide a suitable number of copies of the dissertation, as determined by the doctoral committee and school policy, for review and use during the final oral examination. The general format of the dissertation and the abstract is determined by the Office of the Provost and is set forth in the Format Guidelines for Electronic Thesis and Dissertation Preparation at the University of Pittsburgh. Specific instructions should be available in the office of the dean of the school. After the final oral examination is successfully completed, the candidate must electronically submit the approved complete dissertation and abstract in final form. The candidate must submit a dissertation approval form, the required agreement with University Microfilms Inc. for the publication of the dissertation on microfilm and for the publication of the abstract in Dissertation Abstracts, and any appropriate fees to the designated student services representative in the dean's office of the candidate's school.

The general format of the dissertation and the abstract is determined by the Office of the Provost and is set forth in the ETD Format Guidelines. Specific instructions should be available in the office of the dean of the school. After the final oral examination is successfully completed, the candidate must deposit the approved ETD to the ETD Online System where it will be reviewed by the ETD Student Services Staff in the dean's office of the student's school. At least two additional copies of the dissertation abstract, a receipt for payment of the dissertation processing/microfilm fees and any necessary paperwork must be submitted to the appropriate ETD Student Services Staff in the office of the dean of the student's school. The candidate is also required to execute an agreement with ProQuest Information and Learning for the publication of the dissertation on microform and in an electronic format and submit the Survey of Earned Doctorates

(Forms are available in the dean's office). Students should check with their school for any additional supporting documents and/or requirements.

- **Publication of Theses and Dissertations**

All theses and dissertations submitted at the University of Pittsburgh must be submitted electronically. Electronic Theses and Dissertations (ETDs) are theses or dissertations prepared as text-based PDF files that can contain non-text elements such as multimedia, sound, video, and hypertext links.

All ETDs are made publicly available on the University Library System's online catalog. Students may choose to restrict access to the ETD to University of Pittsburgh IP addresses for a maximum period of five years. After five years, the ETD will automatically become fully accessible. Full access to the ETD may be withheld for a maximum of one year if a patent application has been filed and the student receives appropriate approval from the Provost's Office.

All doctoral candidates are required to execute an agreement with ProQuest/University Microfilms Inc. for the publication of the dissertation in the ProQuest/UMI repository.

Any thesis or dissertation may be published, either by the University or through an outside agency, provided due credit is given to the University. No form of publication, however, shall relieve the student of his or her responsibility for supplying the electronic thesis or dissertation to the University Library System.

Advisors should exercise responsibility in approving research topics that will not endanger long-term research projects or the safety or welfare of informants. Dependent upon the circumstances and the research point at which the danger is recognized, the provost's office may authorize a delay in publication of a dissertation for up to a maximum of one calendar year. Similarly, a publication may be withheld for a maximum of one year, if required, for filing a patent application.

- **Language of the Doctoral Dissertation**

The language in which doctoral dissertations are written shall normally be English. Exceptions may be granted by the student's dean with the approval of the dissertation adviser and committee, but only for sound reasons of scholarship. Permission shall never be granted on the ground of inadequate command of English.

- **Final Oral Examination**

The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and need not be confined to materials in and related to the dissertation. Any member of the Graduate Faculty of the University may attend and participate in the examination. The date, place, and time of the examination should be published well in advance in in The Pitt News or *Pittwire.* Other qualified individuals may be invited by the committee to participate in the examination. Only members of the doctoral committee may be present during the final deliberations and may vote on the passing of the candidate. A report of this examination, signed by all the members of the doctoral committee, must be sent to the dean. If the decision of the committee is not unanimous, the case is referred to the dean for resolution. The chair of the doctoral committee should ensure that the dissertation is in final form before requesting signatures of the members of the committee.

- **Interdisciplinary Doctoral Programs**

A student may be admitted into one of two types of interdisciplinary doctoral programs:

- *Generic Programs*, which are ongoing, formally structured, and approved doctoral programs, admission into which follows the same procedures as those of departmental programs; and,
- *Individualized Programs*, which are specially designed to permit an exceptionally able student who has earned a master's degree or the equivalent to pursue an interdisciplinary doctoral program structured to satisfy his or her unique goals. Such students should apply to the dean of the school if the departments involved in the proposed program are organized within one school or to the Provost if the departments are organized within more than one school. The student must satisfy the admission requirements of each of the departments or schools involved in the proposed program. If the request is approved, the dean or the Provost, in consultation with the departments concerned, will designate five members from these departments to serve as an advisory committee. After these advisers meet with the student, a chief adviser is selected to assume responsibility for general guidance to the student. These advisers continue their responsibility until the student is admitted to candidacy for the PhD degree and may, if it is appropriate, continue as the doctoral committee for this student.

• Other Research Doctoral Degrees

The University of Pittsburgh also offers the research doctoral degrees which are not PhD degrees.

These doctoral degree programs are similar to those for the PhD in the degree of rigor required, the minimum total credit requirements and permissible transfer credits, requirements for the successful completion of a preliminary evaluation and a comprehensive examination, admission to doctoral candidacy, nomination of a doctoral committee, preparation of the dissertation and abstract, publication of the dissertation, and successful completion of the final oral examination. These doctoral dissertations are usually based on an in-depth research project by the student and are intended to permit the student to apply relevant theory and knowledge as well as demonstrate skills in analysis of a major problem and to contribute to the improvement of practice in the student's area of specialization.

- **Professional Doctoral Degrees**

The University of Pittsburgh also offers professional doctoral degree programs for practitioners. These programs provide a coherent curriculum designed to impart the mastery of a substantial and complex body of knowledge that will serve as preparation for leadership and excellence in the practice of the profession. If the program is an accredited program, the standards of the accrediting body for a professional doctorate must be met. The University of Pittsburgh also offers professional doctoral degree programs which, provide a coherent curriculum designed to impart the mastery of a substantial and complex body of knowledge that will serve as preparation for leadership and excellence in the practice of the profession. The curriculum should contain a research component to achieve the goal for the research competence of the graduate. Students should deliver a report based on research that demonstrates both mastery of their subject matter and a high level of communication skills. The curriculum should contain an internship, a practicum, or a clinical component. Each experience should have associated with it clear goals and objectives, a statement of what skills the student should master, a statement of how those skills will be assessed objectively by the academic program and what steps the program will take in response to those assessments. In addition, the program should have an objective way to evaluate the site where internships and/or clinical rotations take place and assure the expertise of those responsible for administering training and instruction. If the program is an accredited program, the standards of the accrediting body for a professional doctorate must be met.

- **Admission to Professional Doctoral Study**

The minimum admission requirements must be the same as for all graduate programs at the University of Pittsburgh. In addition, the student must have completed a defined set of prerequisites so that all students will enter with required basic knowledge. A student must attain a 3.00 GPA in order to maintain good standing and be graduated

- **Programs of Study**

The curriculum should contain a research component to achieve the goal for the research competence of the graduate. Students should deliver a report based on research that demonstrates both mastery of their subject matter and a high level of communication skills. The curriculum should contain an internship, a practicum, or a clinical component. Each experience should have associated with it clear goals and objectives, a statement of what skills the student should master, a statement of how those skills will be assessed objectively by the academic program and what steps the program will take in response to those assessments. In addition, the program should have an objective way to evaluate the site where internships and/or clinical rotations take place and assure the expertise of those responsible for administering training and instruction.

- **Credit Requirements**

To attain the depth of knowledge and experience required by someone earning a professional doctorate, a minimum of 72 credits must be required. To attain the depth of knowledge and experience required by someone earning a doctorate, a minimum nine semesters of full-time study is required. Of this, no more than one-third should be internships or clinical work. A comprehensive examination will be used to assess the student's mastery of a substantial and complex body of knowledge.

Regulations Pertaining to Certificates and Micro-credentials

Graduate Certificate and Graduate Micro-Credential programs are coherent sets of courses and related work specifically designed to provide depth of understanding (via a certificate) or awareness (via a micro-credential) in a particular area. For students enrolled in a

graduate degree program at the University of Pittsburgh, the pursuit and awarding of a given certificate or micro-credential allows for an explicit recognition of a specific set of skills or educational experiences that may not be readily apparent through the conferring of a given graduate degree. Students not concurrently enrolled in a graduate degree program at the University of Pittsburgh can also apply for admission into some graduate certificate and micro-credential programs. Students seeking enrollment into graduate certificates and micro-credential programs must hold a baccalaureate degree or an advanced degree and be subject to admission requirements as outlined and governed by the academic unit(s) offering the certificate or micro-credential.

- **Graduate Certificates**

Graduate certificates are intended to provide depth of understanding in a given topic or area. A graduate certificate requires the satisfactory completion of a minimum of 10 credits, of which at least nine (9) credits are at the graduate level. Graduate certificates may include additional requirements for non-course educational activities such as workshops, projects, or other milestones. Transfer credits from other universities may be applied toward a University of Pittsburgh graduate certificate, but at least ten (10) Pitt credits must be earned towards the certificate. The certificate courses may be comprised from one academic unit or multiple academic units. At the discretion of the academic unit, graduate certificates may be offered to currently enrolled students or to students not concurrently enrolled in other graduate or professional programs at the University. Such students seeking enrollment into graduate certificates programs must hold a baccalaureate or other advanced degree and be subject to admission requirements as outlined and governed by the academic unit granting the certificate.

At the discretion of the individual academic unit(s) offering the certificate, students successfully completing courses in a graduate certificate program may apply some or all of those credits to a graduate degree program if the student meets all admission requirements for that program.

The awarding of a graduate certificate will be annotated on the official transcript of students who successfully meet the requirements as set forth by the academic unit (s) offering the graduate certificate. It is the responsibility of the academic unit offering the graduate certificate to track student progress and certify completion with the University Registrar's Office. The University Registrar's Office will not send a diploma for a graduate certificate. The issuing School(s) may develop and distribute a paper certificate following guidelines found at: https://www.provost.pitt.edu/standards-issuing-physical-certificates.

- **Graduate Micro-Credentials**

Graduate micro-credentials are intended to indicate familiarity with a given topic or area and require the satisfactory completion of at least four and at most nine credits. Graduate micro- credentials may include additional requirements for non-course educational activities such as workshops, projects, or other milestones. The micro-credential courses may be comprised from one academic unit or multiple academic units and are intended to be flexible and adaptive to changing demands. At the discretion of the academic unit, graduate micro-credentials may be offered to currently enrolled students seeking a graduate degree or to students who intend to pursue only a micro-credential. Students enrolled exclusively to seek micro-credential must hold a baccalaureate or other advanced degree and are subject to admission requirements as outlined and governed by the academic unit(s) offering the micro-credential.

At the discretion of the individual academic unit(s) offering the micro-credential, students successfully completing courses in a graduate micro-credential may apply some or all of those credits to an appropriate graduate certificate or degree if the student meets all admission requirements for that program.

The awarding of a graduate micro-credential will be annotated on the official transcript of students who successfully meet the requirements as set forth by the academic unit (s) offering the graduate micro-credential. It is the responsibility of the academic unit offering the graduate micro-credential to track student progress and certify completion with the University Registrar's Office. The University Registrar's Office will not send a diploma for a graduate micro-credentials. The issuing School(s) may develop and distribute a paper micro-credential certificate following guidelines found at: https://www.provost.pitt.edu/standards-issuing-physical-certificates.

Other Policies

- **Graduate Programs Offered in Off-Campus and Distance Learning Programs**

The academic standards set forth in the Regulations Governing Graduate Study apply to graduate programs offered in off-campus locations and offered via electronic communication. Admission criteria should be the same as those used by a school for its on-campus programs.

- **Editorial Assistance**

A student preparing a dissertation or other written work as part of academic requirements may, when appropriate, use the assistance of professional editors, provided that (1) he or she receives the approval of the research adviser or professor of the course in which written work is being submitted; (2) that editorial assistance provided be limited to use of language and not to subject matter, content or meaning; and (3) that all editorial assistance be described and acknowledged in the report.

- **Application for Graduation**

Each candidate for graduation must file an official Application for Graduation in the office of the dean early in the term in which graduation is expected. Students are required to be registered for at least one credit or full-time dissertation study at the University in the 12-month period before graduation. Students must file an application for graduation through the online graduation application. Each school establishes its own deadline by which students must apply for graduation. Students should check with their dean's office for the deadline. As noted above, students must be active. In exceptional circumstances, students who complete all the degree requirements at the end of a term but graduate in the next term may petition the dean of the school for a waiver of this registration requirement. The requirement that a student be on active status cannot be waived.

Prior to the end of the term in which they are graduated, all doctoral candidates must submit to the office of the dean a completed Survey of Earned Doctorates Awarded in the United States.

- **Certification for Graduation**

The Graduate Faculty of the department or program evaluates the performance of the student. If that performance is satisfactory, a report should be submitted to the dean certifying that the candidate has satisfactorily completed all departmental requirements for a graduate degree. The dean, after confirming that the overall school and University requirements have been met, certifies the candidate for graduation.

Student Rights and Responsibilities

The information that follows summarizes several key University-wide policies affecting graduate students, but students are also responsible for being cognizant of those University, school, and departmental regulations relevant to their programs of study.

- Academic Integrity Policy: Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures here.
- AO 10 Access to and Use of University Computing Resources: This policy governs who may access and use computing resources provided by the University of Pittsburgh.
- FERPA: The federal Family Educational Rights and Privacy Act of 1974 (FERPA), as amended, provides students' rights of access to their education records, as well as limited control over the disclosure of personally identifiable information from their education records. The University's commitment to safeguard student privacy and comply with the regulations is reflected in Policy AC 04 and Procedure AC 04.
- Pitt Promise: A Commitment to Civility: The University of Pittsburgh is committed to the advancement of learning and service to society. This is best accomplished in an atmosphere of mutual respect and civility, self-restraint, concern for others, and academic integrity. The Pitt Promise outlines common principles that contribute to a civil campus environment.
- Human Research Subjects: Human Research Protection Office (HRPO) (RI 10 Intellectual Property Policy)
- RI 07 Research Integrity Policy
- Student Code of Conduct: The Student Code of Conduct is an outline of the nonacademic rights and responsibilities of University students. The code defines offenses by and against students.

Statements of Compliance

- **Satisfactory Academic Progress (SAP) for VA Educational Beneficiaries - 38 US Code Section 3675(b)**

This policy applies to students who are VA beneficiaries and is intended to prevent the submission of VA-claims ("certifications") for those students who are suspended.

- In this instance, VA beneficiaries are defined as students receiving VA educational benefits under Chapter-30, Chapter-33, Chapter-35 and Chapter-1606, Title 38 U.S. Code.
- Students placed on academic probation at the end of the term may be certified for VA educational benefits for the subsequent term. If the student does not meet satisfactory academic progress in that subsequent term-defined as attaining a cumulative GPA at or above 2.00 for full-time students or attaining a cumulative GPA at or above 2.00 after attempting 12 additional credits for part-time students-the university will immediately suspend further VA certifications on behalf of the student.
- Students returning from one calendar year of suspension must re-apply for admission to the university. If accepted, those students may be certified for VA educational benefits.

Certification of Chapter-31 students will be at the discretion of the student's VA vocational rehabilitation counselor.

- **VA Educational Beneficiaries - 38 US Code Section 3679(e)**

As a matter of policy, the University of Pittsburgh allows students identified as *covered individuals** to attend and participate in all course(s) of education for any given term in which the student has been certified for VA educational benefits. This policy includes those circumstances in which VA payment(s) for student tuition and fees is late or delayed for up to 90 days after date of certification. The University retains the right to impose late fees upon those students who incur or retain an outstanding balance beyond the amount of expected VA tuition & fee payment for the term.

It is school policy to request all beneficiaries of VA educational benefits-including covered individuals*-provide the following documentation as part of certification process:

- VA Certificate of Eligibility (COE) or Statement of Benefits as printed from the VA.gov website

Completion of a certification request form (in hard-copy or on-line), which includes biographical information necessary for submission in the VA's IT system of record-VA-Once.

Failure to provide such documentation will result in the delay of any VA claim or certification. *Note: VA defines a Covered Individual as any individual who is entitled to VA educational assistance under the VA's Vocational Rehabilitation and Employment program (38 U.S. Code Chapter 31) or the VA's Post-9/11 GI Bill® (38 U.S. Code Chapter 33).

("GI Bill®" is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government website at www.benefits.va.gov/gibill.)

- **Johnny Isakson and David P. Roe Veterans Health Care and Benefits Improvement Act of 2020 - Section 1018**

In accordance with the *"Responsible Education Mitigating Options and Technical Extensions Act"* or the "REMOTE Act" of 2021 to Section 1018 of the *Johnny Isakson and David P. Roe, M.D. Veterans Health Care and Benefits Improvement Act of 2020* (Public Law 116-315)., the University of Pittsburgh provides a College Financing Plan (formerly known as Financial Aid Shopping Sheet) to every student who completes a FAFSA application including all VA beneficiaries.

Per Veterans Benefits Administration notification, "Isakson and Roe, Section 1018 Changes, dated June 13, 2022: The REMOTE Act affords the opportunity for schools to use the College Financing Plan (CFP), available through the U.S. Department of Education as a means to satisfy the requirements of section 3679(f). An Educational Training Institution that utilizes this form is providing sufficient consumer information, will be exempt from all section 3679(f) requirements, and does not need to apply for a waiver. An Educational Training Institution does not need to be participating in Federal Title IV Federal Student Aid to utilize the CFP to satisfy the requirements of section 3679(f).

Definitions

- **Graduate/Professional programs**: all programs of study leading to a research or professional master's degree, a research or professional doctoral degree, a graduate certificate, or a graduate micro-credential.
- **Advanced degrees**: all master's and doctoral degrees awarded upon completion of graduate/professional degree programs as defined above. Graduate micro-credentials and certificates are not considered advanced degrees.
- **Dual, Joint, and Cooperative programs:** A student may pursue an academic course of study which stipulates completion of all or most of the requirements of two distinct academic degree programs, administered by two or more schools or campuses within the University, for which two degrees are awarded.
- **Accelerated programs**
- **Distance Education**
- **Schools:** academic units of the University headed by deans, having their own teaching staffs, and offering instructional programs leading to degrees.
- **Graduate Faculty**: members of the various schools who have been recognized and approved as qualified: (1), (2) to serve on examining committees for advanced degrees, and (3) to advise graduate students and direct their research.
- **Graduate/Professional student:** a student who is enrolled in a graduate program as defined above

Off-campus Locations and Other Instructional Sites

Additional Location **Allegheny Intermediate Unit** 475 East Waterfront Drive Homestead, PA 15120 Opened: 08/03/2010	Other Instructional Site **Bellefield Professional Building** 130 North Bellefield Avenue Pittsburgh, PA 15213
Additional Location **Beaver Valley Intermediate Unit** 147 Popular Drive Monaca, PA 15061	Other Instructional Site **Bridgeside Point I** 100 Technology Drive, Suite 210 Pittsburgh, PA 15219
Additional Location **Butler County Community College** 107 College Drive Butler, PA 16002 Opened: 08/03/2010	Other Instructional Site **Bridgestone Point II** 450 Technology Drive Pittsburgh, PA 15219
Additional Location **Intermediate Unit I (Sch. of Educ.)** Data not provided Coal Center, PA 00000	Other Instructional Site **Butler County Community College** 107 College Dr. Butler, PA 16002
Additional Location **St. Mary's (Univ of Pgh - Bradford)** Data not provided St. Mary's, PA 00000	Other Instructional Site **Center for Strategic and International Studies** 1616 Rhode Island Avenue Washington, DC 20036
Additional Location **U-P at Bradford (c/o Sch of Soc Wk)** Data not provided Bradford, PA 00000	Other Instructional Site **Eye & Ear Institute** 203 Lothrop Street Pittsburgh, PA 15213
Additional Location **U-P at Johnstown, (c/o Sch of Soc Wk)** Data not provided Johnstown, PA 00000	Other Instructional Site **K-Z Guest Ranch** P.O. Box 2167 Cody, WY 82414
Additional Location **U-P at Titusville, c/o U-P at Bradford** 504 E. Main Street Titusville, PA 16354	Other Instructional Site **Kaufmann Building** 3471 Fifth Ave. Pittsburgh, PA 15213
Additional Location **University of Pittsburgh at Bradford** Data not provided 300 Campus Drive Bradford, PA 00000 OPEID: 00337903	Other Instructional Site **Longhorn Lodge** 362 N. 4th Street River Rock, WY 82083
Additional Location **University of Pittsburgh at Greensburg** 1150 Mt. Pleasant Rd	Other Instructional Site **Magee Women's Research Institute**

Greensburg, PA 00000 OPEID: 00337904	204 Craft Ave. Pittsburgh, PA 15213
Additional Location **University of Pittsburgh at Johnstown** Data not provided 450 Schoolhouse Road Johnstown, PA 00000 OPEID: 00337902	Other Instructional Site **McKee Place** 230 McKee Place Suite 500 Pittsburgh, PA 15213
Additional Location **University of Pittsburgh at Titusville** Data not provided 504 E. Main St. Titusville, PA 00000 OPEID: 00337901	Other Instructional Site **Neuromuscular Research Laboratory** 3860 Water Street Pittsburgh, PA 15203
Other Instructional Site **Bakery Square** 6425 Penn Avenue 4th. Floor Pittsburgh, PA 15206	Other Instructional Site **Parkvale Building** 200 Meyran Avenue Pittsburgh, PA 15213
Other Instructional Site **State Correctional Institution at Fayette** 50 Overlook Drive LaBelle, PA 15450	Other Instructional Site **Pymatuning Laboratory of Ecology** 13142 Hartstown Road Linesville, PA 16424
Other Instructional Site **State Correctional Institution at Somerset** 1590 Walters Mill Road Somerset, PA 15510	Other Instructional Site **Regional Learning Alliance Conference Center** 850 Cranberry Woods Drive Cranberry, PA 16066
Other Instructional Site **University of Pittsburgh-Washington DC Office** 2025 M Street, NW Washington, DC 20036	Other Instructional Site **State Correctional Institution at Greene** 169 Progress Drive Waynesburg, PA 15370
Other Instructional Site **University of Pittsburgh Applied Research Center (UPARC)** 3010 William Pitt Way Building A-7, Rm. 216 Pittsburgh, PA 15238	

Application for Admission

Graduate admissions to the University of Pittsburgh are handled by the particular graduate school or program; there is no central admissions office for graduate and professional schools at the University. This section details only the University requirements and procedures for admission to the University. Officially, admission may be granted or denied only by the dean of the school, and the issuance of visa documents may be granted or denied for non-academic reasons only by the Office of International Services.

The Graduate Admissions Office of each school provides admissions information for prospective students to that school.

The admissions information in this section is subject to change at any time. It is intended to serve only as a general source of information.

Graduate Admissions

Decisions regarding admission are based on an overall evaluation of all the credentials submitted by the candidate and in accord with the availability of faculty, facilities, and student support necessary to meet the applicant's expressed academic and research needs and interests. Many departments or programs have a limited number of places available. See also Regulations Governing Graduate Study.

Application Procedures and Deadlines

Prospective students are encouraged to check with the school and program for specific admissions information.

International Students

The minimum requirement for admission to a graduate program is the completion of a bachelor's degree from a regionally accredited institution in the United States or the completion of education that the University of Pittsburgh deems comparable to a bachelor's degree from a regionally accredited institution in the United States.

Applicants are required to submit official original academic credentials. Official original academic credentials that are issued in a language other than English must be accompanied by a certified English translation. In cases where the transcript (grade report, academic record, examination results, mark sheet) does not attest to the awarding of a degree or an academic qualification, a certified copy of the original certificate or diploma awarding the degree or qualification must also be submitted. Certificates or diplomas that are issued in a language other than English must be accompanied by a certified English translation.

The Office of International Services (OIS) provides immigration-related services for international visitors, students, faculty, researchers, and staff at the University of Pittsburgh. The Office of International Services (OIS) advises international students on how to maintain their immigration status and helps to ensure compliance for both international visitors and the University, with respect to federal regulations. For more information, contact OIS at ois@pitt.edu or call 412-624-7120. Non-immigrant students must meet U.S. Department of Homeland Security eligibility requirements for visa document issuance as determined by the Office of International Services.

Admissions Status

Acceptable students are admitted to graduate study in a specific department or school with "full," "provisional," or "special" graduate status depending on their qualifications and objectives. The qualifications described below represent the minimum standards of the University. These may be made more stringent or specific at the option of the department or school.

Full Graduate Status

For admission to full graduate status, an applicant must be a graduate of an accredited U.S. college or university and must be considered qualified for advanced study by the department or school. This normally is demonstrated by a B average (a grade point average of 3.00 on a

4.00 scale) or better in the total undergraduate program. If students with less than a B average present alternative evidence (such as completion of an advanced degree or successful relevant work experience) of superior ability, they may be considered for full graduate status on the recommendation of the department of proposed graduate study. Only students with full graduate status may take the PhD preliminary evaluation, take the MA/MS or PhD comprehensive examination, be considered for the award of an advanced degree or certificate, or be graduated.

Provisional Graduate Status

Applicants who are graduates of a recognized college or university but who do not qualify for admission to full graduate status because of deficiencies in either their undergraduate program or their scholastic achievement may be considered for provisional graduate status if strong supporting evidence of their ability to complete a graduate program is provided. Courses taken to remove deficiencies do not contribute toward completion of graduate degree requirements. Transfer from provisional to full graduate status is initiated and recommended by the department and is possible only after removal of deficiencies and other conditions noted at the time of admission and satisfactory progress in graduate work.

A student on provisional or special status or on probation is not eligible to take the PhD preliminary evaluation, to take the MA/MS or PhD comprehensive examination, or to be graduated.

Special Status

Students may be granted temporary admission as "special status" under the following circumstances:

1. Students who are seeking advanced degrees but who are unable to meet the deadline for filing all required credentials for admission may be granted temporary admission provided they present acceptable evidence concerning their qualifications for graduate study. Regular admission must be accomplished within the first term of registration.

2. Students who are not seeking an advanced degree but who have specific qualifications for one or more courses, including courses required for learning or certification, may register for such courses subject to review by the department and the dean of the school. Schools providing such an opportunity may specify the number of credits or courses for which a student may enroll while in this status and should also clearly specify the limitations on transfer of such credits toward a graduate degree if the student is subsequently admitted to a graduate degree program.

Guaranteed Admission and Accelerated Pathway Programs

Undergraduate students can apply for guaranteed admission into select graduate programs. Undergraduate students can also apply to accelerated Bachelors/Graduate (for example, "4+1") programs, which allow students to complete two sequential degrees on an accelerated timeline per regulations.

Deferred Admission

If a department or school so approves, a student may defer admission for one year without having to complete any additional applications. If approved, the student is sent a new admission letter. Approval of a student's request to defer admission does not necessarily mean that any financial aid awarded is also deferred.

Readmission

A student who has not registered for at least one credit or full-time dissertation study during a 12-month period will be transferred automatically to inactive status and must file an application for readmission to graduate study (and pay the application fee) before being permitted to register again. Inactive students cannot apply to graduate, nor take preliminary or comprehensive exams. Readmission is not automatic nor does it necessarily reinstate the student to the academic status enjoyed prior to becoming inactive. When readmitted, the student must be prepared to demonstrate proper preparation to meet all current admission and degree requirements.

Readmission of Student Service Members to the University of Pittsburgh

The University of Pittsburgh will promptly readmit a service member with the same academic status they had when last attending or accepted for admission. This requirement applies to any student who cannot attend school due to military service.

Definitions

Military service (or service in the uniformed services)-Voluntary or involuntary service in the armed forces, including service by a member of the National Guard or Reserve on active duty, active duty for training, or full-time National Guard duty under federal authority, for a period of more than 30 consecutive days under a call or order to active duty of more than 30 consecutive days. This does not include National Guard service under state authority.

Service member-someone who is a member of, applies to be a member of, performs, has performed, applies to perform, or has an obligation to perform, service in the uniformed services.

Appropriate officer-A warrant, commissioned, or noncommissioned officer authorized to give such notice by the military service concerned.

Armed Forces-the U.S. Army, Navy, Air Force, Marine Corps, Space Force, and Coast Guard.

Active duty-full-time duty in the active military service of the United States. Active duty includes full-time training duty, annual training duty, and attendance, while in the active military service, at a school designated as a service school by law or by the Secretary of the military department concerned. Active duty does not include full-time National Guard duty.

Notice and Procedure

The student must notify the school of their military service and intention to return to school as follows:

- *Notification of military service*. The student (or an appropriate officer of the armed forces or official of the Department of Defense) must give oral or written notice of such service to the University of Pittsburgh Office of Veterans Services ("OVS") as far in advance as is reasonable under the circumstances. This notice does not have to indicate whether the student intends to return to the school and may not be subject to any rule of timeliness. (Timeliness must be determined by the facts in each case.) Alternatively, at the time of readmission, the student may submit an attestation of military service that necessitated their absence from school. No notice is required if precluded by military necessity, such as service in operations that are classified or would be compromised by such notice.
- *Notification of intent to return to school.* The student must also give oral or written notice of their intent to return to their program of study to OVS within three years after the completion of the period of service. A student who is hospitalized or convalescing due to an illness or injury incurred or aggravated during the performance of service must notify OVS within two years after the end of the period needed for recovery from the illness or injury. A student who fails to apply for readmission within these periods does not automatically forfeit eligibility for readmission but is subject to the applicable University of Pittsburgh policies or practices generally governing student leaves of absence, readmission, and/or reinstatement.

OVS suggests that students providing Notification of military service or Notification of intent to return to school do so sending an email to the Director of OVS at the following address veterans@pitt.edu, or orally by calling 412-383-5580, in order to ensure accuracy and expeditious processing, but such notice is not required to follow any particular format. When a student is requesting readmission, they will be required to provide any supporting documentation requested by the University, in accordance with 34 C.F.R. § 668.18(g).

The University of Pittsburgh will promptly readmit the student into the next class or classes in the program beginning after they provide notice of intent to reenroll, unless they request a later date or unusual circumstances require the University of Pittsburgh to admit them at a later date.

The University of Pittsburgh will admit the student with the same academic status, which means:

- to the same program to which the student was last admitted or, if that exact program is no longer offered, the program that is most similar to that program, unless they choose a different program;
- at the same enrollment status, unless the student wants to enroll at a different enrollment status;
- with the same number of credit hours previously completed, unless the student is readmitted to a different program to which the completed credit hours are not transferable; and
- with the same academic standing (e.g., with the same satisfactory academic progress status) the student previously had.

If the student is readmitted to the same program, for the first academic year in which they return, the University of Pittsburgh will assess the tuition and fee charges that they were or would have been assessed for the academic year during which they left the school. However, if their veteran's education benefits or other service member education benefits will pay the higher tuition and fee charges that other students in the program are paying for the year, the University of Pittsburgh may assess those charges to the student as well.

If the student is admitted to a different program, and for subsequent academic years for a student admitted to the same program, the University of Pittsburgh will assess no more than the tuition and fee charges that other students in the program are assessed for that academic year.

The cumulative length of the absence and of all previous absences from the University of Pittsburgh for military service may not exceed five years. Only the time the student spends actually performing service is counted.

Helping students be readmitted and when it might not occur

If the University of Pittsburgh determines that the student is not prepared to resume the program with the same academic status at the point where they left off or will not be able to complete the program, the University of Pittsburgh will make reasonable efforts at no extra cost to the student to help them become prepared or to enable them to complete the program. This may include providing refresher courses and/or other remedial measures as the University deems appropriate under the circumstances.

The University of Pittsburgh is not required to readmit the student if it determines:

- that there are no reasonable efforts it can take to prepare the student to resume the program at the point where they left off or to enable them to complete the program; or
- that after it makes reasonable efforts (those that do not place an undue hardship on the institution), the student is not prepared to resume or complete the program.

"Undue hardship" means an action requiring significant difficulty or expense considering the overall financial resources of the school and the impact of such action on its operation.

The University of Pittsburgh has the burden to prove by a preponderance of the evidence that the student is not prepared to resume the program with the same academic status at the point where they left off or that they will not be able to complete the program.

Financial Information

Tuition

Enrollment Fee or Tuition Deposit

Upon acceptance to the University, students may be required to pay a nonrefundable, nontransferable enrollment fee or tuition deposit. If paying an enrollment fee, part of that fee will be considered to be a tuition deposit, and part might be used to pay for new student programming of some nature. The tuition deposit component will be applied toward their first-term tuition. The amount of the deposit varies, depending on your program of admission. Instructions for payment will be specified in the admission letter.

Full-time and Part-time Tuition and Mandatory Fees

Mandatory fees vary by campus, undergraduate and graduate level, and by full-time and part-time enrollment. Tuition rates are campus, level, and school specific. The University's tuition and mandatory fee rates are available on the Tuition Rates - Pennsylvania Residents page or the Tuition Rates - Out-of-State Residents page.

Pitt Online Tuition and Mandatory Fees

Pitt Online is a division of the University Center for Teaching and Learning. Through Pitt Online, several of the graduate programs offered in traditional classroom settings are available to qualified applicants regardless of their geographical location. Tuition and mandatory fees are available on the Pitt Online Tuition And Fees page; please note, these rates apply to students admitted to one of the Pitt Online programs, not to students taking one or more online classes as part of a traditional academic program.

Determining How Full-Time vs Part-Time Students are Billed

Undergraduate:

Undergraduate students registered for 12 to 18 credits are regarded as full-time students and are assessed the current undergraduate "flat" tuition rate for their academic center.

Undergraduate students registered for fewer than 12 credits are considered part-time and are billed on a per-credit basis.

Students will be charged per credit for each credit exceeding the full-time credit limit.

Graduate:

Graduate students registered for 9 to 15 credits are regarded as full-time students and are assessed the current graduate "flat" tuition rate for their academic center.

Graduate students registered for fewer than 9 credits are considered part-time and are billed on a per-credit basis.

Students will be charged per credit for each credit exceeding the full-time credit limit.

In the Summer Term:

All graduate students are billed on a per-credit basis except for students enrolled in a full-time program that charges a flat rate per term for fall, spring, and summer.

DETERMINING HOW UNDERGRADUATE VS. GRADUATE STUDENTS ARE BILLED

Students are billed at the undergraduate or graduate tuition level in accordance with University of Pittsburgh Tuition and Fees Policy.

- A student enrolled in an associate's or bachelor's degree program is considered an **undergraduate** student and is billed at the appropriate undergraduate tuition rate.
- A student who has already been awarded a bachelor's degree and is enrolled in a **graduate** or doctorate-professional practice program is considered a graduate student and is billed at the appropriate graduate tuition rate, even for undergraduate classes taken during the student's graduate career.
- A student who has already been awarded a bachelor's degree and is enrolled in an associate's program or in another bachelor's program is considered a **post-baccalaureate** student. Post-baccalaureate students enrolled in an undergraduate academic center are billed at the undergraduate tuition rate, while post-baccalaureate students enrolled in an academic center that has both undergraduate and graduate degree programs may be billed at either the undergraduate or graduate rate, according to the admitting school's program requirements.

About Mandatory Fees

Mandatory Fee figures are applicable to students regardless of Pennsylvania or Out-of-State residency. Not listed under Mandatory Fees are:

1. **Course/major fees** that are based upon registration in specific courses (e.g., lab fees).
2. **Academic fees** (e.g., application fees, academic program fees for programs such as Cooperative Engineering Program and Study Abroad).
3. **Service fees** (e.g., late application for graduation and lost ID cards).
4. **Professional workshop and professional development fees**
5. **Specific-student fees** such as the Freshman Socialization Fee at the Greensburg Campus.

Residency/Reduced Tuition

Admitted students who are United States citizens and have lived in Pennsylvania for a continuous period of 12 months before enrollment in any institution of higher education may be eligible for Pennsylvania tuition rates. Students who wish to challenge their residency classification may petition for Pennsylvania tuition rates by submitting convincing evidence for review to the Student Appeals Office in Thackeray Hall. The University's policy on Pennsylvania Residency Classification is located online at https://www.policy.pitt.edu/pa-residency-classification-eligibility-reduced-tuition.

Military affiliated students and students who are not U.S. citizens may be eligible for Pennsylvania tuition rates if they meet the qualifications and provide the documentation required by University of Pittsburgh Policy, Pennsylvania Residency Classification.

For any student younger than 22, both the student and parent(s) or legal guardian(s) must meet the residency requirements to be eligible for reduced tuition.

Eligibility for Pennsylvania tuition (in-state rates) is governed by the University's Policy on PA Residency Classification. The policy establishes the criteria used to classify a student as a Pennsylvania Resident (PA Resident) or Non-Resident for tuition purposes. PA Residents are charged in-state tuition rates; Non-Residents are charged out-of-state rates. The term "PA Resident" for tuition billing purposes may differ from other definitions of Pennsylvania residency.

I. Scope

This policy affects tuition rates charged to students who are enrolled in classes at the University of Pittsburgh. It outlines the requirements that must be met to be considered a PA Resident and the responsibilities of those charged with managing the process governing classification of a student's residency, including the PA Residency Coordinators at each campus.

II. Definitions

A. PA Resident: Classification of students who are charged the in-state tuition rate.

B. Enrolled: Enrolled, as it pertains to this policy, means a student is registered for one or more classes.

III. Policy

One of the requirements to be considered a PA Resident for tuition purposes is that a student must live in PA for 12 continuous months immediately prior to enrollment at an institution of higher education in PA. This is called the "12 Month Requirement." Students under the age of 22 are considered minors for purposes of residency determination and are classified based on the residency information of their parent(s) or legal guardian(s).

In addition to meeting the 12 Month Requirement, Non-U.S. Citizens must submit documentation proving they fall into one of the three immigration categories in the "Non-U.S. Citizens Immigration Requirements" section of this policy.

Section V below outlines the requirements that must be met in determining residency classification. As explained in that section, PA Residency Coordinators serve as the central points of contact for submitting materials required under this Policy. Contact information for the PA Residency Coordinators at each campus is provided in Section IX-Resources, below. Where deadlines in this Policy refer to academic term and session dates, please refer to the University's official academic calendar on the Office of the University Registrar's website.

Scholarships Contingent on Non-Residency

A student receiving a scholarship or grant contingent on maintaining a residence in a state other than PA will be classified as a Non-Resident for tuition purposes.

University of Pittsburgh grants or scholarships awarded to the student based on out-of-state residency status may be reduced or cancelled if the student is subsequently reclassified as a PA Resident.

IV. Requirements

A. 12 Month Requirement

Students who have lived in PA for at least 12 consecutive months immediately prior to enrollment at any institution of higher education in PA meet the 12 Month Requirement. For U.S. Citizens, this is all that is required for classification as a PA Resident. Students who are Non-U.S. Citizens must also meet the immigration requirements described in Subsection B below in order to be eligible for reclassification to PA Resident. Students under the age of 22 are considered minors for purposes of residency determination and are classified based on the residency information of their parent(s) or legal guardian(s).

Students who do not meet the 12 Month Requirement are classified as Non-Residents. Those who wish to challenge their classification can file a petition with their campus PA Residency Coordinator. Instructions are provided below in Section VI. Petitioning to Overcome the 12 Month Requirement.

B. Non-U.S. Citizens Immigration Requirements

In addition to meeting the 12 Month Requirement, Non-U.S. Citizens must demonstrate that they fall into one of three immigration categories to be reclassified to PA Resident:

1. Asylee, refugee, or U.S. Lawful Permanent Resident (green card holder); or
2. Has an approved I-140 or I-130, along with Form I-797, the Receipt Notice for the filing of Form I-485; or
3. Has an approved I-140 or I-130, along with evidence to support that they intend, but are unable, to file a Form I-485 because they do not have a current priority date as determined by the most recent U.S Department of State Visa Bulletin.* To provide sufficient evidence under this category, the student must provide evidence of their country of birth; in most cases, a copy of the passport identification page meets this requirement.

Filing Deadlines. Students who meet the 12 Month Requirement and fall into one of the immigration categories above must submit copies of their immigration documents to their campus PA Residency Coordinator to request reclassification by:

- Fall, Spring, and Summer Terms: no later than 30 calendar days after the first official day of classes for the term.
- Summer session within the Summer Term: no later than 15 calendar days after the first official start date of classes for the session.

If documentation is submitted after the deadline, the request for reclassification will be effective on the first day of the following term or summer term session. Residency reclassification is not retroactive to any prior terms.

** Refer to the U.S. Department of State and U.S. Citizen and Immigration Services for further information about determining your priority dates. As explained in those resources, a person's priority date is determined by the specific category of permanent residency applied for, and the country of chargeability (birth).*

C. Military Affiliated Students

Qualifications. Individuals who meet at least one of the following qualifications are eligible for PA Resident status for tuition purposes:

Under the Commonwealth of Pennsylvania Statutes Title 24 (Education), Section 2509 (the "Act").

1. Any Veteran, their spouse, dependent children, or any other individual who is eligible to receive benefits under any of the following:

1. 10 U.S.C. Chapter 1606 Montgomery GI Bill® Selected Reserve
2. 38 U.S.C. Chapter 30 Montgomery GI Bill® Active Duty
3. 38 U.S.C. Chapter 31 Vocational Rehabilitation and Employment
4. 38 U.S.C. Chapter 33 Post-9/11 GI Bill®

In addition, a child, a spouse, or a surviving spouse who is eligible to receive benefits under Chapter 35 (relating to survivors' and dependents' educational assistance) qualifies for the PA Resident tuition rate.

For purposes of the Act, a "Veteran" is any individual who served in the United States Armed Forces, including a reserve component or National Guard, and who was discharged or released from service under conditions other than dishonorable.

If you meet any of the above-listed requirements, please provide a copy of the Service Member's DD214 and your Certificate of Eligibility from the VA to the Residency Coordinator at the Pittsburgh campus.

2. Military personnel who are assigned to an active duty station in Pennsylvania and who reside in Pennsylvania, and their spouses and dependent children. If you meet this requirement, please provide a copy, to the Residency Coordinator at the Pittsburgh campus, of the active duty member's orders and a copy of the first page of the most recent IRS Form 1040/1040A displaying the name of the spouse or dependent child, if applicable.

3. Civilian personnel employed at a US Department of Defense facility who are transferred to Pennsylvania by the US Department of Defense and who reside in Pennsylvania, and their spouses and dependent children. If you meet this requirement, please provide a letter, to the Residency Coordinator at the Pittsburgh campus, from the US Department of Defense that documents the transfer to Pennsylvania specifying the name of the person employed, the applicable US Department of Defense facility in Pennsylvania, and the start date, along with a copy of the first page of the most recent IRS Form 1040/1040A displaying the name of the spouse or dependent child, if applicable.

Under the Commonwealth of Pennsylvania Consolidated Statutes Title 51 (Military Affairs), Chapter 32:

1. Service Members of the Pennsylvania National Guard who are receiving the Education Assistance Program (EAP) Grant qualify for the resident tuition rate. Beginning academic year 2020-2021, PA National Guard members' spouses, surviving spouses, and children who are eligible for benefits under the Military Family Education Program (MFEP) also qualify for the resident tuition rate. If you meet these requirements, you will be reclassified to a Pennsylvania resident once you are an enrolled student and the financial aid office has been notified by the Pennsylvania Higher Education Assistance Agency that you have been awarded EAP or MFEP benefits.

Filing Deadlines. Military affiliated students should submit the documentation described in paragraph (1), (2), or (3) above to the PA Residency Coordinator at their campus to request reclassification by:

- Fall, Spring, and Summer Terms: no later than 30 calendar days after the first official day of classes for the term
- Summer session within the Summer Term: no later than 15 calendar days after the first official start date of classes for the session.
- date of classes for the session.

If documentation is submitted after the deadline, the request for reclassification will be effective on the first day of the following term or summer term session. Residency reclassification is not retroactive to any prior terms.

GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government website at www.benefits.va.gov/gibill.

V. Petitioning and Appealing to Overcome the 12 Month Requirement

A. Filing a Petition

Students whose initial residency classification is Non-Resident because they do not meet the 12 Month Requirement may complete the University's petition form and file it, together with supporting documentation, to the PA Residency Coordinator at their campus. Through the Petition Process and supporting documentation, the student must demonstrate that they:

1. Came to PA for reasons other than enrollment in an institution of higher education; and/or
2. Intend and are able to live in PA permanently or indefinitely upon completion of their academic studies.

Contact information for the PA Residency Coordinator at each campus, the petition form, and its filing instructions, are provided in Section IX-Resources, below.

Petition Deadlines. A student must submit their petition to the PA Residency Coordinator by:

- Fall, Spring, and Summer Terms: no later than 30 calendar days after the first official day of classes for the term.
- Summer session within the Summer Term: no later than 15 calendar days after the first official start date of classes for the session.

Petitions Filed After the Deadline. A petition filed after the deadline will be considered for the following term or summer term session.

Request for Additional Documentation. If additional documentation and information is requested by the PA Residency Coordinator, it must be submitted within 15 days of the date requested. Otherwise, the petition will be denied for that term.

B. Factors Considered

The following factors may be taken into consideration by the University when rendering a decision on a petition or appeal for reclassification. No required number of factors must be met, since each case is decided on the basis of the facts provided, the quality and reliability of the documentation submitted, and *the student's intentions and actual ability to live permanently or indefinitely in PA*.

- Payment of appropriate PA state and local taxes.
- Agreement for permanent, full-time employment in Pennsylvania.
- Lease or purchase of a permanent, independent residence in Pennsylvania by the student.
- Transfer of bank accounts, stocks, automobiles, and other registered property to Pennsylvania from another state.
- Membership in social, civic, political, athletic, and religious organizations located in Pennsylvania.
- Procurement of a Pennsylvania driver's license.
- Procurement of a Pennsylvania motor vehicle registration.
- Registration to vote in Pennsylvania
- A notarized statement by the student or their parent(s) or legal guardian(s) in the case of a minor declaring their intention to make Pennsylvania their residence either permanently or for an indefinite period of time.
- A notarized statement from the parent(s) or legal guardian(s) of a student under the age of 22 setting forth facts to establish the student's financial independence and separate residence. The student should provide financial documentation demonstrating the ability to fully and independently support themselves to substantiate this condition.

C. PA Residency Coordinator Decision

The PA Residency Coordinator will review the petition and supporting documentation, and then render a decision and provide written notification to the student.

If the petition was submitted by the deadline for the term, and the petition is approved, the residency reclassification will remain in effect going forward.

A petition filed after the deadline for a term, if approved, will be effective on the first day of the following term or summer term session. Reclassification is not retroactive to any prior terms.

If the petition is denied, the student has 30 days from the date of notice of denial to inform their PA Residency Coordinator in writing if they wish to appeal by appearing before the University Residency Appeals Committee (the Committee) as noted in Subsection D below. The PA Residency Coordinator will notify the Committee of the student's request.

D. University Residency Appeals Committee

If a student properly files an appeal of the PA Residency Coordinator's decision, the student will be invited to the next regularly scheduled meeting of the Committee so the Committee can review the PA Residency Coordinator's decision. The student has the option to attend that meeting with the Committee to discuss their case and answer questions. After the meeting, the Committee will deliberate and render a final decision that will be provided to the student in writing. If the student wishes to be accompanied to the meeting by legal counsel, the attorney will be limited to observing and cannot participate in the meeting, nor respond to questions on behalf of the student.

If the initial petition form was submitted by the deadline, and the Committee approves the student's appeal, the effective beginning term of reclassification will be term in which the student filed the petition.

If the initial petition form was submitted after the deadline for a term, and the Committee approves the appeal, the effective beginning term of reclassification will be on first day of the following term or summer term session. Reclassification is not retroactive to any prior terms.

VI. Notifications

1. When a student moves from Pennsylvania to another state they must give written notice to their campus PA Residency Coordinator.
2. When parents of a student under 22 years of age move, the student must give written notice of any change in their parent's/parents' or legal guardian's/legal guardians' address to their campus PA Residency Coordinator.

VII. Adjustments and False Information

Students who are found eligible for in-state rates due to an error in classification are subject to retroactive reclassification as Non-Residents and are responsible for the payment of all related tuition and fees.

Students who are found eligible for in-state rates as a result of false or concealed facts are subject to University discipline and are responsible for the immediate payment of all Non-Resident tuition and fees. Failure to make payment in full may result in legal action and additional costs, including legal fees, court costs, and collection costs that may include an additional percentage of the total amount due to the University, if the unpaid account balance is assigned to a Collection Agency.

The University reserves the right to periodically audit and make any necessary adjustment in the classification of all students.

VIII. Governance or Responsibilities

A. Student

- Under 22, notifies the University of a change in residency of their parent(s) or legal guardian(s);
- Notifies the University of a change in their residency status;
- Files a petition with their campus PA Residency Coordinator, if they receive a Non-Resident classification; and
- Notifies their PA Residency Coordinator if they wish to file an appeal of a decision to deny their petition of a Non-Resident classification.

B. PA Residency Coordinator

- Reviews residency petitions and makes decisions on residency classification;
- Communicates results to the student as needed and when appropriate;
- Notifies the University Residency Appeals Committee of a student's appeal of the PA Residency Coordinator's decision on a petition; and
- Provides written notification to the student of the Committee's final decision, if the student has elected to have the Committee review the appeal.

C. University Residency Appeals Committee

- Reviews student appeals; and
- Provides final decisions on residency classification based on information provided during the review of the appeal.

Petitioning for Eligibility for Reduced Tuition Rates

Instructions for Petitioning

Financial Obligation

Students establish a financial obligation to the University when they enroll in courses and will be asked to acknowledge that obligation to be permitted to enroll in classes each term. The agreement to pay (Promissory Note) the student electronically agrees to provide detailed information about the student's financial obligation and also the consequences of default of that obligation. Unpaid accounts may be referred to a collection agency, reported to credit bureau(s), and/or the student may be subject to legal action. In either case, the student will be responsible for any and all expenses incurred, including attorney fees. Students will bear the University's costs and fees associated with all collection activity resulting from the student's failure to make payment under the agreement they will sign each term.

Fees

Special Service Fees may be charged for University transactions that are processed beyond deadlines, due dates, and specified time limits. Special service fees are listed each term in the Schedule of Classes.

Course Fees are associated with certain courses and will be charged when the student enrolls in those courses. These courses are identified in the Schedule of Classes and Course Descriptions. Course fee information is also available on the Academic Regulations page.

Late Payment Fees are charged when students make payment after the published due date for their charges for the term.

Payments and Credit Balance Refunds

PittPAY is the University's online financial portal for students and the Authorized Users that students have designated as having access to their financial information.

Payments may be made in PittPAY by electronic check (eCheck) or by credit or debit card. While there is no charge for eCheck transactions, our vendor will charge a non-refundable convenience fee for all debit or credit card payments. Check payments can be mailed to the address on the Remittance Form at the bottom of the Term Statement, which students and Authorized Users can generate and print themselves.

International Payments can be processed in PittPAY through the University's partnership with Flywire. Flywire offers a streamlined and cost effective way for students and Authorized Users to make international payments on the student account from almost any country, in most currencies.

PittPAY Payment Plans are available for those who elect to make payments in a series of monthly installments, instead of one payment by the due date. Participation in a payment plan is optional. To view available payment plan offers, go to the Payment Plans tab in PittPAY.

eRefunds are automatic refunds of credit balances from the student account. Credit balances occur when payments to the account, including the disbursement of loans and financial aid, exceed the amount you owe. Students and Authorized Users who are Parent PLUS loan borrowers, go to the eRefund tab in PittPAY to designate the checking or savings account where your credit balances should be directly deposited.

Tuition Rates - Pennsylvania Residents

Graduate Cost of Attendance

Pennsylvania Residents

Cost of Attendance includes Tuition, Mandatory Fees, and Other Estimated Expenses. Tuition and Mandatory Fees are the board-approved rates. Tuition and mandatory fees also apply to the summer term.

Costs charged to the student account include tuition and mandatory fees, on-campus housing, university meal plans, some course materials, and certain program-related fees. Examples of costs that are not charged to the student account are off-campus housing and food, misc. personal expenses, and transportation costs.

Tuition Rates

Program	Fall and Spring Terms	Full-time per Term	Part-time per Credit	Summer Term per Credit
Dietrich School of Arts and Sciences	$27,412	$13,706	$1,100	$1,100
MS in Quantitative Economics (MQE) Program	$48,934	$24,467	$1,628	$1,628
School of Social Work Exceptions below	$27,412	$13,706	$1,100	$1,100
Master of Social Work/MBA Program	$30,398	$15,502	$1,216	$1,216
School of Dental Medicine Residency Programs *Note the academic year is 3 terms: fall, spring, and summer for a total cost is $61,278	$61,278	$20,426	$2,526	$2,526
Certificate	$29,112	$14,556	N/A	N/A
Doctorate - Professional Practice *Note the academic year is 3 terms: fall, spring, and summer for a total cost is $58,686	$58,686	$19,562	$1,281	$1,281
Graduate (MS, PhD in Oral and Craniofacial Sciences) *Note the academic year is 3 terms: fall, spring, and summer for a total cost is $32,130	$32,130	$10,710	$1,305	$1,305

School of Public Health Exceptions below	$32,140	$16,070	$1,305	$1,305
MHA/MBA Program	$33,312	$16,656	$1,732	N/A
Swanson School of Engineering	$30,628	$15,314	$1,449	$1,449
School of Computing and Information Exceptions below	$28,824	$14,412	$1,170	$1,170
Graduate MLIS The Full-time per Year rate is for three terms. For summer term, the Part-time per Credit rate applies, so it may differ slightly from the Full-Time per Term tuition	$43,236	$14,412	$1,170	$1,170
School of Nursing	$32,140	$16,070	$1,305	$1,305
School of Health and Rehabilitation Sciences	$32,140	$16,070	$1,305	$1,305
Master of Science in Sports Science This is a full-time, 1-year, 2-term program, plus three credits during the summer term. The total cost of the program is $26,020.	$23,656	$11,828	$788	$788
Graduate Programs Athletic training (MS); Communication Science Disorders (MA, MS): Health Informatics on-campus (MS); Nutrition and Dietetics (MS); Occupational Therapy (MS); Physician Assistant studies on-campus (MS): Prosthetics and Orthotics (MS); Doctorate - Professional Practice programs in Audiology (AuD); Occupational Therapy (OTD); Doctor of Philosophy (PhD).	$32,140	$16,070	$1,305	$1,305
MA & MS in Speech Language Pathology The MA & MS Speech Language Pathology program tuition is billed at a flat rate each of $14,586 per term for the duration of the program for students entering in Fall 2026.			N/A	N/A
Doctor of Chiropractic (DC) The DC program is a full-time, 2.7-year, 8 term-program. Tuition is billed at rate each term for the duration of the program. For PA students entering in **Fall 2026**, tuition is a flat rate of $15,398 per term ($46,194 for a 3-term year, or $123,184 for all 8 terms.)			N/A	N/A

The DC program is a full-time, 2.7-year, 8 term-program. Tuition is billed at rate each term for the duration of the program. For PA students entering in **Fall 2027**, tuition is a flat rate of $15,705 per term ($47,115 for a 3-term year, or $125,640 for all 8 terms.)				
Doctor of Physical Therapy Program (Hybrid) The DPT hybrid program is a full-time, 2.3-year, 7 term-program. Tuition is billed at a flat rate each term for the duration of the program. For students entering in Fall 2026, tuition is a flat rate of $15396 per term ($46,188 for a 3-term year, or $107,772 for all 7 terms). For students who entered in Fall 2024 or prior, review historical tuition rates here.			N/A	N/A
Doctor of Physical Therapy Program (On-campus) The DPT on-campus program is a full-time, 2.3-year, 7 term-program. Tuition is billed at a flat rate each term for the duration of the program. For PA students entering in Fall 2026, tuition is a flat rate of $15,396 per term ($46,188 for a 3-term year, or $107,772 for all 7 terms). For students who entered in Fall 2024 or prior, review historical tuition rates here.			N/A	N/A
Master of Science in Clinical Mental Health Counseling			$1,115	N/A
Master of Science in Physician Assistant Studies (Hybrid) This is a full-time, 6-term program. Tuition is billed at a flat rate each term for the duration of the program. The 3-term cost for students first entering in **Spring 2026** is $53,832. This is a full-time, 6-term program. Tuition is billed at a flat rate each term for the duration of the program. The 3-term cost for students first entering in **Spring 2027** is $54,906.			N/A	N/A
School of Education Exceptions below	$27,412	$13,706	$1,100	$1,100
Doctor of Education (EdD) Program The EdD is a 52-credit, part-time, hybrid program. It takes 3 years to complete over 9 academic terms. Tuition is billed at the same rate for in-state and out-of-state students. Based on current tuition rates, the total tuition cost of the EdD program is $57,200 (subject to annual tuition increases). Additionally, students are responsible for the mandatory fees and expenses described on this website.			N/A	$1,100
MEd in Higher Education	$26,876	$13,438	$1,079	$1,079
Visual Impairment and Blindness Programs	$26,876	$13,438	$1,079	$1,079

Tuition is billed at the same rate for in-state and out-of-state students. Full-and-part-time programs are offered in the areas of Teacher of Visually Impaired (TVI) Students and in Orientation and Mobility (O&M). Students may earn a Master of Education degree, graduate certificate, or both credentials jointly.				
School of Public and International Affairs Exceptions below	$27,412	$13,706	$1,100	$1,100
Nursing/SPIA Program	$31,510	$15,755	$1,305	$1,305
Joseph M. Katz Graduate School of Business Exceptions below	$35,554	$17,777	$1,732	$1,732
NOTE: Current tuition rates for Part-Time MBA students admitted prior to Fall 2021 and all MS students admitted prior to Fall 2024 are available.			N/A	N/A
All Master of Science Full-Time Programs	$35,100	$17,550	$1,732	$1,732
All Master of Science Part-Time Programs	$35,100	$17,550	$1,732	$1,732
Executive Doctor of Business Administration	$54,000	$27,000	$3,000	$3,000
Executive MBA The Executive MBA and Executive MBA in Healthcare programs are five-term programs. The total, five-term cost for both programs is $95,000.			N/A	N/A
Juris Doctor/MBA Program	$50,114	$25,057	N/A	N/A
Master of Social Work/MBA Program	$31,004	$15,502	$1,216	$1,216
MBA Accelerated Program The rate for the MBA Accelerated Program under "Full-Time Per Academic Year" is for three terms.	$35,554	$17,777	$1,732	$1,732
MBA Part-Time Program	$35,100	$17,550	$1,732	$1,732
MBA Signature Program; Full-Time Dual-Degree MBA/MS Programs	$33,818	$16,909	$1,732	$1,732
MHA/MBA Program	$33,312	$16,656	$1,732	$1,732
MSE/MBA	$34,496	$17,592	$1,732	$1,732
PhD	$36,444	$18,222	$1,566	$1,566

School of Law			N/A	N/A
Doctorate - Professional Practice (JD)	$40,734	$23,635	$1,532	$1,532
Graduate (LLM)	$47,270	$23,365	$1,892	N/A
School of Pharmacy Graduate (exceptions below).	$32,140	$16,070	$1,305	$1,305
Doctorate - Professional Practice (PharmD)	$38,176	$19,088	$1,469	N/A
MSPBA The MSPBA program is a four-term program that costs $38,776 for all four terms			N/A	N/A
School of Medicine Graduate (PhD, MS, Certificate) **Additional fees apply**	$32,284	$16,142	$1,308	$1,308
Doctorate - Professional Practice	$67,208	$33,604	N/A	N/A

Mandatory Fees

Fee Type	Full-time, Two terms	Full-time per Term	Part-time per Term
Student Activity Fee	$80	$40	$20
Wellness and Recreation Support Fee	$1,060	$530	$265
Computing and Network Services Fee	$550	$275	$137
Transportation Fee	$316	$158	$158
TOTAL	$2,006	$1,003	$484 580

*In summer term, the Student Activity Fee is $20 for full-time and $10 for part-time enrollment. Tuition and Mandatory fees exhibited on this website are subject to change without prior notice. Additional fees apply for School of Medicine students.

Other Estimated Expenses

Fee Type	Full time, Two Terms	Full-time per Term	Part-time per Term
Transportation	$1,114	$557	$557
Loan Fees	$218	$109	$109
Miscellaneous Personal Expenses	$3,304	$1,652	$1,652
Housing	$10,374	$5,187	$5,187
Food	$6,118	$3,059	$3,059
Books & Supplies	$584	$292	$292
Total*	$21,712	$10,856	$10,856

*The Other Estimated Expenses displayed are the same for PA and non-PA students. Your actual expenses may vary based on student choice, travel habits, and academic program.

Tuition Rates - Out-of-State Residents

Graduate Cost of Attendance
Out-of-State Residents

Cost of Attendance includes Tuition, Mandatory Fees, and Other Estimated Expenses. Tuition and Mandatory Fees are the board-approved rates. Tuition and mandatory fees also apply to the summer term.

Costs charged to the student account include tuition and mandatory fees, on-campus housing, university meal plans, some course materials, and certain program-related fees. Examples of costs that are not charged to the student account are off-campus housing and food, misc. personal expenses, and transportation costs.

Tuition Rates

Program	Full-time, Two Terms	Full-time per Term	Part-time per Credit	Summer Term per Credit
Dietrich School of Arts and Sciences	$49,272	$24,636	$2,010	$2,010
MS in Quantitative Economics (MQE) Program	$64,220	$32,110	$2,139	$2,139
School of Social Work Exceptions below	$40,686	$20,343	$2,139	$1,658
Master of Social Work/MBA Program	$50,782	$25,391	$2,115	$2,115
School of Dental Medicine Residency Programs **Note the academic year is 3 terms: fall, spring, and summer for a total cost is $79,646*	$79,646	$26,548	$3,294	$3,294
Certificate	$29,112	$14,556	N/A	N/A
Doctorate - Professional Practice **Note the academic year is 3 terms: fall, spring, and summer for a total cost is $74,590*	$74,590	$24,863	$2,059	$2,059
Graduate (MS, PhD in Oral and Craniofacial Sciences) **Note the academic year is 3 terms: fall, spring, and summer for a total cost is $40,680*	$40,680	$13,560	$1,658	$1,658
School of Public Health Exceptions below	$57,816	$28,908	$2,363	$2,363

MHA/MBA Program	$59,904	$29,952	$3,113	$3,113
Swanson School of Engineering	$54,002	$27,001	$2,552	$2,552
School of Computing and Information Exceptions below	$51,810	$25,905	$2,125	$2,125
Graduate MLIS The Full-time per Year rate is for three terms. For summer term, the Part-time per Credit rate applies, so it may differ slightly from the Full-Time per Term tuition.	$77,715	$25,905	$2,125	$2,125
School of Nursing	$40,686	$20,343	$2,363	$2,363
School of Health and Rehabilitation Sciences	$57,816	$28,908	$2,363	$2,363
Master of Science in Sports Science This is a full-time, 1-year, 2-term program, plus three credits during the summer term. The total cost of the program is $26,020.	$23,656	$11,828	$788	$788
Graduate Programs Athletic training (MS); Communication Science Disorders (MA, MS): Health Informatics on-campus (MS); Nutrition and Dietetics (MS); Physician Assistant studies on-campus (MS): Prosthetics and Orthotics (MS); Doctorate - Professional Practice programs in Audiology (AuD); Occupational Therapy (OTD)	$40,686	$20,343	$1,658	$1,658
MA & MS in Speech Language Pathology The MA & MS Speech Language Pathology program tuition is billed at a flat rate each of $18,108 per term for the duration of the program for students entering in Fall 2026.			N/A	N/A
Doctor of Chiropractic (DC) The DC program is a full-time, 2.7-year, 8 term-program. Tuition is billed at rate each term for the duration of the program. For PA students entering in **Fall 2026**, tuition is a flat rate of $18,400 per term ($55,200 for a 3-term year, or $147,200 for all 8 terms.) The DC program is a full-time, 2.7-year, 8 term-program. Tuition is billed at rate each term for the duration of the program. For PA students entering in **Fall 2027**, tuition is a flat rate of $19,136 per term ($57,408 for a 3-term year, or $153,088 for all 8 terms.)			N/A	N/A
Doctor of Physical Therapy Program (Hybrid)			N/A	N/A

The DPT hybrid program is a full-time, 2.3-year, 7 term-program. Tuition is billed at a flat rate each term for the duration of the program. For students entering in Fall 2026, tuition is a flat rate of $15396 per term ($46188for a 3-term year, or $107,772 for all 7 terms). For students who entered in Fall 2024 or prior, review historical tuition rates here.				
Doctor of Physical Therapy Program (On-campus) The DPT on-campus program is a full-time, 2.3-year, 7 term-program. Tuition is billed at a flat rate each term for the duration of the program. For out-of-state students entering in Fall 2026, tuition is a flat rate of $19,200 per term ($57,600 for a 3-term year, or $134,400 for all 7 terms). For students who entered in Fall 2024 or prior, review historical tuition rates here.			N/A	N/A
Master of Science in Clinical Mental Health Counseling			$1,384	N/A
Master of Science in Physician Assistant Studies (Hybrid) This is a full-time, 6-term program. Tuition is billed at a flat rate each term for the duration of the program. The 3-term cost for students first entering in **Spring 2026** is $53,832. This is a full-time, 6-term program. Tuition is billed at a flat rate each term for the duration of the program. The 3-term cost for students first entering in **Spring 2027** is $54,906.			N/A	N/A
School of Education Exceptions below	$49,272	$24,636	$2,010	$2,010
Doctor of Education (EdD) Program The EdD is a 52-credit, part-time, hybrid program. It takes 3 years to complete over 9 academic terms. Tuition is billed at the same rate for in-state and out-of-state students. Based on current tuition rates, the total tuition cost of the EdD program is $57,200 (subject to annual tuition increases). Additionally, students are responsible for the mandatory fees and expenses described on this website.			N/A	$1,100
MEd in Higher Education	$47,378	$23,689	$1,933	$1,933
Visual Impairment and Blindness Programs Tuition is billed at the same rate for in-state and out-of-state students. Full-and-part-time programs are offered in the areas of Teacher of Visually Impaired (TVI) Students and in Orientation and Mobility (O&M). Students may earn a Master of Education degree, graduate certificate, or both credentials jointly.	$26,876	$13,438	$1,079	$1,079
School of Public and International Affairs Exceptions below	$49,272	$24,636	$2,010	$2,010
Nursing/SPIA Program	$40,686	$20,343	$1,658	$1,658

Joseph M. Katz Graduate School of Business Exceptions below	$63,856	$31,928	$3,113	$3,113
NOTE: Current tuition rates for Part-Time MBA students admitted prior to Fall 2021 and all MS students admitted prior to Fall 2024 are available.			N/A	N/A
All Master of Science Full-Time Programs	$53,252	$26,626	$3,113	$3,113
All Master of Science Part-Time Programs	$53,252	$26,626	$1,732	$1,732
Executive Doctor of Business Administration	$54,000	$27,000	$3,000	$3,000
Executive MBA The Executive MBA and Executive MBA in Healthcare programs are five-term programs. The total, five-term cost for both programs is $95,000.			N/A	N/A
Juris Doctor/MBA Program	$70,272	$35,136	N/A	N/A
Master of Social Work/MBA Program	$50,782	$25,391	$2,115	$2,115
MBA Accelerated Program The rate for the MBA Accelerated Program under "Full-Time Per Academic Year" is for three terms.	$95,784	$31,928	$3,113	$3,113
MBA Part-Time Program	$63,856	$31,928	$1,732	$1,732
MBA Signature Program; Full-Time Dual-Degree MBA/MS Programs	$60,746	$30,373	$3,113	$3,113
MHA/MBA Program	$60,734	$29,952	$3,113	$3,113
MSE/MBA Program	$63,224	$31,612	$3,113	$3,113
PhD	$54,068	$27,034	$2,522	$2,522
School of Law			N/A	N/A
Doctorate - Professional Practice (JD)	$55,570	$27,785	$2,431	$2,431
Graduate (LLM)	$47,270	$23,635	$1,892	N/A

School of Pharmacy Graduate (exceptions below).	$36,340	$18,170	$1,476	$1,476
Doctorate - Professional Practice (PharmD)	$46,528	$23,264	$1,792	N/A
MSPBA The MSPBA program is a four-term program that costs $38,776 for all four terms.			N/A	N/A
School of Medicine Graduate (PhD, MS, and Certificate). Additional fees apply.	$54,838	$27,419	$2,242	$2,242
Doctorate - Professional Practice	$74,014	$37,007	N/A	N/A

Mandatory Fees

Fee Type	Full-time, Two terms	Full-time per Term	Part-time per Term
Student Activity Fee	$80	$40	$20
Wellness and Recreation Support Fee	$1,060	$530	$265
Computing and Network Services Fee	$550	$275	$137
Transportation Fee	$316	$158	$158
Total*	$2,006	$1,003	$580

*In summer term, the Student Activity Fee is $20 for full-time and $10 for part-time enrollment. Tuition and Mandatory fees exhibited on this website are subject to change without prior notice. Additional fees apply for School of Medicine students.

Other Estimated Expenses

Fee Type	Full-time, Two Terms	Full-time per Term	Part-time per Term
Transportation	$1,114	$557	$557
Loan Fees	$218	$109	$109
Miscellaneous Personal Expenses	$3,304	$1,652	$1,652

Housing	$10,374	$5,187	$5,187
Food	$6,118	$3,059	$3,059
Books & Supplies	$584	$292	$292
Total*	$21,712	$10,856	$10,856

*The Other Estimated Expenses displayed are the same for PA and non-PA students. Your actual expenses may vary based on student choice, travel habits, and academic program.

Pitt Online Tuition And Fees

Online Graduate Cost of Attendance

Cost of Attendance includes Tuition, Mandatory Fees, and Other Estimated Expenses. Tuition and Mandatory Fees are the board-approved rates. Tuition and mandatory fees also apply to the summer term.

Costs charged to the student account include tuition and mandatory fees, on-campus housing, university meal plans, some course materials, and certain program-related fees. Examples of costs that are not charged to the student account are off-campus housing and food, misc. personal expenses, and transportation costs.

Graduate Tuition

School/College	Full-time per Term	Part-time per Credit
School of Public and International Affairs Master of Public Policy and Management (MPPM)	$13,706	$1,100
Swanson School of Enginnering Graduate Certificate in Construction Management	$15,314	$1,449
Swanson School of Engineering Graduate Certificate in Electric Power Engineering	$15,314	$1,449
Swanson School of Engineering Graduate Certificate in Nuclear Engineering	$15,314	$1,449
Swanson School of Engineering Master of Science in Civil Engineering	$15,314	$1,449
Swanson School of Engineering Master of Science in Nuclear Engineering	$15,314	$1,449
School of Computing and Information Graduate Certificate in Applied Data-Driven Methods	$14,412	$1,170
School of Computing and Information Master of Data Science	N/A	$510
School of Computing and Information Master of Library and Information Science (MLIS)	$14,412	$1,170
School of Nursing Adult-Gerontology Acute Care Nurse Practitioner (MSN) (Hybrid)	N/A	$1,200

School of Nursing Doctor of Nursing Practice	$16,070	$1,305
School of Nursing Family Nurse Practitioner (MSN) (Hybrid)	N/A	$1,200
School of Nursing Graduate Certificate in School Nurse PK-12	$16,070	$1,305
School of Nursing Health Systems Executive Leadership (DNP)	$16,070	$1,305
School of Nursing Psychiatric-Mental Health Nurse Practitioner (Hybrid)	N/A	$1,200
School of Health and Rehabilitation Sciences Advanced Practice Certificate in Implementation of Evidence in Clinical Practice	$16,070	$$1,305
School of Health and Rehabilitation Sciences Doctor of Clinical Science in Occupational Therapy	$16,070	$1,305
School of Health and Rehabilitation Sciences Doctor of Medical Science (DMSc)	N/A	$489
School of Health and Rehabilitation Sciences Graduate Certificate in Health Data Analytics	N/A	$1,305
School of Health and Rehabilitation Sciences Graduate Certificate in Leadership in Health Informatics	N/A	$1,305
School of Health and Rehabilitation Sciences Master of Science in Health Informatics	N/A	$1,305
School of Health and Rehabilitation Sciences Master of Rehabilitation Technology (Hybrid)	$16,070	$1,305
School of Education Master of Education in Teacher of Students with Visual Impairments (Hybrid)	$13,438	$1,079
School of Education Doctor of Education (EdD) (Hybrid)	N/A	$1,100
School of Education Graduate Certificate for Reading Specialist	$13,706	$1,100
School of Education Graduate Certificate in Critical Technology and Digital Media for Learning	$13,438	$1,079
School of Education Graduate Certificate in Infant Mental Health	N/A	$750
School of Education Graduate Certificate in Instructional Design and Technology	$13,706	$1,100

School of Education Graduate Certificate in Orientation and Mobility Specialist (Hybrid)	$13,438	$1,079
School of Education Graduate Certificate in STEAM Education	$13,438	$1,079
School of Education Graduate Certificate in Supervisor of Special Education (Hybrid)	$13,706	$1,100
School of Education Graduate Certificate in Teacher of Students with Visual Impairments (Hybrid)	$13,438	$1,079
School of Education K-12 Principal Certification	$13,438	$1,079
School of Education Master of Education in Curriculum and Instruction	$13,438	$1,079
School of Education Master of Education in Education Leadership	$13,438	$1,079
School of Education Master of Education in Orientation and Mobility Specialist (Hybrid)	$13,438	$1,079
School of Education Master of Education in Reading Education	$13,706	$1,100
School of Education Superintendent Letter of Eligibility (Hybrid)	$13,706	$1,100
School of Law Graduate Certificate in Corporate Compliance	N/A	$883
School of Law Graduate Certificate in Health Care Compliance	N/A	$883
School of Law Graduate Certificate in Human Resources Law	N/A	$883
School of Law Graduate Certificate in Sports, Entertainment and Arts Law	N/A	$883
School of Law Master of Studies in Law	N/A	$1,330
School of Pharmacy Master of Science in Pharmaceutical Outcomes Research (PA-POR)	$16,070	$1,305
School of Business Doctor of Business Administration (Hybrid)	$27,000	$3,000
School of Business Master of Business Administration (MBA) (Hybrid)	$17,777	$1,732

School of Social Work Master of Social Work	N/A	$1,100

Mandatory Fees

Fee Type	Full-time per Term	Part-time per Term
Computing and Network Services Fee	$275	$137

*Tuition and mandatory fees exhibited on this website are subject to change without prior notice.
Additional fees may apply for School of Medicine students, please refer to the School of Medicine Expenses page.

Other Estimated Expenses

Fee Type	Full-time, Two terms	Full-time per Term	Part-time per Term
Books & Supplies	$584	$292	$292
Transportation	$0	$0	$0
Loan Fees	$218	$109	$109
Miscellaneous Personal Expenses	$3,304	$1,652	$1,652
Housing	$10,374	$5,187	$5,187
Food	$6,118	$3,059	$3,059
Total*	$20,598	$10,299	$10,299

*The Other Estimated Expenses displayed are the same for PA and non-PA students. Your actual expenses may vary based on student choice, travel habits, and academic program.

Due Date Schedule

Notifications and Due Dates

Weekly Balance Due Notifications are sent by email and text to students and their Authorized Users from pittpay@pitt.edu when there is a balance due on the student account. To view and edit your email and mobile phone number settings for these notifications, login to PittPAY, select Actions, then Manage Notifications.

Please note, due dates provided here are for planning purposes. The due dates for future terms are estimates, and are subject to change. When balance due notifications begin for each new term, the official due date will be presented in PittPAY on the Account Summary and Account Activity tabs. The current due date is always provided on the Student Payment Center's homepage, as well.

Term	Periodic Balance Due Notifications Begin:	Balance is Due:
Spring 2024	November 22, 2023	January 24, 2024
Summer 2024	April 17, 2024 May 22, 2024	May 22, 2024 June 20, 2024
Fall 2024	July 24, 2024	September 11, 2024
Spring 2025	November 20, 2024	January 29, 2025

As soon as you make an online payment in PittPAY, your balance due will be updated to reflect the payment. You can view your payment receipt in Transaction History. Late fees, collection costs, and financial holds are placed on past due accounts.

If you prefer to make monthly payments, learn about the PittPAY Payment Plan. **There is a deadline to enroll in a payment plan each term** and you can take advantage of more monthly installments by enrolling in a plan early.

Kenneth P. Dietrich School of Arts and Sciences

Kenneth P. Dietrich School of Arts and Sciences

Contact Information

- Admissions
- Admission Status
- Academic Standards
- Advising and Placement
- A&S Degree Requirements
- Requirements for the MA, MS, and MFA Degrees
- Certificate Programs
- Arts and Sciences Administration and Staff
- Arts and Sciences Faculty
- Departments / Programs

Graduate programs in the Dietrich School of Arts and Sciences (A&S) are designed to prepare students for careers in research and teaching in the humanities, natural sciences, and social sciences responsive to the evolving needs of the private and public sectors of society as well as to the particular interests of academia.

A&S Graduate Studies has final approval over all admissions to graduate study in A&S. It reviews and records the academic progress of graduate students, including the passing of comprehensive examinations, admissions to doctoral candidacy, and final oral examinations. It verifies the completion of theses and dissertations and certifies all graduate degrees awarded in the Dietrich School of Arts and Sciences.

Contact Information

Questions regarding admissions and programs of study should be addressed first to the individual graduate department or program. Questions regarding registration and graduate status should be addressed to:

Dietrich School of Arts and Sciences-Graduate Studies
910 Cathedral of Learning
412-624-6094
E-mail: graduate@as.pitt.edu
www.asgraduate.pitt.edu

Admissions

A&S offers MA, MFA, and PhD degrees and certificate programs in the humanities; MA, MS, and PhD programs in the natural sciences; and MA and PhD programs in the social sciences. Several dual and joint degree programs are available.

Students applying for admission should proceed as follows:

Interested applicants are encouraged to go to the Dietrich School of Arts and Sciences graduate Web page at www.asgraduate.pitt.edu and to visit Web pages of their departments of interest. Students should complete the online application through Liaison GradCAS.

Deferred Admission

Admission to graduate study is valid for the academic year. If a department approves, a student may defer admission for one year without having to complete any additional applications. If approved, the student is sent a new admission letter. Additional course work taken during the deferred year and a new affidavit of financial support should also accompany any financial aid request. The deferral of admission is independent of financial aid.

Transferring Between A&S Departments

A student desiring to change a major department of graduate study in A&S must file an application for admission in the department of intended graduate study. Applications for transfer will be evaluated in the same way as applications for admission to the designated department. An application fee is not required.

Admission of International Students

Before reading the A&S-specific details below, see the *International Graduate Student Admission section under Application for Admission* section for a complete overview of University admissions requirements, including the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS), and the Duolingo English Test as a measure of English language proficiency.

Minimum requirements for all Dietrich School graduate programs (several graduate degree programs have higher requirements, please check the specific requirements of your prospective program):

TOEFL: a minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section. TOEFL scores submitted must not be more than two years old.

IELTS: score of 7.0, with at least 6.5 in each of its four sections. IELTS scores submitted must not be more than two years old.

Duolingo English Test: Minimum score: 120. Duolingo scores submitted must not be more than two years old. The Duolingo English Test is an online English proficiency test that can be taken online, on-demand, in under an hour. The test is taken via a computer with a camera and includes a proficiency score, video interview, and writing sample which are shared with the University of Pittsburgh when you send your results.

International Student Application Deadlines and Application Fee

The deadlines for submitting a completed application and financial aid form are determined by the individual departments, but due to delays in the issuance of visas it is recommended that international students apply as early as possible, preferably at least six months prior to the start of the term of admittance, so that paperwork can be processed in a timely manner.

The application fee for all students is $75. The fee must be submitted in the form of a check or money order made payable to the University of Pittsburgh or may be paid using a credit card when applying online.

Admission Status

For an overview of the requirements for the three admission statuses-full, provisional, and special-see Admissions Status in the Application for Admission section of this catalog.

Full Graduate Status

Only students in full graduate status may undergo preliminary evaluations, take comprehensive examinations, or be advanced to degree candidacy.

Provisional Graduate Status

Transfer from provisional to full graduate status is possible only upon formal recommendation of the student's department and after:

1. removal of deficiencies noted at the time of admission, with A or B grades, and/or
2. completion of four courses (12 credits) for which graduate credit is earned with at least a 3.00 average.

Special Status

A special status student who takes courses while not seeking an advanced degree may transfer up to four courses (12 credits) taken while on special status to a degree program if the student is subsequently admitted into one, and if the department recommends the transfer. A transferred course must carry a grade of B or better.

Those special status students who earn graduate credits while on temporary admission may apply those credits toward degree requirements.

Early Admission Program

Exceptionally able students in Arts and Sciences at the University of Pittsburgh (GPA of 3.50 or above) with strong letters of recommendation from faculty in the department to which they are applying may be admitted to full graduate status in a department in A&S. At the time of admission, students must have completed 96 credits toward the baccalaureate degree, the final 30 of which must have been taken in A&S, and must have satisfied the general education requirement, second language requirement (if any), and academic major requirements (as certified by A&S). For additional information regarding requirements for the completion of the baccalaureate degree, see the *A&S section in the University of Pittsburgh Undergraduate Catalog.*

Inactive Status/Readmission

For detailed information on what constitutes inactive registration status and requirements for readmission to active status, please see *Readmission.*

Applications for readmission to A&S should be received according to the following schedule:

- Fall term readmission applications by August 1
- Spring term readmission applications by December 1
- Summer term and/or sessions by April 1

Academic Standards

In addition to those University-wide regulations and standards detailed in the section on General Regulations, each student in A&S is expected to be familiar with these school-specific regulations and academic standards:

Credits and Grade Points

Courses for which a G, I, N, R, or W grade is recorded and courses numbered below 1000 or lower (0-0999) do not contribute either credits or grade points toward graduation. When a course is repeated, only the last grade and credits are used to calculate the GPA.

Students must achieve the minimum GPA established by their departments, in no case less than 3.00, to undergo the preliminary evaluations, to take comprehensive examinations, to be admitted to candidacy for the PhD degree, and to graduate.

Independent study and individual thesis and dissertation research must be graded using the S/NC option and thus are not used in the calculation of the GPA required for continuation in good academic standing.

Academic Probation and Dismissal

A graduate student who fails to maintain an overall GPA of 3.00 or to make satisfactory progress in a degree program is subject to dismissal from graduate study at the University. When the overall GPA of a student falls below 3.00, the student is automatically placed on academic probation; is not eligible for participation in the department comprehensive examination; and is subject to dismissal at the end of the following term. The department should so warn the student in writing.

In addition, any student who is not making satisfactory progress toward the completion of an advanced degree (completion of an acceptable number of required courses and/or research each term or year) may be placed on academic probation by the department. The student must be informed in writing of this action by the department. Normally, one term will be granted in which to correct the deficiency.

A student whose performance on a preliminary or comprehensive examination is judged to be inadequate may be subject to dismissal at the end of the term.

Students who have been dismissed for academic reasons may be able to appeal that decision. Students can appeal until all appeals are exhausted. Appeals generally start in the student's home department, depending on the outcome of the initial appeal they can then appeal the initial outcome to the Graduate Dean's office and ultimately to the Office of the Vice-Provost of Graduate Studies.

Withdrawal from Courses

Students may add or drop courses before the end of the add/drop period. A student who wishes to withdraw from an individual course after the add/drop period must complete a Monitored Withdrawal form available from the Dean of the school offering the course, obtain the signature of the instructor, and return the completed form to the Assistant Dean of Graduate Studies, 910 Cathedral of Learning. A W grade will then be issued.

Students may terminate their registration in all classes by informing the Office of the University Registrar of their intent to do so prior to the end of the add/drop period for the term. Students registered for courses scheduled to begin after the end of the add/drop period for the term may terminate their registration by informing the Office of the University Registrar of their intent to do so at any time prior to the first scheduled meeting day of the class. A student who stops attending a course and does not initiate the withdrawal or resignation procedures may be assigned an F grade.

Repetition of Courses

A student may repeat any course in which a grade of B- or lower is received if authorization is given by the student's department. When a graduate student repeats a course in which the subject matter has not changed, only the last grade received is counted in computing the grade point average. A Course Repeat form must be filed with A&S Graduate Studies, 910 Cathedral of Learning, to initiate proper computing of the grade point average.

Grade Changes

A grade given by an instructor for completed work will not be changed unless an error has been made in reporting or recording the grade. (Reexamination or extra work may not be used as a basis for a change of grade.) Grade Changes must be approved by the Assistant Dean of Graduate Studies.

Independent Study

Students who are using University facilities to an extent greater than represented by their formal course load (and those students required by a fellowship or other appointment to be full-time students) are required to register for an appropriate number of additional credits of Independent Study to reflect their correct status. All graduate study not under the direct supervision of a specific faculty member is, by definition, Independent Study, course number 2990 in each program. This includes study for preliminary evaluations, comprehensive and overview examinations, the preparation of research proposals, etc. Only the S/NC Grade Option may be used in a 2990 course.

Directed Study

Registration for Directed Study is limited to students in good academic standing and normally beyond their first year of graduate study who wish to study or carry out a project in an area not available in a formal course. The work must be under the direct supervision of a faculty member who has approved the proposed work in advance of registration. A brief description of the work should be recorded in the student's file in the department. Either a letter grade or the S/NC option may be used to evaluate the quality of work performed by the student, and both the credits and the grade points (if any) will be used in determining the academic standing of the student.

Transfer Credits

Students may transfer credits earned at another accredited institution in an approved degree-granting graduate program toward the requirements for an advanced degree at the University of Pittsburgh. Students requesting advanced-standing credits by transfer should indicate this within the first year of graduate study and provide official transcripts. The department evaluates each applicant's credentials and indicates to the student at the time of admission its recommendation to the Assistant Dean of Graduate Studies concerning advanced-standing credit. Credits for course work taken 10 or more years prior to admission for graduate study at the University of Pittsburgh are not automatically transferred for PhD students. For master's students, credits for course work taken four or more years prior to admission for graduate study at the University of Pittsburgh are not automatically transferred. Departments must evaluate such coursework in terms of its currency of knowledge in the field when submitting transfer credit requests for approval by A&S. Students admitted with special or provisional status cannot transfer credits until full status has been granted. Graduate students already enrolled, when approved in advance by their department and the Assistant Dean of Graduate Studies, may spend a term or more at another graduate institution to obtain training or experience not available at the University of Pittsburgh and may transfer those credits toward the requirements for an advanced degree at the University of Pittsburgh.

A maximum of 6 credits may be accepted by transfer toward the requirements for the master's degree. A maximum of 30 credits may be transferred toward the requirements for the PhD degree for course work at the master's level earned in another approved graduate school. A student who transfers 30 credits due to completion of a master's degree at another institution is not eligible to earn a master's degree in that discipline at the University of Pittsburgh. If a student has completed relevant graduate work beyond the master's level at another institution, up to an additional 6 credits may be accepted for transfer. (No more than 36 credits can be accepted for transfer from all other graduate institutions.) Acceptance of credits by transfer from other graduate schools does not relieve the student from the requirement to register at the University of Pittsburgh and satisfactorily complete a minimum of 24 credits for a master's degree and a minimum of 36 credits for a PhD degree.

For further detail on University requirements on transfer credits, see Acceptance of Transfer Credits under the General Regulations section of this catalog.

Registration of Undergraduate Students for Graduate Credit

University of Pittsburgh undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree in A&S may be permitted, during their final term, to register for one or two courses at the 2000 level for credit toward a graduate degree. Students must obtain written permission from an A&S department admissions officer that the course may count when and if they are admitted into the degree program. This privilege should not be granted if the proposed total course program exceeds a normal full-time load or if the courses are required for the undergraduate degree. When students register for graduate study at the University, these graduate credits and grades may be transferred to the graduate transcript upon recommendation of the department and approval by the Assistant Dean of Graduate Studies. No more than 6 credits can be transferred in this manner.

Statute of Limitations and Leaves of Absence

All regulations regarding the statute of limitations for completion of degree requirements and leaves of absence are detailed under Statute of Limitations section under General Regulations. Variations and additions to those rules within A&S are as follows:

Requirements for the master's degree should be completed within a period of four consecutive calendar years from the student's initial registration for graduate study. Requirements for the PhD degree must be completed within a period of 10 years from the student's initial registration, or within 8 years if the student has received a previous master's degree. Some departments may have a more stringent statute of limitations for completion of master's or doctoral degrees. There is also a strictly enforced limit of four calendar years on the master's comprehensive examination or its equivalent for students beginning or readmitted for graduate study in fall 2002 or later, and a seven-calendar-year limit on the PhD comprehensive examination for students entering graduate study programs in fall 1999 or later. (Ten-year limits on PhD comprehensive examinations apply for doctoral students enrolled prior to fall 1999.) If the student has not completed all requirements for the master's or doctoral degrees within the time limits on comprehensive examinations for degrees as specified above, the comprehensive examination for the degree must be retaken in order to graduate.

Under exceptional circumstances a candidate for an advanced degree may apply for an extension of the statute of limitations. Applications are available in the department or in A&S Graduate Studies, 910 Cathedral of Learning. They must state the reason for the delay, provide evidence of continuing progress toward the completion of the degree, and include a detailed plan of study and proposed date for completion. The request must be approved by the Chair of the student's doctoral or master's committee and the department Chair or director of graduate studies and be submitted to the Assistant Dean of Graduate Studies for final action. Each student who requests an extension of the statute of limitations must be able to demonstrate proper preparation for the completion of all current degree requirements. There is no extension on the time limits for the master's and doctoral comprehensive examinations.

Under special conditions, graduate students may be granted a leave of absence. Only one leave of absence can be obtained by students during their graduate career. Readmission following an approved leave of absence is a formality.

Advising and Placement

Advising and placement services in A&S graduate programs are conducted within the various departments and programs. Students should consult department handbooks, their departmental advisor, their departmental director of graduate studies, their departmental graduate administrator, and/or the Chair for details. The A&S Graduate Studies Office makes every effort to keep advising and placement in the forefront of departmental concerns. All departments are responsible, with A&S oversight, for implementing policies and practices consistent with the University's in *Elements of Good Academic Advising*. Unresolved problems relating to the advising of graduate students at the department level can be taken to the Assistant Dean of Graduate Studies and Research in A&S Graduate Studies, 910 Cathedral of Learning

A&S Degree Requirements

The general requirements for the master's degrees and doctoral degrees are detailed under Regulations Pertaining to Master of Arts and Master of Science Degrees, Regulations Pertaining to Professional Master's Degrees (including the MFA), and Regulations Pertaining to Doctoral Degrees. For further A&S-specific requirements, see below. Once the University-wide requirements and the A&S Degree Requirements below have been reviewed, see the relevant departmental description for more specific detail.

Requirements for the MA, MS, and MFA Degrees

The minimum requirement for the Master of Art and Master of Science degrees is 30 credits beyond the baccalaureate degree. Furthermore, the MFA, as a professional degree, requires a minimum of 36 credits. Not more than 6 credits may be granted toward the completion of the requirements for a master's degree for work completed at another accredited graduate institution. Most programs require more than this minimum.

Credit Requirements

In addition to the general credit requirements detailed under MA and MS Requirements at the front of this catalog, the following requirements must be satisfied:

- Completion of 12 credits from the 2000 or 3000 series with a grade of B or higher.
- All courses from the 2000 or 3000 series must be completed with an average grade of B (3.00)
- Registration for research, independent study, or directed study cannot be included among the minimum of 12 credits that must be taken from the 2000 or 3000 series with a grade of B or higher
- Independent study credits do not count towards the MA/MS/MFA degrees

Second Language Requirement

The requirement of proficiency in second languages is at the discretion of individual departments.

Comprehensive Examination

Whenever a program substitutes an equivalent requirement for the comprehensive examination, the department or program must obtain prior approval from the A&S Graduate Council and notify the University Council on Graduate Study and describe the situation. Students on inactive, special, or provisional status, or who have a GPA less than 3.00, are not eligible to take the comprehensive examination. *See Comprehensive Examination under Regulations Pertaining to Master's Degrees for further detail on requirements for comprehensive exams.*

Thesis

The requirement of a thesis or its equivalent is at the discretion of individual departments. If a thesis is submitted, its form must be in accord with specifications available from The ETD Format Guidelines Manual and approved by the Assistant Dean of Graduate Studies. A report of the final oral examination in defense of the master's thesis must be filed in 910 Cathedral of Learning. *For further information on thesis requirements, including the make up of the thesis committee, see Thesis Option under Regulations Pertaining to Master's Degrees.*

Application for Graduation

Each candidate for graduation must file an official Application for Graduation early in the term in which graduation is expected. (See your graduate administrator for deadline dates.) *See Application for Graduation under General Regulations for further details on graduation and graduation requirements.*

Graduation Certification

The faculty of the department evaluates the performance in course work and on comprehensive examinations. If the candidate's performance is satisfactory and all degree requirements have been met, a letter must be submitted to the Associate Dean for Graduate Studies and Research, on behalf of the department, certifying that the candidate has completed all requirements for a master's degree and indicating whether or not the candidate is recommended to proceed to doctoral study.

Requirements for the PhD Degree

An overview of the University requirements for the PhD degree is presented in Regulations Pertaining to Doctoral Degrees. A&S-specific requirements are detailed below.

Credit Requirements

The minimum requirement for the PhD degree of 72 credits may be earned in formal course work, directed study, independent study, and/or thesis and dissertation research.

Course Requirements

Students must achieve the minimum GPA established by their departments, in no case less than 3.00, to be eligible to undergo the preliminary examination, to take the comprehensive examination, to be admitted to candidacy for the PhD degree, and to be graduated.

Second Language and/or Other Tools of Research

The requirement of proficiency in the use of second languages or other tools of research is at the discretion of individual departments. The second language departments have the capacity to evaluate second language proficiency and will be available to so certify.

Preliminary Examination

The nature of the preliminary examination/evaluation and the time when it is conducted are determined by each department. In some programs, the preliminary doctoral exam/evaluation may be combined with a master's comprehensive examination. *See Preliminary Evaluation under Regulations Pertaining to Doctoral Degrees for further details on regulations pertaining to the exam. Students must be registered in the term they are completing the Preliminary Examination*.

Comprehensive Examination

Comprehensive examination results must be reported promptly to A&S Graduate Studies, 910 Cathedral of Learning, and no later than the last day of the term in which the examination is administered. Students must be enrolled in the term in which they are completing the Comprehensive Examination. *See Comprehensive Examination under Regulations Pertaining to Doctoral Degrees for further detail on regulations regarding the exam*

Doctoral Committee

Doctoral dissertation committees are composed of four members, three of whom must be Graduate Faculty with either a primary appointment in the candidate's department or a secondary/joint appointment in the candidate's department and a primary/joint appointment in another relevant department within the University of Pittsburgh ("internal members"). The fourth member must be Graduate Faculty external to the candidate's department within the University of Pittsburgh or a qualified scholar with an equivalent status at another accredited institution ("external member"). The Graduate Faculty Roster for the University of Pittsburgh can be viewed at the following website: https://www.gradstudies.pitt.edu/academics/resources-research/graduate-faculty-roster. Membership in the Graduate Faculty is not automatic and must be formally requested by the faculty member's department and approved by the Associate Dean of Graduate Studies before the faculty member can serve on a doctoral dissertation committee. The Chair of the committee must be a current (or recently departed) member of the University of Pittsburgh. Any member may serve as Co-Chair.

Notification of Committee Membership

The names of the committee members must be submitted to the Graduate Studies Office as part of the application for candidacy by the graduate student. All requests for subsequent changes to the committee should be submitted for approval to the Graduate Studies Office by the Graduate Administrator for the candidate's department. Any changes to the committee membership, internal or external, after the dissertation proposal/prospectus/overview meeting must be approved by the Assistant Dean of Graduate Studies before the dissertation defense. Forms for admission to candidacy and committee changes can be obtained by the Graduate Administrator in the A&S Graduate Handbook.

Special Requirements for External

Faculty from outside the University of Pittsburgh may serve as external committee members, but the qualifications of the proposed committee member must be reviewed and their participation approved by the Assistant Dean of Graduate Studies **before** the dissertation proposal/prospectus/overview meeting or defense is scheduled. Such a request should be accompanied by the requested committee member's current CV and a brief memo that explains the benefits for the student of the participation of this faculty member on the committee. CVs for external committee members who have been approved previously by the Assistant Dean for a particular department's graduate students need only be resubmitted once every five years. In this case, however, the memo accompanying each request for an external member's participation in a new committee must also note the date on which the CV was last submitted for this individual. If the date is not known, a new CV must be included. Requests for external members must be approved by the Assistant Dean in advance of the requested member's participation on the doctoral committee. The Assistant Dean will review the material and either approve or reject the proposed external member.

Additional Committee Members

Additional members may be added to the doctoral committee in cases where additional expertise is needed. Such additional committee members are expected to have significant involvement with the graduate student and to attend both the proposal/prospectus/overview meeting and the defense unless prior approval has been received for remote attendance. For additional committee members only, the Graduate Faculty status (or the equivalent at another institution) requirement may be waived if prior approval from the Assistant Dean is requested and granted. Such a request should be accompanied by a brief memo that explains the benefits for the student of the participation of this faculty member on the committee and, in the case of a member who is not from the University of Pittsburgh, a current CV. The CV need only be provided every five years for committee members serving on multiple committees within the same department.

Committee Participation by Former Members of the University of Pittsburgh Faculty

Committee members who leave the University after a graduate student has been admitted to candidacy may stay on the committee in their original capacity, as long as they are willing and able to physically attend the defense (or have requested and received permission to attend remotely as described below), and providing that the defense is scheduled within 12 months of the faculty member's departure. If the departed committee member is the Chair, and continues in this role, a Co-Chair from the department must be designated. The participation of any committee member in this category will not affect the maximum number of remote attendees permitted (two, one of whom must be external as described below).

Committee Participation by Retired Members of the University of Pittsburgh Faculty

Faculty who are retired from the University of Pittsburgh are eligible to serve as members on committees formed both before and after their retirement, as long as they are still active professionally in the academic community as reasonably determined by the Chair of the Department. Retired faculty may serve in any capacity including as Chair of the committee. The participation of any committee member in this category will not affect the maximum number of remote attendees permitted (two, one of whom must be external as described below).

Remote Participation by Candidate and Committee members

The candidate and the Committee Chair must attend in person both the dissertation proposal/prospectus/ overview meeting and the defense. All other committee members should also be physically present at both meetings. In exceptional circumstances, however, this requirement may be waived as described below.

External committee member only: Remote attendance may be requested from the Assistant Dean for both the dissertation proposal/prospectus/overview meeting and the defense for the external committee from a distant location if, and only if, remote attendance can be arranged according to the guidelines detailed below.

Other committee members. Remote attendance may also be requested from the Assistant Dean for no more than one of the other committee members. Where an external member from outside the University of Pittsburgh is already attending remotely, however, the request must also be accompanied by a memo from the department explaining the need for this second member to attend remotely. Such a request may not be granted by the Assistant Dean if the situation could easily be resolved by a shift in the meeting date of one month or less. A committee member who participated remotely in the overview meeting must attend the defense in person. It is the responsibility of the student to consult as early as possible with committee members about their availability such that remote attendance by more than one member is avoided if at all possible. Remote attendance by more than two committee members will not be permitted.

Remote Attendance Requirements

To satisfy the requirements of remote attendance, any remotely attending committee member must have full audiovisual interaction. The attendee must be visible to other committee members and the graduate student presenter and must be able to see the presenter as well as others in the room as necessary. The attendee must be able to hear and participate orally in all parts of the discussion and questioning. The candidate's department is responsible for arranging the necessary technology to fulfill the remote attendance requirements and it is recommended that someone with technological expertise be present to resolve difficulties if they arise. **The dissertation proposal/prospectus/overview meeting or the defense of the dissertation** must **be rescheduled (or finished at later time) if -**

1. it is not technologically possible to accomplish the required level of audiovisual interaction at the time and place appointed; or

2. the video portion of the connection fails before the defense is 50% completed (reasonably determined by the Committee Chair) and cannot be reestablished; or

3. the audio portion connection fails before 90% of the meeting or defense is completed (reasonably determined by the Committee Chair) and cannot be reestablished.

Chair Certification of Compliance with Remote Participation Requirements

The Chair of a dissertation committee in which any members participate remotely will be required to complete a form ("Remote Attendance Certification"), in which the Chair attests that the requirements for remote attendance have been met. This form must be included with the results of the dissertation proposal/prospectus/overview meeting or defense in the submission to the Graduate Office. If the Chair of the committee signs the student's paperwork in the name of the remotely attending member, a copy of the authorization for this signature (an email from the remotely attending member authorizing the signature is sufficient) must also be provided when the documentation is submitted.

The form is available at: Remote Attendance Certification

Admission to Candidacy for the PhD Degree

After completion of the overview, the student should, in consultation with the student's major advisor, file the application for admission to candidacy for the Doctor of Philosophy degree. Students are informed of admission to candidacy by written notification from the Assistant Dean of Graduate Studies. When the topic has been accepted and the proposed doctoral committee has been approved by the Department Chair and the Assistant Dean of Graduate Studies, the student will be informed of admission to candidacy and of the membership of the doctoral committee. Students must be enrolled in the term in which they are completing the overview for candidacy. *For a listing of requirements for admission to candidacy, see Admission to Candidacy for the Doctor of Philosophy Degree under Regulations Pertaining to Doctoral Degrees.*

Admission to candidacy must be at least eight months before the defense of the dissertation in order to provide an opportunity for the members of the doctoral committee to review, criticize, and monitor the proposed research.

Meetings of the doctoral candidate and the dissertation committee must occur at least annually from the time the student gains admission to doctoral candidacy. A record of such meetings must be maintained in the student's file in the department.

Dissertation

See Dissertation and Abstract under Regulations Pertaining to Doctoral Degrees for an overview of requirements and form for the dissertation and abstract. In addition, students in A&S should note that photocopies of journal articles may be used only in the appendix and only if necessary.

Language of the Doctoral Dissertation

The language in which doctoral dissertations are written shall normally be English. Exceptions may be granted for graduate students in second language departments but only for sound reasons of scholarship. Permission shall never be granted on the grounds of inadequate command of English. Students who wish to write a dissertation in a second language shall apply formally to their Department Chair for permission. The

application must be approved by the Assistant Dean of Graduate Studies prior to submission of the paperwork for admission to candidacy. For approval, the following requirements must have been met:

1. The application must be recommended for approval by the department.
2. All members of the doctoral committee must have an adequate command of the language.
3. The student must have demonstrated full proficiency in English to the satisfaction of the Assistant Dean of Graduate Studies.

Dissertation abstracts shall in any case be in English. The final oral examination must be conducted in English.

Final Oral Examination

Students preparing to take their final oral examination in defense of their dissertation should refer to Final Oral Examination under Regulations Pertaining to Doctoral Degrees for details on the examination. Expansions on and additions to that information are given below.

Candidates for a doctoral degree must provide a suitable number of copies of the dissertation, as designated by their doctoral committee, for review and use during the final oral examination.

One copy of the dissertation must be submitted to each member of the doctoral committee at least two weeks before the date set for the final oral examination. All members of the doctoral committee must attend the examination; exceptions can be made only with the permission of the Assistant Dean of Graduate Studies. At least four weeks before the final examination, the Chair of the doctoral committee must provide the Assistant Dean of Graduate Studies with a typewritten notice, listing the title of the dissertation and the time and place for its defense, for announcement in the University Calendar. A report of this examination and a report on approval of the dissertation, signed by all members of the doctoral committee, must be sent to the Assistant Dean of Graduate Studies for approval. The report on the approval of the dissertation may be signed concurrently with or subsequently to the report of the final oral examination. If the decision of the committee is not unanimous, the case is referred to the Assistant Dean of Graduate Studies for resolution.

When the examination is completed, the candidate must notify the Assistant Dean if they have uploaded an electronic dissertation and submit three copies of an abstract of the dissertation initialed by the dissertation advisor in the upper right-hand corner. These documents must have been prepared for publication in accordance with instructions furnished by A&S Graduate Studies, 910 Cathedral of Learning. All graduation requirements are on the graduation website: https://www.asgraduate.pitt.edu/academics/graduation.

Multiple Degree Options

Students in A&S have several options for dual and joint degrees that may be pursued as detailed below. Students also may pursue two independent degree programs simultaneously, either in two departments within A&S or in a department within A&S and a department in another school at the University. *For information on pursuing two independent degrees simultaneously, see Two Independent Degree Programs Simultaneously under Special Academic Opportunities* .

Dual-Degree Programs

A&S dual-degree programs are available only in mathematics and computer science. For further details, contact one of those departments and see Cooperative, Dual-Degree, and Joint-Degree Programs under *Special Academic Opportunities* .

Joint-Degree Programs

There are three joint-degree programs involving A&S:

1. The MD/PhD program offers selected students an opportunity to earn MD and PhD degrees simultaneously from the School of Medicine and certain departments in A&S. Interested applicants should contact the MD/PhD program at M211 Scaife Hall, 412-648-2324 for further information.
2. The MBA/MA in area studies program provides students who are admitted to the MBA program in the Joseph M. Katz Graduate School of Business an opportunity to earn a joint MA in area studies with foci in Asian studies, Latin American studies, Russian and East European Studies, or West European studies. Interested students should contact the International Business Center, 355 Mervis Hall, 412-648-1509 for further information.
3. The JD/MA program offers selected students the opportunity to earn the JD and the interdisciplinary MA degree in Bioethics. Interested students should see the Bioethics section of this catalog or call the School of Law at 412-648-1415.
4. The MD/MA program offers selected students the opportunity to earn their MD and the interdisciplinary MA degree in Bioethics. Interested students should see the Bioethics section of this catalog or call the School of Medicine at 412-648-9891.

In both the dual- and joint-degree programs, students must be admitted to both academic programs offering the degrees and must be graduated from both degree programs at the same time. *For further details, see Cooperative, Dual-Degree, and Joint-Degree Programs under Special Academic Opportunities* .

Certificate Programs

A variety of interdisciplinary programs leading to completion of a certificate may be pursued by students working toward a master's degree or doctorate in A&S.

Composition, Literacy and Pedagogy Certificate

Composition, Literacy and Pedagogy Certificate, MA

Composition, Literacy and Pedagogy Certificate, MFA

Composition, Literacy and Pedagogy Certificate, PhD

Cultural Studies, Doctoral Certificate

Cultural Studies, Master's Certificate

Digital Studies and Methods Certificate

Film and Media Studies Doctoral Certificate

Film and Media Studies Master's Certificate

Gender, Sexuality, and Women's Studies Doctoral Certificate

Gender, Sexuality, and Women's Studies Master's Certificate

Graduate Certificate in Bioethics

Medieval and Renaissance Studies Doctoral Certificate

Medieval and Renaissance Studies Master's Certificate

TESOL Certificate

Department and Program Descriptions

The minimal requirements established by the Graduate Faculty of the University, as described under General Academic Regulations, and any additional requirements of A&S Graduate Studies described under A&S Degree Requirements, should be read in conjunction with specific departmental and program requirements.

Courses numbered from 1000 to 1999, inclusive, are advanced undergraduate credits. They may not be taken for graduate credit. All courses numbered 2000 and above are open only to graduate students unless special permission is granted.

Descriptions of graduate courses offered in a particular term in departments of the Dietrich School of Arts and Sciences can be obtained by visiting the following Web site: www.courses.as.pitt.edu.

Arts and Sciences Administration and Staff

http://www.asgraduate.pitt.edu/node/318

Arts and Sciences Faculty

Dietrich School of Arts and Sciences Faculty

Departments/Programs

PhD

Astrophysics, PHD

The Department of Physics and Astronomy offers the PhD in Astrophysics. The PhD in Astrophysics provides students with foundational knowledge in modern astrophysics as well as focused study in several speciï¬c subdisciplines. The PhD trains students to perform independent research in several subdisciplines of astrophysics. Individuals earning the Astrophysics PhD are prepared for a variety of careers including teaching and research at major academic institutions, research at government and industrial laboratories, data analysis and software development, statistical analysis, quantitative modeling, scientiï¬c writing and outreach technical marketing corporate leadership at science and engineering ï¬rms and a variety of scientiï¬c entrepreneurial endeavors.

Required Courses

- ASTRON 3540 - Introduction to Astrophysics and Cosmology
- ASTRON 3550 - STELLAR STRUCTURE
- ASTRON 3580 - GALACTIC AND EXTRAGALACTIC ASTRONOMY
- ASTRON 3650 - Galactic Dynamics
- ASTRON 3705 - STATISTICS AND DATA SCIENCE
- ASTRON 3785 - COSMOLOGY
- ASTRON 3907 - DIRECTED RESEARCH

Suggested Elective Courses

The number and specific elective courses to be taken by any individual student will be determined in consultation with the academic advisor, thesis committee, and director of graduate studies based on the prior preparation and research area of the student.

- PHYS 2373 - MATHEMATICAL METHODS IN PHYSICS
- PHYS 2513 - DYNAMICAL SYSTEMS
- PHYS 2541 - THERMODYNAMICS AND STATISTICAL MECHANICS
- PHYS 3274 - COMPUTATIONAL METHODS
- PHYS 3725 - GENERAL RELATIVITY 1
- PHYS 3726 - GENERAL RELATIVITY 2
- PHYS 3790 - PARTICLE ASTROPHYSICS

Department of Africana Studies

Africana studies is the study, research, interpretation, and dissemination of knowledge concerning African American, African, and Caribbean affairs and culture. Using the tools of the social sciences and humanities, Africana studies examines the structure, organization, problems, and perspectives of Blacks in Africa and the African Diaspora. Africana studies also stresses analytical interpretations and policy prescriptions for social change in African American communities and in various African and Caribbean nations. The term Africana incorporates the three-tier interdisciplinary thrust of the department: African, African American, and Caribbean social sciences and humanities.

Africana studies prepares social science majors for advanced graduate studies in international affairs, education, social work, social policy studies, and legal and professional training. In the humanities, preparation in the creative arts and literature gears students to practical development in such fields as communication, teaching, theater, and dance. Africana studies occupies a central role in understanding modern American life and African and Caribbean linkages. As an interdisciplinary major, Africana studies offers intellectual paradigms for the multicultural approach to historical, political, and economic reality. It is also critical and corrective of the inadequacies, omissions, and distortions of mainstream American education leading into the 21st century. Africana studies is committed to producing liberally educated

women and men with a lifetime dedication to working on African American, African, and Caribbean affairs. For more information on the major and the Department of Africana Studies, see the department's Web site at www.africanastudies.pitt.edu.

Contact Information

Department Chair: John Wallace
Director of Graduate Studies: Kamesha Spates
Graduate Program Administrator: Amber Fontenot

Main Office: 4140 Wesley W. Posvar Hall
412-648-7555
Fax: 412-624-7214
E-Mail: ffg4@pitt.edu
https://www.africanastudies.pitt.edu/

Admissions

Applications are considered once a year for fall admission only. All students wishing to apply must submit their application electronically through the university's online application process. In addition to the following requirements, applicants must meet the general Dietrich School of Arts and Sciences requirements for admission to graduate study. The following application materials are required: an application form submitted online to the School of Arts & Sciences; a non-refundable application fee of $75 (The University offers fee waivers for the following national programs that cover application fees: Gates Millennium Scholars Program, McNair Scholars, the Society for Advancement of Chicanos & Native Americans, and those currently serving or who previously served as members of the U.S. Armed Services); a statement of purpose describing the applicant's intellectual interests (in alignment with our faculty areas of expertise) and professional aspirations; three (3) letters of recommendation intended to provide independent evaluation of each applicant's potential; unofficial transcripts from all undergraduate and graduate institutions attended (If applicants are non-US citizens, they must submit transcripts in the native language accompanied by notarized English translations); and English Language Scores for all non-US citizens. All non-U.S. citizens applying to the graduate program (except for those who have received degrees from a U.S. institution or from other English-speaking countries) must submit scores from the Test of English as a Foreign Language (TOEFL), IELTS, or Duolingo as part of their application packet to demonstrate a sufficient command of English to meet the requirements of their field. TOEFL: a minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section. TOEFL scores submitted must not be more than two years old. 7.0 for IELTS (with at least 6.5 in each of its four sections), and IELTS scores submitted must not be more than two years old and a 120 for Duolingo. Duolingo scores submitted must not be more than two years old.

Master's

Africana Studies, MA

The University of Pittsburgh's graduate program in Africana Studies is led by faculty trained in Africana Studies as well as other disciplines from the humanities and social sciences. The M.A. program in Africana Studies distinguishes itself with its emphasis on Race & Equity, Migration & Community Transformation, and Culture & Creative Production. Graduate students in the program receive rigorous training in the discipline of Africana Studies. In addition, to broaden their intellectual experience and maximize their professional opportunities, students are encouraged to explore the various graduate certificates and courses outside the department which align with their areas of concentration. The M.A. program in Africana Studies prepares graduate students for university-level research and teaching, as well as professions in international relations & development, public policy & government, the arts, health equity & global health, non-profit organizations and other careers.

Students will complete the M.A. in two years. The M.A. program is for two years, and it is for students who desire to obtain the Ph.D. in Africana Studies degree but have not yet earned an M.A. in Africana Studies from another school (**since we do not offer a terminal MA, this program is not for students who only want an MA degree**).

To obtain the M.A. in Africana Studies, students must have a G.P.A of 3.0. For the master's comprehensive they must complete a research paper of about 5,000 to 7,500 words. The paper must be based on original research and should be potentially publishable. The research paper is a separate standalone paper, but students can expand on a paper from one of their courses to craft this standalone research paper.

Students must take 18 graduate credits from courses in the Department of Africana Studies. The following course of study will comprise these credit requirements:

Core Courses (12 Credits)

- AFRCNA 2031 - Critical Africana Pedagogy
- AFRCNA 2750 - Africana Studies Proseminar I
- AFRCNA 2850 - Africana Studies Proseminar II
- AFRCNA 2860 - Africana Research Methods

Additional Courses in the Department of Africana Studies: (6 credits)

- Students will have a wide selection of courses from which to choose each semester.

Change "Theme Courses" to "Sample Courses in the Race & Equity Concentration Area"

Theme: Migration & Community Transformation

Building from the extensive scholarship in Africana and African Diaspora Studies, this research track analyzes the causes and implications of the movements of people of African origin throughout time and space. Through an interdisciplinary methodological approach, it sheds light on how such movements led to transformative outcomes in both the sending and receiving spaces. Graduate students may find support for their research with the University Center for International Studies and the World History Center.

Sample Courses in the Migration & Community Transformation Concentration Area

AFRCNA 2012 Early 20th Century Black Social Movements

AFRCNA 2035 Black Body Studies

AFRCNA 2039 History Of Caribbean Slavery

AFRCNA 2131 Mobility, Identity, and the Black Atlantic

AFRCNA 2201 Global Diasporas: Contemporary African And Caribbean Migration

AFRCNA 2240 African Literature And Society

AFRCNA 2250 Black Europe

AFRCNA 2301 Black Space: Architectures of Race and Resistance.

AFRCNA 2309 Women Of African And African Diaspora

AFRCNA 2310 Cultures Of Africa

AFRCNA 2330 Science And Technology In Africana Context

AFRCNA 2347 Francophone Africana Literature

AFRCNA 2349 Contemporary Caribbean Literature

AFRCNA 2425 Caribbean Identities

AFRCNA 2450 Africana Cultural Memory

AFRCNA 2510 Health In The African Diaspora

AFRCNA 2535 Dimensions Of Racism

FRCNA 2537 Race And The Criminal Justice System

AFRCNA 2555 Afro Caribbean Dance

AFRCNA 2610 Health in the Environment in the Caribbean

AFRCNA 2628 Afro-Latinos In The United States

AFRCNA 2655 African Cinemas/Screen Griots

AFRCNA 2704 Africana World Literature

Theme: Culture & Creative Production

This track seeks to illuminate the intersections between socio-economic, political, intellectual, and psychological transformation and Black cultural productions in music, literature, performing and visual arts, as well as film & media. To further develop their expertise, graduate students may use resources from various units, including the Center for African American Poetry and Poetics, the Jazz Studies Program, the graduate program in Film & Media Studies, the August Wilson archive, and the Rob Penny papers.

Sample Courses in the Culture & Creative Production Concentration Area

AFRCNA 2010 Issues in Contemporary Africa

AFRCNA 2035 Black Body Studies

AFRCNA 2042 Class and Inequality Portrayals in Black Women's Writing

AFRCNA 2108 African American Folk Culture

AFRCNA 2110 Race and Race-Making in U.S. History

AFRCNA 2131 Mobility, Identity, and the Black Atlantic

AFRCNA 2150 Contemporary African American Writing

AFRCNA 2240 African Literature And Society

AFRCNA 2301 Black Space: Architectures of Race and Resistance.

AFRCNA 2330 Science And Technology In Africana Context

AFRCNA 2347 Francophone Africana Literature

AFRCNA 2349 Contemporary Caribbean Literature

AFRCNA 2420 Power And Performance In Africa: From Hip-Life To Soukouss

AFRCNA 2450 Africana Cultural Memory

AFRCNA 2555 Afro Caribbean Dance

AFRCNA 2616 African American Women Writers

AFRCNA 2655 African Cinemas/Screen Griots

AFRCNA 2704 Africana World Literature

Elective Courses

- AFRCNA 2010 - Issues in Contemporary Africa
- AFRCNA 2035 - Black Body Studies
- AFRCNA 2042 - Class and Inequality Portrayals in Black Women's Writing
- AFRCNA 2110 - Race and Race-Making in U.S. History
- AFRCNA 2131 - Mobility, Identity, and the Black Atlantic
- AFRCNA 2301 - Black Space: Architectures of Race and Resistance
- AFRCNA 2435 - Prison Literature & Black Life
- AFRCNA 2610 - Health in the Environment in the Caribbean
- AFRCNA 2900 - Field Placement
- AFRCNA 2901 - Independent Study
- AFRCNA 2902 - Directed Reading
- AFRCNA 2903 - Directed Research

Cross-Listed Electives

- AFRCNA 2012 - Early 20th Century Black Social Movements
- AFRCNA 2021 - History Of The African Diaspora
- AFRCNA 2039 - History Of Caribbean Slavery
- AFRCNA 2108 - African American Folk Culture
- AFRCNA 2150 - Contemporary African American Writing
- AFRCNA 2201 - Global Diasporas: Contemporary African And Caribbean Migration
- AFRCNA 2240 - African Literature And Society
- AFRCNA 2250 - Black Europe
- AFRCNA 2309 - Women Of African And African Diaspora
- AFRCNA 2310 - Cultures Of Africa
- AFRCNA 2330 - Science And Technology In Africana Context
- AFRCNA 2347 - Francophone Africana Literature
- AFRCNA 2349 - Contemporary Caribbean Literature
- AFRCNA 2402 - Learning Paradigms African American Child Development
- AFRCNA 2420 - Power And Performance In Africa: From Hip-Life To Soukouss
- AFRCNA 2425 - Caribbean Identities
- AFRCNA 2450 - Africana Cultural Memory
- AFRCNA 2510 - Health In The African Diaspora
- AFRCNA 2522 - Sex And Racism
- AFRCNA 2535 - Dimensions Of Racism
- AFRCNA 2537 - Race And The Criminal Justice System
- AFRCNA 2555 - Afro Caribbean Dance
- AFRCNA 2616 - African American Women Writers
- AFRCNA 2628 - Afro-Latinos In The United States
- AFRCNA 2655 - African Cinemas/Screen Griots

- AFRCNA 2704 - Africana World Literature
- AFRCNA 2710 - African American Health Issue
- AFRCNA 2904 - Rebels And Revolution

Theme: Race & Equity

Drawing from various methodological and theoretical approaches, this research track articulates an understanding of race as a social construct with material, intellectual, cultural, political, and bioethical implications. It aims to create and develop the tools to achieve social justice and equity throughout Africa and its diaspora. Graduate students may enhance their expertise by exploring opportunities in Public Health Programs with an emphasis on equity https://www.publichealth.pitt.edu/certificates , as well as The Center for Urban Education https://www.cue.pitt.edu/people.

Theme Courses

- AFRCNA 2035 - Black Body Studies
- AFRCNA 2039 - History Of Caribbean Slavery
- AFRCNA 2042 - Class and Inequality Portrayals in Black Women's Writing
- AFRCNA 2110 - Race and Race-Making in U.S. History
- AFRCNA 2131 - Mobility, Identity, and the Black Atlantic
- AFRCNA 2150 - Contemporary African American Writing
- AFRCNA 2250 - Black Europe
- AFRCNA 2309 - Women Of African And African Diaspora
- AFRCNA 2310 - Cultures Of Africa
- AFRCNA 2347 - Francophone Africana Literature
- AFRCNA 2349 - Contemporary Caribbean Literature
- AFRCNA 2402 - Learning Paradigms African American Child Development
- AFRCNA 2420 - Power And Performance In Africa: From Hip-Life To Soukouss
- AFRCNA 2425 - Caribbean Identities
- AFRCNA 2435 - Prison Literature & Black Life
- AFRCNA 2510 - Health In The African Diaspora
- AFRCNA 2522 - Sex And Racism
- AFRCNA 2535 - Dimensions Of Racism
- AFRCNA 2537 - Race And The Criminal Justice System
- AFRCNA 2616 - African American Women Writers
- AFRCNA 2655 - African Cinemas/Screen Griots
- AFRCNA 2710 - African American Health Issue

Total Credits: 30

PhD

Africana Studies, PhD

The University of Pittsburgh's graduate program in Africana Studies is led by faculty trained in Africana Studies as well as other disciplines from the humanities and social sciences. The Ph.D. program in Africana Studies distinguishes itself with its emphasis on Race & Equity, Migration & Community Transformation, and Culture & Creative Production. Graduate students in the program receive rigorous training in the discipline of Africana Studies. In addition, to broaden their intellectual experience and maximize their professional opportunities, students are encouraged to explore the various graduate certificates and courses outside the department which align with their areas of concentration. The Ph.D. program in Africana Studies prepares graduate students for university-level research and teaching, as well as

professions in international relations & development, public policy & government, the arts, health equity & global health, non-profit organizations and other careers.

Contact Information

Department Chair: John Wallace
Director of Graduate Studies: Kamesha Spates
Graduate Program Administrator: Amber Fontenot

Main Office: 4140 Wesley W. Posvar Hall
412-648-7555
Fax: 412-624-7214
E-Mail: ffg4@pitt.edu
https://www.africanastudies.pitt.edu/

Admissions

Applications are considered once a year for fall admission only. All students wishing to apply must submit their application electronically through the university's online application process. In addition to the following requirements, applicants must meet the general Dietrich School of Arts and Sciences requirements for admission to graduate study. The following application materials are required: an application form submitted online to the School of Arts & Sciences; a non-refundable application fee of $75 (The University offers fee waivers for the following national programs that cover application fees: Gates Millennium Scholars Program, McNair Scholars, the Society for Advancement of Chicanos & Native Americans, and those currently serving or who previously served as members of the U.S. Armed Services); a statement of purpose describing the applicant's intellectual interests (in alignment with our faculty areas of expertise) and professional aspirations; three (3) letters of recommendation intended to provide independent evaluation of each applicant's potential; unofficial transcripts from all undergraduate and graduate institutions attended (If applicants are non-US citizens, they must submit transcripts in the native language accompanied by notarized English translations); and English Language Scores for all non-US citizens. All non-U.S. citizens applying to the graduate program (except for those who have received degrees from a U.S. institution or from other English-speaking countries) must submit scores from the Test of English as a Foreign Language (TOEFL), IELTS, or Duolingo as part of their application packet to demonstrate a sufficient command of English to meet the requirements of their field. The minimum scores are TOEFL: a minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section. TOEFL scores submitted must not be more than two years old. IELTS: score of 7.0, with at least 6.5 in each of its four sections. IELTS scores submitted must not be more than two years old. Duolingo English Test: score of 120. Duolingo scores submitted must not be more than two years old.

General Requirements

The School of Arts and Sciences at the University of Pittsburgh requires a minimum of 72 credits at the 2000-level or above for the PhD. Of these 72 credits required for the PhD Africana Studies, 39 will be earned through required seminars, courses, and electives offered by the Department of Africana Studies; an additional 33 credits can be earned through other elective courses, seminars, direct reading, independent studies, or dissertation credits. The following course of study will comprise these credit requirements:

- AFRCNA 2860 Africana Research Methods

This seminar explores how Africana scholars formulate their research questions and design their methodologies. It explains how they use a variety of methodological approaches for conducting research in Black communities worldwide and creating new ideas that contribute to the advancement of Africana Studies scholarship.

- AFRCNA 2031 Critical Africana Pedagogy

This seminar examines the arts of teaching and learning in Africana Studies. Students are introduced to Africana-centered pedagogical tools while also being exposed to resources from the University's Center for Teaching and Learning.

- AFRCNA 2750 Africana Studies Proseminar I

Introduces students to cultural, social, historical, artistic, and theoretical approaches to developing a global analytics of Blackness

- AFRCNA 2850 Africana Studies Proseminar II

Explore theories of Black migration and community formation

- Additional AFRCNA courses: 27 credits

- Electives: 33 credits

Courses in Concentration Area (research track):

- Students must take a minimum of three (3) courses in their particular area of concentration or research track. The areas are Race & Equity; Migration & Community Transformation; and Culture & Creative Production.

Preliminary Exams: The core courses fulfill the role of preliminary exams in the PhD requirements for the Dietrich School of Arts and Sciences. Students must complete the courses with at least a B grade in each course. They should complete their core courses no later than the end of their second year.

Graduate Transfer Credits: Students already holding a Master's degree have the potential to transfer up to 30 credits from another approved degree-granting graduate program. The transfer credits will be evaluated and approved by the Director of graduate studies and two other members of the department graduate faculty.

Comprehensive Exams: Students should aim to take their comprehensive exam either before or in the fall semester of the third year. Should the student fail the comprehensive exam they will have the right to retake it once. The failed exam must be retaken prior to the end of the third year. The student has the right to choose new examiners. If a student does not pass the retake exam, tenure will end with the term during which this exam took place.

To obtain the Ph.D. in Africana Studies, it is recommended that students:

- Complete required coursework by the end of the second year; if the student has a master's degree in Africana Studies already, they do not have to complete the master's comprehensive examination (research paper), but they should complete the preliminary examination by the end of their first year
- Pass comprehensive examinations in the fall of the third year or earlier
- Defend the dissertation prospectus in the spring of the third year (no later than early fall of the fourth year)
- Be admitted to candidacy at least 8 months prior to their defense date
- Have their dissertation defended and approved by the dissertation committee by the agreed upon date that the student chooses in consultation with their dissertation chair
- Complete at least 72 credits (course work and research included) with a GPA of at least 3.0, including the required courses

Admissions Requirements

Students will complete the Ph.D. in five years. Students who have already earned a master's degree Africana Studies can often receive credit for previous coursework which may shorten the time needed to earn a Ph.D. by as much as a year. Students accepted without this disciplinary training will earn an MA in Africana Studies in the course of working toward the Ph.D. Applications are considered once a year for fall admission only. All students wishing to apply must submit their application electronically through the university's online application process.

The following application materials are required:

- An application form must be submitted to the School of Arts & Sciences online using the link below: https://gradcas.liaisoncas.org/apply/
- A non-refundable application fee of $75. The University offers fee waivers for the following national programs that cover application fees: Gates Millennium 3 Scholars Program, McNair Scholars, and Society for Advancement of Chicanos & Native Americans and applicants who are currently serving or who previously served as members of the U.S. Armed Services. To apply for a fee waiver, you need to fill out the application form at the link below: https://pitt.co1.qualtrics.com/jfe/form/SV_3CxvKCWrXUv6tCd
- A statement of purpose describing the applicant's intellectual interests and professional aspirations. The applicant should also be able to explain how their intellectual interest aligns with our faculty areas of expertise. Be as specific as possible about your research interests and qualifications.
- Three (3) letters of recommendation intended to provide independent evaluation of each applicant's potential. Letters should come from current or former teachers or others who can evaluate your intellectual and academic qualifications for graduate study. Reference writers will submit these forms and letters independently from the application using a link embedded in an e-mail they receive from the "apply online" process.

- Unofficial transcripts from all undergraduate and graduate institutions you have attended. If non-US citizens, please submit transcripts in the native language accompanied by notarized English translations. The University requires at least a 3.0. GPA. Note: official transcripts will need to be sent if admitted into the program.
- English Language Scores for all non-US citizens: All non-U.S. citizens applying to the graduate program - except for those who have received degrees from a U.S. institution or from other English-speaking countries - must submit scores from the Test of English as a Foreign Language (TOEFL), IELTS, or Duolingo as part of their application packet to demonstrate a sufficient command of English to meet the requirements of their field. The minimum scores are 90 for TOEFL (with at least a score of 22 in all of the four sections of speaking, listening, reading, and writing), 7.0 for IELTS (with at least 6.5 in each of its four sections), and a 120 for Duolingo.

Program Requirements

The School of Arts and Sciences at the University of Pittsburgh requires a minimum of 72 credits at the 2000-level or above for the PhD. Of these 72 credits required for the PhD in Africana Studies, 39 credits must be earned in the four AFRCNA core courses (12 credits) and through nine additional AFRCNA seminars and courses at the 2000 level or higher (27 credits). Additional credits may be earned through elective courses and seminars (in AFRCNA or other departments), directed studies, independent studies, or dissertation credits. The following course of study will comprise these credit requirements:

Core Courses: 12 credits

Additional AFRCNA coursework: 27 credits

Additional electives: 33 credits

Core Courses

- AFRCNA 2031 - Critical Africana Pedagogy
- AFRCNA 2750 - Africana Studies Proseminar I
- AFRCNA 2850 - Africana Studies Proseminar II
- AFRCNA 2860 - Africana Research Methods
- AFRCNA 3000 - Research And Dissertation PhD

Electives

- AFRCNA 2010 - Issues in Contemporary Africa
- AFRCNA 2035 - Black Body Studies
- AFRCNA 2042 - Class and Inequality Portrayals in Black Women's Writing
- AFRCNA 2110 - Race and Race-Making in U.S. History
- AFRCNA 2131 - Mobility, Identity, and the Black Atlantic
- AFRCNA 2301 - Black Space: Architectures of Race and Resistance
- AFRCNA 2435 - Prison Literature & Black Life
- AFRCNA 2610 - Health in the Environment in the Caribbean
- AFRCNA 2900 - Field Placement
- AFRCNA 2901 - Independent Study
- AFRCNA 2902 - Directed Reading
- AFRCNA 2903 - Directed Research

Cross-Listed Electives

- AFRCNA 2012 - Early 20th Century Black Social Movements
- AFRCNA 2021 - History Of The African Diaspora
- AFRCNA 2039 - History Of Caribbean Slavery
- AFRCNA 2108 - African American Folk Culture
- AFRCNA 2150 - Contemporary African American Writing
- AFRCNA 2201 - Global Diasporas: Contemporary African And Caribbean Migration
- AFRCNA 2240 - African Literature And Society
- AFRCNA 2250 - Black Europe
- AFRCNA 2309 - Women Of African And African Diaspora
- AFRCNA 2310 - Cultures Of Africa
- AFRCNA 2330 - Science And Technology In Africana Context
- AFRCNA 2347 - Francophone Africana Literature
- AFRCNA 2349 - Contemporary Caribbean Literature
- AFRCNA 2402 - Learning Paradigms African American Child Development
- AFRCNA 2420 - Power And Performance In Africa: From Hip-Life To Soukouss
- AFRCNA 2425 - Caribbean Identities
- AFRCNA 2450 - Africana Cultural Memory
- AFRCNA 2510 - Health In The African Diaspora
- AFRCNA 2522 - Sex And Racism
- AFRCNA 2535 - Dimensions Of Racism
- AFRCNA 2537 - Race And The Criminal Justice System
- AFRCNA 2555 - Afro Caribbean Dance
- AFRCNA 2616 - African American Women Writers
- AFRCNA 2628 - Afro-Latinos In The United States
- AFRCNA 2655 - African Cinemas/Screen Griots
- AFRCNA 2704 - Africana World Literature
- AFRCNA 2710 - African American Health Issue
- AFRCNA 2904 - Rebels And Revolution

Themes

The theme information highlights various areas of study that students may pursue. Students may choose to focus on a single theme or to sample from multiple themes, depending on their interests. These themes are meant to help graduate students organize coherent programs of study without requiring any specific commitment to a fixed number of themes or courses per theme.

Race & Equity

Drawing from various methodological and theoretical approaches, this research theme articulates an understanding of race as a social construct with material, intellectual, cultural, political, and bioethical implications. It aims to create and develop the tools to achieve social justice and equity throughout Africa and its diaspora. Graduate students may enhance their expertise by exploring opportunities in Public Health Programs with an emphasis on equity https://www.publichealth.pitt.edu/certificates , as well as The Center for Urban Education https://www.cue.pitt.edu/people

Theme Courses:

- AFRCNA 2035 - Black Body Studies
- AFRCNA 2039 - History Of Caribbean Slavery
- AFRCNA 2042 - Class and Inequality Portrayals in Black Women's Writing
- AFRCNA 2110 - Race and Race-Making in U.S. History
- AFRCNA 2131 - Mobility, Identity, and the Black Atlantic
- AFRCNA 2150 - Contemporary African American Writing

- AFRCNA 2250 - Black Europe
- AFRCNA 2309 - Women Of African And African Diaspora
- AFRCNA 2310 - Cultures Of Africa
- AFRCNA 2347 - Francophone Africana Literature
- AFRCNA 2349 - Contemporary Caribbean Literature
- AFRCNA 2402 - Learning Paradigms African American Child Development
- AFRCNA 2420 - Power And Performance In Africa: From Hip-Life To Soukouss
- AFRCNA 2425 - Caribbean Identities
- AFRCNA 2435 - Prison Literature & Black Life
- AFRCNA 2510 - Health In The African Diaspora
- AFRCNA 2522 - Sex And Racism
- AFRCNA 2535 - Dimensions Of Racism
- AFRCNA 2537 - Race And The Criminal Justice System
- AFRCNA 2616 - African American Women Writers
- AFRCNA 2655 - African Cinemas/Screen Griots
- AFRCNA 2710 - African American Health Issue

Migration & Community Transformation

Building from the extensive scholarship in Africana and African Diaspora Studies, this research theme analyzes the causes and implications of the movements of people of African origin throughout time and space. Through an interdisciplinary methodological approach, it sheds light on how such movements led to transformative outcomes in both the sending and receiving spaces. Graduate Students may find support for their research with the University Center for International Studies https://www.ucis.pitt.edu/main/ & the World History Center https://www.worldhistory.pitt.edu

Theme Courses:

- AFRCNA 2012 - Early 20th Century Black Social Movements
- AFRCNA 2035 - Black Body Studies
- AFRCNA 2039 - History Of Caribbean Slavery
- AFRCNA 2131 - Mobility, Identity, and the Black Atlantic
- AFRCNA 2201 - Global Diasporas: Contemporary African And Caribbean Migration
- AFRCNA 2240 - African Literature And Society
- AFRCNA 2250 - Black Europe
- AFRCNA 2301 - Black Space: Architectures of Race and Resistance.
- AFRCNA 2309 - Women Of African And African Diaspora
- AFRCNA 2310 - Cultures Of Africa
- AFRCNA 2330 - Science And Technology In Africana Context
- AFRCNA 2347 - Francophone Africana Literature
- AFRCNA 2349 - Contemporary Caribbean Literature
- AFRCNA 2425 - Caribbean Identities
- AFRCNA 2450 - Africana Cultural Memory
- AFRCNA 2510 - Health In The African Diaspora
- AFRCNA 2535 - Dimensions Of Racism
- AFRCNA 2537 - Race And The Criminal Justice System
- AFRCNA 2555 - Afro Caribbean Dance
- AFRCNA 2610 - Health in the Environment in the Caribbean
- AFRCNA 2628 - Afro-Latinos In The United States
- AFRCNA 2655 - African Cinemas/Screen Griots
- AFRCNA 2704 - Africana World Literature

Culture & Creative Production

This theme seeks to illuminate the intersections between socio-economic, political, intellectual, and psychological transformation and Black cultural productions in music, literature, performing and visual arts, as well as film & media. To further develop their expertise, Graduate students may use resources from various programs, including The Center for African American Poetry and Poetics https://www.caapp.pitt.edu/about/people , The PhD Concentration in Jazz Studies https://www.music.pitt.edu/graduate/phd-jazz-studies , the graduate program in Film & Media Studies https://www.filmstudies.pitt.edu/graduate,the August Wilson archive https://augustwilson.library.pitt.edu & the Rob Penny papers https://library.pitt.edu/rob-penny-papers

Theme Courses:

- AFRCNA 2010 - Issues in Contemporary Africa
- AFRCNA 2035 - Black Body Studies
- AFRCNA 2042 - Class and Inequality Portrayals in Black Women's Writing
- AFRCNA 2108 - African American Folk Culture
- AFRCNA 2110 - Race and Race-Making in U.S. History
- AFRCNA 2131 - Mobility, Identity, and the Black Atlantic
- AFRCNA 2150 - Contemporary African American Writing
- AFRCNA 2240 - African Literature And Society
- AFRCNA 2301 - Black Space: Architectures of Race and Resistance.
- AFRCNA 2330 - Science And Technology In Africana Context
- AFRCNA 2347 - Francophone Africana Literature
- AFRCNA 2349 - Contemporary Caribbean Literature
- AFRCNA 2420 - Power And Performance In Africa: From Hip-Life To Soukouss
- AFRCNA 2450 - Africana Cultural Memory
- AFRCNA 2555 - Afro Caribbean Dance
- AFRCNA 2616 - African American Women Writers
- AFRCNA 2655 - African Cinemas/Screen Griots
- AFRCNA 2704 - Africana World Literature

Total Credits: 72

Department of Anthropology

The Department of Anthropology offers the degrees of Master of Arts (non-terminal) and Doctor of Philosophy.

The department also offers several areas of concentration:

- Linguistic Anthropology
- Archeology & Bioarchaeology
- Cultural Anthropology
- Medical Anthropology
- Biological Anthropology

Students may earn an MA on the way to the PhD degree, including a program in which the student earns an MPH (Master of Public Health in behavioral and community health science), as part of the PhD in anthropology. Students may also opt to leave the PhD program with an MA, subject to satisfying program requirements. Students are encouraged to develop a regional specialization that can lead to a certificate in Latin American studies, Asian studies, West European studies, or Russian and Eastern European studies.

Contact Information

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E-Mail: lukacs@pitt.edu
www.anthropology.pitt.edu

Admissions

Entrance into programs leading to the MA and PhD degrees in anthropology requires a baccalaureate degree in one of the arts or sciences from an accredited institution of higher learning. Qualified students from any discipline are considered for admission. Graduate Record Examination (GRE) scores are no longer required. International applicants whose first language is not English are required to submit the TOEFL administered by the Educational Testing Service, the IELTS administered by the University of Cambridge (taking the academic writing and reading modules), or an exam through DuoLingo. The department admits students only for the fall term. The deadline for applications is December 5. All applicants are automatically considered for financial aid.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Anthropology, PhD

Requirements

Dietrich School of Arts and Sciences requirements for the PhD also apply.

Credit Requirements:

A minimum of 72 course credits is required for the PhD (doctoral) degree. Of these, at least 42 credits must be in formal courses (as opposed to readings courses and independent study). The remaining 30 credits may be any combination of formal courses, readings courses and independent study.

Core Courses/Preliminary Examinations:

The core course system of the Department of Anthropology fills the role of the preliminary examination in the Dietrich School of Arts and Sciences requirements for the PhD. PhD students are required to pass (with a grade of B or better) at least three of the four core courses (cultural anthropology [ANTH 2788], biological anthropology [ANTH 2688], archeology [ANTH 2587], and linguistics [ANTH 2491]), including the core course in the student's chosen subfield of specialization. Students may also fulfill the linguistics requirement with LING 2267 Sociolinguistics in a year in which the department is not offering the linguistics core course; students should consult with their advisor and the DGS ahead of time about this option. Full-time students are expected to pass the required core courses by the end of their second term in residence. A student may petition the Graduate Studies Committee to waive the core course on the basis of an equivalent course taken in an MA or PhD program at another institution.

Graduate Seminar Electives Requirement:

Students must pass with a grade of B or better a minimum of three **graduate seminar electives** (at the 2000-level). These courses are grad-only (or at a minimum grad-predominant) seminars and are offered by different faculty across the subfields on a rotating basis. They are

intended to advance student theoretical knowledge in areas related to our program's strengths and student interests. Students should consult with their advisors to discover which courses satisfy this requirement in a given term. While only three courses are required, students are encouraged to take more than that. These courses are also open to ABD students. This new requirement applies to students entering the program in the fall of 2022 and after.

Language Requirement:

Before students advance to candidacy, they must demonstrate competence in a language other than English that is relevant to the student's research.

Method/Theory Requirements:

All students must pass the Method/Theory requirement with a grade of B or better by the end of the second year. Students may petition for approval of other courses to satisfy these requirements.

Students in **archeology** must pass ANTH 2534 and ANTH 2524 (Archeological Data Analysis 1 and 2). Students in **bioarcheology** must pass ANTH 2534 and ANTH 2524 (Archaeological Data Analysis 1 and 2), or, with the approval of their advisor, a two-course statistical sequence, BIOST 2041 and BIOST 2042 (Introduction to Statistical Methods I and II). Students in **biological anthropology** must pass (Introduction to Statistical Methods I and II), or, with the approval of their advisor, Anthropology ANTH 2534 and Anthropology ANTH 2524 (Archeological Data Analysis I and II). Students in **cultural anthropology** must pass ANTH 2763 (Field Methods). Students in **medical anthropology** (for the joint PhD / MPH) must pass ANTH 1761 (Patients and Healers: Medical Anthropology 1), ANTH 2731 (Medical Anthropology 2), and 12 credits from a list of approved courses.

Comprehensive Examinations:

Students must pass the comprehensive examination designed to test breadth and depth of knowledge in the chosen areas of expertise. The acceptable forms of the exam are described in greater detail in the department's handbook. Examinations are designed and administered by a faculty committee consisting of at least two members of the department and a third member. Students will generally have completed the comprehensive exam requirements during their third year in the program.

Dissertation Overview:

Before actively pursuing dissertation research, the student makes an oral presentation of the intended project to a dissertation committee chosen by the student subject to approval by the department chair and dean. The committee consists of three members of the department and a fourth external member. Following committee approval, the student applies for admission to candidacy for the Doctor of Philosophy degree. Students conducting research with human subjects must also have their projects approved by the IRB before advancing to candidacy.

Dissertation Defense and Graduation:

The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee. The defense is accompanied by a public presentation, which is open to the University community.

Courses

Anthropological Linguistics

- ANTH 2441 Field Methods in Linguistics
- ANTH 2466 Topics in Anthropological Linguistics
- ANTH 2490 Linguistics Core Course

Archaeology and Prehistory

- ANTH 2512 Prehistory of a Selected Area
- ANTH 2513 Selected Archaeological Problem
- ANTH 2515 Seminar: Andean Archaeology
- ANTH 2516 Chiefdoms
- ANTH 2517 Archaeological Method and Theory
- ANTH 2524 Archaeological Data Analysis 2
- ANTH 2525 Europe in Later Prehistory
- ANTH 2526 Maritime Adaptations
- ANTH 2531 Household Archaeology
- ANTH 2532 Archaeological Applications of Geographic Information Systems
- ANTH 2533 Ancient States in the New World
- ANTH 2534 Archaeological Data Analysis 1
- ANTH 2535 The Maya: Past and Present
- ANTH 2541 Regional Settlement Patterns and Demography
- ANTH 2550 Ethnoarchaeology
- ANTH 2551 Peoples in Contact
- ANTH 2554 Human Behavioral Ecology
- ANTH 2588 Archaeology Core Course

Biological Anthropology

- ANTH 2603 Laboratory Methods in Biological Anthropology
- ANTH 2605 Primate Anatomy
- ANTH 2607 Experimental Morphology and Functional Anatomy
- ANTH 2608 Primate Biology
- ANTH 2617 Paleopathology
- ANTH 2619 Advanced Skeletal Analysis
- ANTH 2620 Special Topics in Biological Anthropology SPECIAL TOPICS IN PHYSICAL ANTHROPOLOGY
- ANTH 2630 Biological Anthropology Research
- ANTH 2687 Core Course in Biological Anthropology
- ANTH 2692 Biological Anthropology Research Seminar

Social and Cultural Anthropology

- ANTH 2720 The Poetics and Politics of Ethnography
- ANTH 2726 Gender and Health
- ANTH 2728 Educational Anthropology
- ANTH 2730 Environments, Health and Power
- ANTH 2731 Health and Healing: Analysis and Theory
- ANTH 2732 Anthropology and Contemporary Political Issues
- ANTH 2735 Economic Anthropology
- ANTH 2736 Population and Culture
- ANTH 2737 Anthropology of Food
- ANTH 2740 Pacific Ethnology
- ANTH 2741 Anthropology of Law
- ANTH 2744 Grants and Research Design
- ANTH 2745 History of Anthropological Theory
- ANTH 2750 Contemporary Anthropological Theory
- ANTH 2753 Conflict and Violence
- ANTH 2755 Cultural, Social, and Psychological Explanation
- ANTH 2756 Religion and Culture
- ANTH 2761 Development Education and Applied Anthropology
- ANTH 2763 Field Methods in Cultural Anthropology

- ANTH 2764 Kinship Theory
- ANTH 2766 Anthro and Political Economy
- ANTH 2771 Gender and the State
- ANTH 2775 Applied Anthropology
- ANTH 2782 Special Topics in Cultural Anthropology
- ANTH 2783 Social Stratification and Expressive Culture
- ANTH 2785 Ethnography of Education
- ANTH 2789 Cultural Anthropology Core Course
- ANTH 3007 Ethnographic Approaches to Program Evaluation

General

- ANTH 2000 Research and Thesis for the Master's Degree
- ANTH 2755 The Art of Publication
- ANTH 2902 Directed Study for MA Students
- ANTH 2980 Readings in Selected Fields
- ANTH 2990 Independent Study
- ANTH 3000 Research and Dissertation for the PhD Degree
- FTDC 3999 Full Time Dissertation Study

Joint Degree

Anthropology, PhD/MPH

Requirements

Dietrich School of Arts and Sciences requirements for the PhD also apply.

The joint degree program makes it possible to complete both the PhD in anthropology and an MPH in approximately six years. The typical program consists of completion of coursework in the first three years, a fourth year in dissertation field research, and dissertation writing in the final year(s). The program guarantees students funding for five years; pending satisfactory student progress and departmental resources, funding in the sixth year is common.

Admissions:

Students should apply to the Anthropology PhD program. They can then apply to the MPH upon being accepted into the Anthropology PhD program, or during their first year at Pitt. Coursework in public health taken during this first year will count towards the MPH.

Credit Requirements:

The program is structured so that the student meets the general PhD requirements for anthropology including the core courses, comprehensive exam, and language requirements, and the requirements for a concentration in medical anthropology.

Language courses do not count towards the formal credit requirement, nor do any courses below the 1000 level.

Under most circumstances, the MPH essay/thesis requirement will be met by the doctoral dissertation, so that the MPH will be awarded at the same time as the PhD. As an option, the student can choose to obtain an MPH at an earlier point by writing a separate MPH essay/thesis, and completing the MPH course requirements.

Master's

Anthropology, MA

Requirements

Anthropology does not currently offer a terminal MA degree other than in cases where a PhD student decides to leave the PhD program and wishes to write an MA paper. In such cases,a minimum of 30 course credits in anthropology and a paper is required for the MA (master's) degree. Of these, at least 21 credits must be in formal courses (as opposed to readings courses, independent study, or thesis credits). The MA committee consists of three graduate faculty members. Two must come from the department and include the student's advisor. The third member can be either from the department or outside of the department. All committees are approved by the faculty of anthropology. The language requirement is the same as for the PhD program. Students must pass a designated "methods" course with a B or better.

For the MA paper, students plan an original research paper with their advisory committee. This committee will also evaluate the final paper. Note that the required paper is not necessarily a "thesis" as defined in Dietrich School of Arts and Sciences requirements (although a thesis, as formally defined, would also satisfy the MA paper requirement).

Bioethics Program

Overview of the Program

The Kenneth P. Dietrich School of Arts & Sciences provides innovative graduate-level education in bioethics through its Master of Arts in Bioethics (MA) and a Graduate Certificate in Bioethics, serving the interests of those who do not want to commit to pursuing a graduate degree, as well as joint degree programs with the School of Law and School of Medicine. Like the field of bioethics itself, each program's curriculum is interdisciplinary. Courses are taught by faculty from a range of disciplines, including ethics and philosophy, health policy and law, medicine, and the social sciences. Students from varied backgrounds, pursuing diverse career paths, explore ethical issues within these programs through seminars, clinical ethics practica, and research projects tailored to their individual interests and career goals.

Contact Information

Program Director: Lisa S. Parker, PhD
Program Administrator: Mia Spinelli
Main Office: 519 Barco Law Building
412-648-7007
Fax: 412-648-2649
bioethics@pitt.edu

Admissions

Applicants for admission must submit digital scans of all undergraduate and graduate transcripts, three letters of recommendation, a personal statement explaining interest in the program (and its relevance for current or future education or career plans), and a sample of written work demonstrating critical reasoning skills and/or ability to present an argument. (Official transcripts are not required during the application process; applicants will be required to submit certified transcripts when they accept the offer of admission and matriculate.) International applicants whose first language is not English are required to submit TOEFL scores. Applications for admission to the Bioethics Program in the fall term must be submitted by March 31; after that date, interested applicants should contact the program administrator. Joint program students must be admitted by both the Dietrich School and the relevant professional school.

Financial Assistance

Applicants may qualify to receive a Dean's Tuition Scholarship to defray part of the cost of tuition and fees and may apply for student loans. Qualified out-of-state students may be offered a scholarship equal to the difference between out-of-state and in-state tuition.

Master's

Bioethics, Graduate Certificate

Graduate Certificate in Bioethics

The Graduate Certificate in Bioethics provides broad interdisciplinary background in the core concepts, methods, and topics in bioethics. The 15-credit curriculum provides a foundation for ethical analysis of issues in clinical care, health policy, and biomedical research, as well as the ethical and social implications of emerging technologies.

The Certificate allows practicing professionals to explore ethical issues arising in their work and the social implications of advances in their fields. It enables graduate students to address issues associated with their primary academic or professional program. Within many programs, Certificate courses may serve as electives.

Contact Information

Program Director: Lisa S. Parker, PhD
Program Administrator: Mia Spinelli
Main Office: 519 Barco Law Building
412-648-7007
Fax: 412-648-2649
bioethic@pitt.edu

Admissions

Interested graduate or professional students enrolled in a University of Pittsburgh degree program, as well as post-baccalaureate healthcare professionals and those working in relevant fields-including social work, chaplaincy, mental health, health law or policy, health-related research, and biotechnology or bioengineering-are invited to apply.

Prospective students are invited to contact the Certificate's director at bioethics@pitt.edu to learn how to complete a Certificate Application for Admission to the Dietrich School of Arts and Sciences.

Requirements for the Graduate Certificate

Following are the course requirements (15 credits) for the Graduate Certificate in Bioethics:

Courses

- BIOETH 2658 - PHILOSOPHY OF MEDICINE
- BIOETH 2661 - THEORETICAL FOUNDATIONS OF APPLIED ETHICS
- BIOETH 2664 - BIOETHICS
- Two elective courses in Bioethics or related disciplines, of which one may be Clinical Ethics Practicum

Bioethics, MA

Overview of Degree Program

The 30-credit interdisciplinary Master of Arts in Bioethics, permits students to tailor the curriculum to their interests and career paths. Designed for clinicians, lawyers, and students of the humanities and social sciences, the program is interdisciplinary with a strong emphasis on the philosophical foundation of bioethics. The program, founded in 1989, affords students the opportunity to observe ethical issues as they arise in clinical practice and to pursue in-depth research. Coursework allows students to combine studies in ethical theory, philosophy, history of medicine, cultural and gender studies, health law, public health, and the social sciences. The degree is intended primarily to complement and enhance other graduate or professional education.

Joint JD/MA and MD/MA programs with the Schools of Law and Medicine allow students to integrate their dual interests during their professional education and to complete both degrees in less time than would be required to pursue the degrees separately. Joint program students must be admitted by both the bioethics program and the relevant professional school.

Requirements

- BIOETH 2604 - CLINICAL PRACTICUM 1
- BIOETH 2606 - CLINICAL PRACTICUM 2
- BIOETH 2658 - PHILOSOPHY OF MEDICINE
- BIOETH 2661 - THEORETICAL FOUNDATIONS OF APPLIED ETHICS
- BIOETH 2664 - BIOETHICS
- Elective courses are chosen from related disciplines, as well as Bioethics
- Master's thesis

Department of Biological Sciences

Graduate education in the biological sciences provides individuals with the training, guidance, experience, and opportunity to participate in research that enables their transition from being students of biological knowledge to being fully participating members of their profession. The Department of Biological Sciences offers the degree of Doctor of Philosophy via two areas of concentration:

Molecular, Cellular and Developmental Biology (MCDB)
Ecology and Evolution (E&E)

Contact Information

Department Chair: Jeffrey G. Lawrence, PhD
Main Office: A234 Langley Hall
412-624-4350
Fax: 412-624-4349
E-mail: biophd@pitt.edu
http://www.biology.pitt.edu/

Additional information concerning the department's graduate programs may be obtained from the University of Pittsburgh, Department of Biological Sciences, Graduate Administrator, A210 Langley Hall, Pittsburgh, PA 15260. Phone: 412-624-4268. Fax: 412-624-4349. E-mail: cbarr@pitt.edu.

Admissions

Admissions to our graduate programs are competitive, and applications must meet minimum standards (http://www.biology.pitt.edu/graduate/how-apply). Applications should be submitted via online at https://gradcas.liaisoncas.org/apply. Applications are considered for matriculation for the fall term beginning in September.

Faculty

http://www.biology.pitt.edu

Doctoral

Biological Sciences, PhD

Requirements

http://www.biology.pitt.edu/graduate

A PhD in biological sciences involves four or more years of study and requires the completion of 72 credits. Specific requirements are as follow:

- Seminar Courses. MCDB students take two semesters of Biological Sciences Seminar (BIOSC 2450) in the first year. EE students take two semesters of Seminar in Ecology and Evolution (BIOSC 2540) in the first two years.
- Communications workshops. Students must complete three 1-credit Communication in the Biological Sciences workshops, one each in Grant writing, Paper writing, and Seminar/Poster presentation.
- Graduate Courses. Students in both the MCDB and EE programs are required to take 4 graduat-level courses within the first two years.
- Research Rotations. Both MCDB and EE students perform research rotations in the first year in at least two (EE) or three (MCDB) different labs.
- Research Ethics. Students must complete a workshop in the ethical performance of scientific research in the first year.
- Seminars. MCDB and EE students must attend the weekly MCDB Student Research Seminar (BIOSC 2050) and EE Student Research Seminar (BIOSC 2050), respectively. After the first year, students must present their research at these seminars once per year. Students must also attend the weekly Departmental Seminar presented by outside scholars.
- Preliminary Evaluation. Advancement to the second year of study requires successful completion of courses with an overall average of B or better, satisfactory performance in research rotations, the identification of a research mentor and a positive vote from Department Faculty.
- Dissertation Research. MCDB students choose a dissertation advisor by the end of the second semester. Typically, students in the E&E program identify a research advisor prior to entry. Each student also has a Dissertation Committee made up of three other members of Department and an outside member and must meet with this committee at least once a year. Students are expected to establish their dissertation research topic during the second year.
- Comprehensive Exam. Taken in the second year, this is designed to test a student's general knowledge of MCDB or EE and their detailed knowledge of one particular area.
- Teaching Practicum. Each student must participate in this teaching practicum as an academic requirement and if they take part in the Teaching Minor Program there will be more requirements.
- Admission to Candidacy for the PhD Degree. This is based upon research performance and satisfactory completion of the comprehensive exam. Admission to candidacy is decided at a special overview meeting of the Dissertation Committee.
- PhD Defense. The PhD is awarded following a public seminar followed by a private defense with the Thesis Committee, and satisfaction of all other University, department, and program requirements. This includes acceptance of the PhD Thesis Document by the Committee University.

Department of Chemistry

The Department of Chemistry provides programs of graduate study leading to the MS and the PhD in chemistry in the fields of **analytical, biological, inorganic and materials, organic**, and **physical** chemistry. Interdisciplinary research is also currently conducted in the areas of surface science, combinatorial chemistry, natural products synthesis, nanotechnology, biosensors, laser spectroscopy, organometallic chemistry, and biophysical chemistry.

The Department of Chemistry is housed in a modern chemistry complex that includes Eberly Hall, Chevron Annex, Ashe Lecture Halls, and the 15-story Chevron Science Center. The Chemistry Instrumentation Center is an in-house research instrumentation laboratory that includes NMR, mass spectroscopy, and X-ray crystallography facilities. In addition to instrumentation within individual research groups, the department supports a vast array of modern research instruments, including three 300 MHz NMRs, one 500 MHz NMR, one 600 MHz NMR, two high-resolution and two low-resolution mass spectrometers, a light-scattering instrument, a circular dichroism spectrophotometer, a spectropolarimeter, X-ray systems for both single crystal and powder samples, a scanning electron microscope, an atomic force microscope, a vibrating sample magnetometer, several FT-IR and UV-VIS spectrophotometers, an X-ray photoelectron spectrometer, an AFM-Raman system, and workstation computer clusters. Additional shared research resources include in-house materials characterization laboratory, machine shop, electronics shop, and glassblowing laboratory; helium recovery system, and the Dietrich School Scientific Stockroom.

Contact Information

Department Chair: Haitao Liu
Director of Graduate Studies: Geoffrey Hutchinson
Graduate Program Administrator: Christie Hay
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412-624-8200
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E-mail: gradadm@pitt.edu
www.chem.pitt.edu

Admissions

A bachelor's degree in chemistry, or closely related discipline, including courses in mathematics through integral calculus, is preferred. In addition, the student must meet the general Dietrich School of Arts and Sciences requirements for admission to graduate study.

All applicants are recommended to submit Graduate Record Examination (GRE) and advanced chemistry GRE scores. International applicants must also submit TOEFL, IELTS, or Duolingo scores. The minimum acceptable TOEFL score for the Department of Chemistry is minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section. The minimum IELTS score for the Department of Chemistry is a 7.0 with a minimum of 6.5 in each section. The minimum Duolingo score is 120.

Faculty

http://www.chem.pitt.edu/people/faculty

Overview of Degree Program

The chemistry department has ca. 32 tenured/tenure track faculty members and typically accepts ca. 40 doctoral students each year. Student interested in applying for the M.S. program should contact the department prior to applying. Typical time to earn a PhD is five to six years.

Degree Requirements

Entering students take appraisal exams in each of four areas of chemistry: analytical, inorganic/materials, organic and physical. In discussion with a member of the department's Graduate Student Advisement Committee, scores on the appraisal exams are considered, as each student selects and registers for appropriate coursework. Midway through the first year in residence, students are assigned to research groups. The remainder of the student's graduate program is developed in consultation with their research advisor. Satisfactory performance in graduate core courses is required for students to pass the preliminary examination, as well as a brief written and oral overview of a research project with the student's committee. All advanced degree programs require original research and course work. Additional requirements include a comprehensive examination, thesis/dissertation, and defense.

Doctoral

Chemistry, PhD

Requirements for the PhD

PhD candidates are required to earn 72 graduate credits that include 12 credits of core courses (CHEM 2110, CHEM 2120, CHEM 2210, CHEM 2220, CHEM 2230, CHEM 2310, CHEM 2320, CHEM 2430, CHEM 2440, CHEM 2810, CHEM 2820). In consultation with their research advisor or GSAC, students may take additional courses after they complete the required core selections. Candidates are required to participate in a teaching practicum for at least one or two terms during their doctoral program.

Additional Requirements

PhD Preliminary Evaluation: The preliminary exam is a 'closed door' meeting that includes the student, the student's advisor, and two other chemistry department T/TS faculty members. To pass this exam the student must demonstrate a strong likelihood for passing the comprehensive exam, which occurs in the last part of the student's second year in the program. In the preliminary exam, the student must demonstrate i) good progress in meeting the course requirement (i.e., at least 6 credits with an average GPA of 3.0 or better), ii) an understanding of their research project (i.e., an ability to articulate their project's goals and importance), and iii) basic skills and aptitude for chemistry research (i.e., a basic understanding and experience in theory, literature, and methods that are core to their research).

Comprehensive Examination: The comprehensive examination provides the candidate an opportunity to demonstrate their potential for independent research and scholarship. The student submits a research report on their own work to committee members; the oral exam is a discussion of the student's research to date. The student must be prepared to answer questions related to the theoretical and practical aspects of the research problem. The student is also expected to show a command of graduate course work related to the field of the student's research. The department's comprehensive examination satisfies the Dietrich School of Arts and Sciences requirements for an overview examination. Upon satisfactory completion of the Comprehensive Exam, with approval by the department chair and the assistant dean of graduate studies, the student is formally admitted to candidacy for the PhD program.

Seminar: Each student in the doctoral program is required to present at least one seminar, open to the department. The seminar may be given at any time during the student's career and on any topic approved by the student's major advisor, including the results of doctoral research.

Dissertation and Final Examination: The PhD dissertation is a report of scientific investigation completed under the supervision of the student's faculty mentor/research advisor. It must represent an original contribution to knowledge and must relate what is found to what was known before. The candidate must defend his/her dissertation in an oral examination before a doctoral committee consisting of the major advisor, at least two additional departmental graduate faculty members, and one graduate faculty member from another department within the University. With prior approval, a qualified faculty member from another institution may also be appointed. The final examination is open to all members of the University community.

Analytical Chemistry Concentration

Students with a concentration in Analytical Chemistry are required to take at least two out of these three courses: Electrochemistry (Chem 2210), Chemical Separations (Chem 2220), and Analytical Spectroscopy (Chem 2230) for 6 credits toward the 12-credit course requirement. The other 6 credits may be chosen based on the student's own interests, the advice of the Graduate Student Advising Committee, or the recommendation of the Major Advisor.

- CHEM 2210 - ELECTROANALYTICAL CHEMISTRY
- CHEM 2220 - CHEMICAL SEPARATIONS
- CHEM 2230 - ANALYTICAL SPECTROSCOPY

Biological Chemistry Concentration

Biological Chemistry doctoral students will take four 3-credit courses. All external courses will need approval by the Graduate Curriculum Committee.

- CHEM 2810 - BIOLOGICAL CHEMISTRY 1
- CHEM 2820 - BIOLOGICAL CHEMISTRY 2
- CHEM 2310 - ADV ORGANIC CHEMISTRY 1
- CHEM 2320 - ADV ORGANIC CHEMISTRY 2
- CHEM 2220 - CHEMICAL SEPARATIONS
- CHEM 2830 - SYNTHETIC BIOLOGY
- BIOSC 2940 - MOLECULAR BIOLOGY
- MSCBMP 2885 - IMAGING CELL BIOLOGY IN LIVING SYSTEMS
- MSMVM 3410 - MICROBIAL PATHOGENESIS
- PHARM 3032 - MEDICINAL CHEMISTRY

Inorganic and Materials Chemistry Concentration

- CHEM 2110 - CHEMICAL SYMMETRY: APPLICATIONS IN SPECTROSCOPY AND BONDING
- CHEM 2120 - DESCRIPTIVE INORGANIC AND ORGANOMETALLIC CHEMISTRY

Organic Chemistry Concentration

Organic students are required to take both organic core courses (Chemistry 2310 and 2320) and Chemistry 2380 (Techniques of Organic Research). Advanced courses in the Division are treated in a two-year cycle of one month, one credit modular units (Minicourses) on Special Topics (Chemistry 3300, 3310, 3320). This program is designed to give advanced students exposure to new developments outside their area of concentration. Each doctoral candidate is required to take for credit a total of three credits of advanced-level minicourses during his or her residence but is encouraged to audit others. No single course can be used to account for all 3 credits, and a GPA of 3.00 or greater is required. In order to ensure maximum freedom of choice, students are advised to register for all three courses (3300, 3310, 3320) during any term in which he or she plans to take one minicourse for credit; before the final examination in the course, the student informs the instructor whether he or she wishes to take the course for credit or audit.

- CHEM 2310 - ADV ORGANIC CHEMISTRY 1
- CHEM 2320 - ADV ORGANIC CHEMISTRY 2
- CHEM 2380 - TECHNIQUES OF ORGANIC RESEARCH
- CHEM 3300 - ADVANCED TOPICS ORGANIC CHEM 1
- CHEM 3310 - ADVANCED TOPICS ORGANIC CHEM 2

Physical Chemistry Concentration

Physical Chemistry doctoral students are required to take both Physical Chemistry core courses: CHEM 2430 and CHEM 2440. The Graduate Student Advising Committee, Preliminary Examination Committee, and/or the Research Advisor will recommend additional courses, from within and outside the Department to meet the 12-credit concentration requirement.

- CHEM 2430 - QUANTUM MECHANICS AND KINETICS
- CHEM 2440 - THERMODYNAMICS & STATSTCL MECHNC

Master's

Chemistry, MS

Requirements for the Master's Degree

Four to six terms of full-time graduate work is generally required to obtain a MS degree in chemistry (a minimum of 30 credits). Special arrangements can be made for individuals who wish to pursue a MS degree as part time students. Each MS student must take a minimum of 12 credits of 2000- or 3000-level chemistry courses. These must include 2 three-credit core courses (CHEM 2110, CHEM 2120, CHEM 2210, CHEM 2220, CHEM 2230, CHEM 2310, CHEM 2320, CHEM 2430, CHEM 2440, CHEM 2810, CHEM 2820); the remaining courses can either be in the student's area of specialization or in other chemistry division areas. Students electing to present a nonresearch thesis must take one laboratory course (CHEM 1250, 1430, 1440, or 1600) for credit, in addition to the preceding requirements. Each student must also demonstrate proficiency in physical chemistry by achieving 65% or higher score on physical chemistry appraisal exam, or earn a grade of B or better in CHEM 1410 and 1420 (or equivalent) or earn a B or better grade in either CHEM 2430 or CHEM 2440.

Additional Requirements

Comprehensive Examination: The student must earn a B or higher in all required chemistry courses and must maintain an overall QPA of 3.0 or higher to be in good standing. The comprehensive examination consists of an examination of the student's record in the required core courses and the additional 2000- or 3000-level courses.

Thesis: The thesis for the MS must represent an original research project or a comprehensive and detailed survey of a research topic of current interest in chemistry. It must be defended in an oral examination.

Analytical Chemistry Concentration

Students with a concentration in Analytical Chemistry are required to take at least two out of these three courses: Electrochemistry (Chem 2210), Chemical Separations (Chem 2220), and Analytical Spectroscopy (Chem 2230) for 6 credits toward the 12-credit course requirement. The other 6 credits may be chosen based on the student's own interests, the advice of the Graduate Student Advising Committee, or the recommendation of the Major Advisor.

- CHEM 2210 - ELECTROANALYTICAL CHEMISTRY
- CHEM 2220 - CHEMICAL SEPARATIONS
- CHEM 2230 - ANALYTICAL SPECTROSCOPY

Biological Chemistry Concentration

Biological Chemistry doctoral students will take four 3-credit courses. All external courses will need approval by the Graduate Curriculum Committee.

- CHEM 2810 - BIOLOGICAL CHEMISTRY 1
- CHEM 2820 - BIOLOGICAL CHEMISTRY 2
  The research advisor will recommend remaining courses that include (but are not limited to):
- CHEM 2310 - ADV ORGANIC CHEMISTRY 1
- CHEM 2320 - ADV ORGANIC CHEMISTRY 2
- CHEM 2220 - CHEMICAL SEPARATIONS
- CHEM 2830 - SYNTHETIC BIOLOGY
  These outside courses, each 3-credit, may include the following courses:
- BIOSC 2940 - MOLECULAR BIOLOGY
- MSCBMP 2885 - IMAGING CELL BIOLOGY IN LIVING SYSTEMS
- MSMVM 3410 - MICROBIAL PATHOGENESIS
- PHARM 3032 - MEDICINAL CHEMISTRY

Inorganic and Materials Chemistry Concentration

- CHEM 2110 - CHEMICAL SYMMETRY: APPLICATIONS IN SPECTROSCOPY AND BONDING
- CHEM 2120 - DESCRIPTIVE INORGANIC AND ORGANOMETALLIC CHEMISTRY
- Six other credits of graduate level classes to meet the 12-credit course requirement..

Organic Chemistry Concentration

Organic students are required to take both organic core courses (Chemistry 2310 and 2320) and Chemistry 2380 (Techniques of Organic Research). Advanced courses in the Division are treated in a two-year cycle of one month, one credit modular units (Minicourses) on Special Topics (Chemistry 3300, 3310, 3320). This program is designed to give advanced students exposure to new developments outside their area of concentration. Each doctoral candidate is required to take for credit a total of three credits of advanced-level minicourses during his or her residence but is encouraged to audit others. No single course can be used to account for all 3 credits, and a GPA of 3.00 or greater is required. In order to ensure maximum freedom of choice, students are advised to register for all three courses (3300, 3310, 3320) during any term in which he or she plans to take one minicourse for credit; before the final examination in the course, the student informs the instructor whether he or she wishes to take the course for credit or audit.

- CHEM 2310 - ADV ORGANIC CHEMISTRY 1
- CHEM 2320 - ADV ORGANIC CHEMISTRY 2
- CHEM 2380 - TECHNIQUES OF ORGANIC RESEARCH
- CHEM 3300 - ADVANCED TOPICS ORGANIC CHEM 1
- CHEM 3310 - ADVANCED TOPICS ORGANIC CHEM 2

Physical Chemistry Concentration

Physical Chemistry doctoral students are required to take both Physical Chemistry core courses: CHEM 2430 and CHEM 2440. The Graduate Student Advising Committee, Preliminary Examination Committee, and/or the Research Advisor will recommend additional courses, from within and outside the Department to meet the 12-credit concentration requirement.

- CHEM 2430 - QUANTUM MECHANICS AND KINETICS
- CHEM 2440 - THERMODYNAMICS & STATSTCL MECHNC

Department of Classics

The Department of Classics focuses on the interpretation of the culture and society of Greco-Roman antiquity in the widest sense of those terms. Our Doctor of Philosophy is integrated into the Joint Graduate Program in Classics, Philosophy and Ancient Science, http://cpas.pitt.edu/. The program is primarily designed to train professional scholars and teachers of the Classics with a specialization in ancient philosophy, and/ or ancient science. Students receive intensive training in methodologies appropriate to their special areas of concentration, reading and analysis of Greek and Roman texts, and in the secondary literature. While the students' primary association is with the Department of Classics, they will work closely with graduate students and faculty drawn from the Departments of Philosophy and the History and Philosophy of Science.

Contact Information

University of Pittsburgh, Department of Classics

1501 Cathedral of Learning

4200 Fifth Avenue, Pittsburgh, PA 15260

[P] 412-624-4494

[F] 412-624-4419

https://www.classics.pitt.edu/

Director of Graduate Studies:

Sarah Brucia Breitenfeld, Assistant Professor, Department of Classic, University of Pittsburgh

Office: 1530 Cathedral of Learning

Email: sbb78@pitt.edu

Admissions

Applicants should have a broad exposure to the cultural history of ancient Greece and Rome, and will have demonstrated knowledge of Ancient Greek and Latin appropriate for graduate work. All applicants will also have demonstrated reading knowledge of at least one modern foreign research language besides English (German, French, or Italian) before beginning the program. Applicants from outside the U.S. must show evidence of having completed a program of study equivalent to a Master of Arts degree and be prepared to present certification of the degree or license at the time of registration. If the credentials are incomplete or not familiar, please send a copy of the application to Office of International Services for evaluation. For applicants whose first language is not English, please refer to http://www.asgraduate.pitt.edu/admissions/international-students to ensure fulfillment of the University's language requirements.

Required Application Materials:

- University of Pittsburgh's on-line Application for Admission (note the $75.00 application fee)
- A Personal **Statement of Purpose** indicating your reasons for pursuing a graduate degree at the University of Pittsburgh and your academic and professional goals. We welcome applicants who approach the intellectual history of the civilizations of ancient Greece and Rome as part of a multicultural and interconnected Mediterranean region. Using specific examples from your past academic experiences and a vision for your future academic trajectory, please write your statement in response to our Mission Statement.
- One **Academic Writing Sample** not longer than 20-25 double-spaced pages. You may submit your statement of purpose and writing sample in the "Additional Information" section of the online Application for Admission, which allows you to upload your documents.
- **Unofficial College Transcripts**. Admitted students must send copies of their official transcripts by email before they can be enrolled. The transcripts need to come directly from an applicant's institution.
- **Three Letters of Recommendation**. Please submit the names of three referees with your online Application for Admission. The letters should address the applicant's expertise in Latin and/ or Ancient Greek, ability to conduct independent research, and academic potential. The recommendation form to be included with each letter of recommendation is available for download as a .pdf file once you begin your online application process. Referees receive an automated email requesting recommendation letters and submit them electronically through the GradCAS portal
- **For Non-US Citizens: TOEFL, IELTS or Duolingo scores**. The application portal allows you to upload them, but you may submit these scores directly to the department later, preferably by January 15.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Classics, PhD

Overview of Degree Program

The Doctor of Philosophy in Classics is integrated into the Joint Graduate Program in Classics, Philosophy and Ancient Science,

http://cpas.pitt.edu/

The program is primarily designed to train professional scholars and teachers of the Classics with a specialization in ancient philosophy, and/ or ancient science. The students' primary association is with the Department of Classics. At the same time, they will work closely with graduate students and faculty drawn from the Departments of Philosophy and the History and Philosophy of Science. The rigorous curriculum is comprised of inter-departmental seminars offered by the graduate faculty from the three participating departments, and complemented by a range of seminars from across the University's thriving intellectual departments and communities. The Ph.D. program mentors students' professionalization by actively supporting publication, conference participation, and membership in professional organizations. It prepares students to participate in and contribute to scholarly conversations nationally and internationally. All Ph.D. students instruct a variety of undergraduate courses under mentorship of the faculty, which include Greek and Latin language classes, Greek and Roman civilization and history. Graduates of the program are well-qualified and competitive candidates for academic positions at a variety of institutions, post-doctoral research opportunities, and non-academic employment sectors

Requirements for the PhD

Degree Requirements

Course Requirements:

Students are required to enroll in the following courses:

- CPAS Proseminar (two terms, during year 1 in the program)
- CPAS Ancient Greek Seminar (four terms, during years 1 and 2 in the program)
- Four courses in Classics, one of which may be completed at the undergraduate level with appropriate graduate components added (e.g. papers and oral examinations, as approved by the DGS). These four must include:

· at least two Classics graduate seminars in Ancient Science (2000-level)

· at least two other graduate seminars in Classics or a related subfield (e.g. ancient Greek or Roman literature, history, archaeology, rhetoric, art history) approved by the student's advisor and the DGS.

- Two courses in Philosophy, including Metaphysics and Epistemology.
- One course in History and Philosophy of Science: Part One of the 'History of Science Sequence' (equals one course).
- Remaining credits may be earned through electives, Independent or Directed Study, and up to 12 credits of PhD dissertation research.

Comprehensive PhD Examinations

Students are required to demonstrate expertise in both Greek and Latin by passing a translation exam by the beginning of the Fall Term of their second year. As a preparation, students are required to carry out independent work on the departmental reading lists in both Latin and Ancient Greek authors (as specified on the departmental lists and in discussion with the student's advisor). This translation exam will represent the Doctoral Preliminary Examination. Students may petition to retake the exam subject to consensus of the Dissertation Committee (see the section 'The Dissertation Committee', below, p.8).

Before admission to Ph.D. candidacy, students must pass three Comprehensive ("Qualifying") Examinations by the beginning of their third year in the program:

1. Greek and Roman History
2. Greek and Latin Literature
3. Special Topic: either Classical Philosophy or Ancient Science

Students are required to demonstrate expertise in a second modern research language by passing a departmental exam by the beginning of their second year (one modern language qualification must have been obtained upon entry into the graduate program, see the section **Admissions Requirements**). This second modern research language must be German unless prior qualification in German has already been obtained before entry into the doctoral degree program. The modern foreign language requirement may also be satisfied by earning a 'B' or better in an appropriate reading course offered by the Departments of German and/or French and Italian Languages and Literature.

The Prospectus

The prospectus proposes the subject and plan for the completion of the dissertation. It must include the following items:

- Abstract (*ca*. 200 words). The abstract gives a clear statement of the research topic and the main conclusion(s).
- Proposal (*ca.* 3000-4000 words).

1. statement of the research topic, with review of earlier scholarship on the topic. Make clear to the reader how your work fits into the scholarly discussion of the topic. A precise mapping of your own position relative to the views of other scholars will make it easier for you to focus your attention on your own project and to define your contribution to the scholarship.
2. description of the method(s) you will use in conducting your research. This item is related to the review of scholarship. In the course of the review you may single out the approach of a scholar or scholars that you have decided to follow in your own research; or you may reject previous approaches in favor of your own. Here you may include a specific example or examples of what kinds of evidence you will be using and how you will treat that evidence. A sample of the argumentation you will be using allows readers to see whether your method is adequate to the material you are working with.
3. statement of the contribution that the dissertation will make to scholarship on the topic. Here you will explain how your work marks an advance in some way on what previous scholars have written.
4. bibliography (not a comprehensive listing at this stage of all relevant items but rather of the works that at this point have stimulated and influenced your own thinking on the topic).

- A Chapter Outline with a brief summary of contents for each one.
- A Timetable for Completion, setting out a realistic schedule for completing the project.

For the submission of the prospectus, the student must file the Prospectus Form with the Graduate Administrator. A prospectus meeting is then held to discuss the student's completed prospectus. At that meeting the prospectus must be approved by the three members of the Classics faculty plus a member from outside the department (usually drawn from within the university but may, with special permission, be chosen from outside the university). These four members, all of whom must have graduate faculty status, will constitute the student's Dissertation Committee (see the section 'The Dissertation Committee' below, p.8). All these committee members must be present for the prospectus meeting and later for the dissertation defense.

The Dissertation

This written work must demonstrate the student's capacity to carry out independent and original research in the field of Classics, ancient philosophy and/ or ancient science. It must embody an extended original investigation of a problem of significance to these fields, and is the capstone to the research program of a student's education. A specific description of the requirements, and of the final oral examination, which completes the requirements for the PhD, can be found in the Faculty of Arts and Sciences Bulletin http://www.bulletins.pitt.edu/graduate/index.html.

Dissertation Defense

When the student completes the dissertation and the supervisor believes it is ready to be defended, a dissertation defense is scheduled and the date of the defense must be published in advance in the University Times (see the Graduate Administrator about this; also note that the date of the defense must be set at least one month in advance so that it can be published on time). The student must submit to the full Dissertation Committee a complete, polished, copy-edited text with full scholarly apparatus and images. This must be submitted by November 1 at the latest to schedule a defense in the fall semester, or by March 1 at the latest to schedule a defense in the spring semester. There are no defenses in the summer semester. The defense is normally a two-hour conversation with the Dissertation Committee; all four members must be physically present. The defense is open to the public and may thus be attended by other students in the department as well as by family or friends of the student.

Students must submit an application to graduate in the term in which they plan to defend and must be enrolled for at least one credit or for **Research and Dissertation for the Ph.D. Degree (CLASS 3000).** The university now requires all dissertations to be filed electronically. Complete instructions can be found at http://www.pitt.edu/~graduate/etd/. Students should have their committee members sign the Electronic Theses and Dissertations Approval Form

http://www.pitt.edu/~graduate/etd/pdf/ETD_Approval_Form.pdf at the defense.

Note: The defense must be passed no later than seven calendar years after the passage of the comprehensive exams. If a student does not pass their defense in this time limit, they must re-take the comprehensive exams in a format approved by the Dean's Office.

Summary of Milestones towards the PhD Degree

1. Modern Language Exam by beginning of Year Two
2. PhD Preliminary Examination by Beginning of Year Two
3. Three Comprehensive Exams (oral and written) by beginning of Year Three
4. Dissertation Prospectus by end of Year Three Fall Term
5. Admission to PhD candidacy at least 8 months prior to defense

- # of courses required (list core courses, etc.)
- PhD Prelim Evaluation
- Comprehensive Exam
- Proposal/overview
- Dissertation and Final Examination

Department of Communication

The department offers the Doctor of Philosophy in Communication. Students entering the program without a prior Communication MA may pick up one from the department along the way. The curriculum emphasizes critical, cultural, historical, philosophical, and theoretical approaches to studying contexts of power, knowledge, and desire that exert differential impacts on various bodies and groups. Departmental research, teaching, and extracurricular community interventions attend to structures of power informing race, class, gender, sex, sexuality, ability, and other intersecting axes of social difference. Many students and faculty members examine the forms of persuasion, protest, silence, coming-to-voice, testimony, noise, and imagination needed to transform such power structures that produce and reproduce inequality.

Contact Information

Director of Graduate Studies: Dr. Brent Malin
Main Office: 1433 Cathedral of Learning
412-624-6798
Fax: 412-624-1878
E-mail: bmalin@pitt.edu
http://www.comm.pitt.edu/

Additional information concerning the department's graduate program may be obtained by contacting commgrad@pitt.edu or writing to University of Pittsburgh, Department of Communication, Graduate Admissions, 1433 Cathedral of Learning, Pittsburgh, PA 15260.

Admissions

Admission is highly selective, and limited to those who can be funded for five years. Applications to the doctoral program are reviewed holistically. In order to be considered for admission to graduate standing, students must meet the requirements of the Dietrich School of Arts and Sciences and supply (by the first business day of the year) all materials called for in the department's application guidelines, including a completed application form, copies of all post-secondary educational records, at least three letters of recommendation, a statement of purpose, and writing sample. Non-native speakers of English without a degree from an accredited institution of higher education in the U.S. must also have the Educational Testing Service send TOEFL scores as part of the application. Citizens of other nations follow a separate set of guidelines that include TOEFL requirements and, if they are offered admission, certified /notarized translations of transcripts and diplomas for applicants from countries where English is not the official language. Upon admission, candidates will be assigned an advisor who will assist them in planning a course of study.

William Pitt Debating Union

Graduate students interested in public argument and argumentation theory can pursue co-curricular study and teaching of argumentation practices by working with the William Pitt Debating Union (WPDU), one of the nation's most venerable debating societies.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Communication: Rhetoric and Communication, PhD

The aim of the program is to train rigorous researchers and excellent teachers. To this end it offers historical, theoretical, and critical approaches to the study of communication. The curriculum includes traditional and innovative course work drawn from four intersecting areas of emphasis: History, Theory and Criticism of Rhetoric; Media and Cultural Studies; Public Address and Argument; and Rhetoric of Science.

Requirements for the PhD

- 24 courses (72 credit hours) required, thirteen of which will consist of the departmental core requirements of COMMRC 2295 Teaching Practicum, COMMRC 2296 Approaches to Communication, COMMRC 2297 Faculty Research Forum, COMMRC 2298 Research Laboratory, and COMMRC 2299 Writing Workshop. Complete a first semester in residence enrolled in a minimum of nine credit hours under the guidance of the DGS, who will approve course selections for the following semester and offer advice about choosing a DPA. Students entering with a recent MA in Communication or cognate field may be able receive credit toward the PhD.
- Approved Plan of Study (by end of third semester of degree work)
- 9 credit hours of coursework outside of the Communiations Department
- Up to 12 credits of individual study through some combination of COMMRC 3001 Prospectus Research, COMMRC 3002 Professional Development, and COMMRC 3902 PhD Directed Study
- Portfolio-based Comprehensive Exam with Oral Defense (after or near the end of coursework)
- Dissertation Prospectus and Oral Defense
- Dissertation and Final Oral Defense

Master's

Communication: Rhetoric and Communication, MA

The aim of the program is to train rigorous researchers and excellent teachers. To this end it offers historical, theoretical, and critical approaches to the study of communication. The curriculum includes traditional and innovative course work drawn from four intersecting areas of emphasis: History, Theory and Criticism of Rhetoric; Media and Cultural Studies; Public Address and Argument; and Rhetoric of Science.

Requirements for the MA

- 10 courses (30 credit hours) required, two of which are core (COMMRC 2296 - APPROACHES TO COMMUNICATION and COMMRC 2295 - TEACHING PRACTICUM), one of which may be taken as COMMRC Directed Study, and two of which may be taken outside the Department of Communication.

- Approved Plan of Study (in first year of degree work)
- Up to 3 credits of Directed Study
- Written Comprehensive Exam with Oral Defense (after or near the end of coursework)

Program in Computational Biology

Joint Pitt-CMU PhD Program in Computational Biology

James Faeder and Russell Schwartz, Directors

Computational biology is defined as the development and application of data-analytical and theoretical methods, mathematical modeling, and computational simulation techniques to the study of biological, behavioral, and social systems.* It is an interdisciplinary approach that draws from specific disciplines such as mathematics, physics, computer science and engineering, biology, and behavior science.

The Joint CMU-Pitt PhD Program in Computational Biology is an intensive, interdisciplinary training program that provides students with a deep understanding of the current state of the art in computational biology. Students in this program acquire the quantitative background and research skills needed to advance the field of computational biology. In addition, they develop the critical thinking skills needed to appreciate the potential, strength, and limitations of computational, mathematical, and engineering tools for tackling biological problems.

*NIH Working Definition, July 17, 2000

Contact Information

	University of Pittsburgh:	**Carnegie Mellon University:**
Directors:	James R. Faeder, PhD Associate Professor Department of Computational and Systems Biology School of Medicine, University of Pittsburgh 3501 Fifth Avenue, BST3, Room 3082 Pittsburgh, PA 15260 412-648-8171 (phone) 412-648-3163 (fax) faeder@pitt.edu	Ziv Bar-Joseph, PhD Professor of Computational Biology and Machine Learning Carnegie Mellon University 5000 Forbes Avenue Pittsburgh, PA 15213 Phone: 412-2688595 email: zivbj@cs.cmu.edu
Associate Directors:		Carl Kingsford, PhD Associate Professor Department of Computational Biology School of Computer Science, Carnegie Mellon University Gates Hillman Center, Room 7705 5000 Forbes Avenue Pittsburgh, PA 15213 412-268-1769 (phone)

		412-268-2977 (fax) carlk@cs.cmu.edu
Program Coordinators:	Kelly M. Gentille Educational Programs Administrator Department of Computational Biology School of Medicine, University of Pittsburgh 3501 Fifth Avenue, BST3, Room 3067 Pittsburgh, PA 15260 412-648-8107 (phone) 412-648-7819 (fax) kmg120@pitt.edu	Nicole Stenger Academic Programs Manager Computational Biology Department Carnegie Mellon University 4400 Fifth Avenue Pittsburgh, PA 15213 412-268-2474 (phone) 412-268-2977 (fax) nstenger@cs.cmu.edu
Program Website:	www.compbio.pitt.edu	www.compbio.cmu.edu

Admissions

The interdisciplinary character of the program is unique and distinct from many other programs that are focused toward a specific discipline. The program seeks outstanding students from the biological, physical and computational sciences, and engineering. For example, computational biology majors, or double majors in biology and quantitative sciences, are ideal candidates.

Recommended Prerequisites

For students planning their undergraduate course schedules in anticipation of applying for the PhD in computational biology, prerequisites in life sciences, computer science, physical sciences, mathematics, statistics, and computational biology are recommended. Students whose background does not include these courses may be admitted with the additional requirement to take appropriate compensating classes. For more information on prerequisites, see http://www.compbio.cmu.edu/?page_id=91

Application

REQUIRED MATERIALS - Deadline December 15

1. The Online Application
2. Statement of Purpose
3. Three letters of Recommendation
4. Unofficial Transcripts (submitted online)
5. Conversion of GPA (for international students only)
6. Unofficial TOEFL Scores (submitted online)
7. Application Fee

Applications are reviewed by the Joint CMU-Pitt PhD Program in Computational Biology. Each admitted student is assigned an initial university of matriculation, and receives an admissions offer letter from that university. Incoming students can be placed directly in a laboratory (if mutual interest exists between a student and an advisor), or go through a period of three rotations, after which the student chooses an advisor. Students have the ability to change advisors (subject to agreement of the new advisor and availability of support) and to transfer between the two universities to reflect advisor changes.

For more information on application process, see http://www.compbio.cmu.edu/?page_id=163

Terminal Masters Degree

The program does not admit students whose goal is to attain a Master's of Science degree. However, it might become necessary for a PhD student to transfer to an MS track for academic reasons or reasons beyond the student's control, e.g., medical circumstances or a change in family circumstances necessitating a long-distance move.

Courses

http://www.compbio.cmu.edu/?page_id=87

Training Faculty

The program provides students with cross-disciplinary training in established as well as newly emerging fields of computational biology. Students have access to a community of faculty mentors from the University of Pittsburgh and Carnegie Mellon University, which not only provides a breadth of research areas for investigation, but also offers the technical and intellectual resources to make rapid progress toward their doctoral degree.

For a list of training faculty, see https://www.cmu.edu/compbio/people/core-faculty.html

Doctoral

Center for Neuroscience Training Program (CNUP), PhD

PhD Degree Requirements

Credits: A minimum of 72 credit hours including a 23-credit course requirement covering fundamental material in cellular and molecular neurobiology, systems neurobiology and several elective courses.

Specifically, the following core courses are required:

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS

- MSNBIO 2010 - SCIENTIFIC ETHICS or
- NROSCI 2010 - SCIENTIFIC ETHICS

- MSNBIO 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1 or
- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1

- MSNBIO 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2 or
- NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2

- MSNBIO 2102 - SYSTEMS NEUROBIOLOGY or
- NROSCI 2102 - SYSTEMS NEUROBIOLOGY

- MSNBIO 2624 - GRANT WRITING

Note:

In addition to University requirements for graduate degrees, students are also required to obtain research experience in at least two separate laboratories; attend journal clubs and research seminars; pass a reprint exam following their first year of study, a comprehensive exam, and a doctoral dissertation and defense.

Integrative Molecular Biology, PhD

Degree Requirements

This is an accelerated program that provides the opportunity for students to complete their degrees in approximately 4 years. Students enter the Program in the summer session, and after performing three rotations identify an advisor and area of research. Areas of research focus include Genomics, Proteomics, and Gene Function and Cellular and Developmental Dynamics. Required course work is completed during the first year. At the end of the first year students take a comprehensive examination that includes the submission of a research proposal to national fellowship programs. Students receive career mentoring during the third and fourth years to ensure a seamless transition to the postdoctoral level. Additional information can be found at the following Web site: www.pimb.pitt.edu/curriculum.php.

A minimum of 72 credits beyond the baccalaureate degree is required for the PhD degree. 32 of these credits are completed taking required and elective course work, and 40 of these credits are taken as dissertation research credits upon completing the comprehensive examination and advancing to candidacy. Required course work includes the following:

- MSIMB 2000 or
- IMB 2000 - LABORATORY RESEARCH ROTATIONS - 9 credits - taken in the summer prior to the first year

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH - taken during the summer of the second year
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS

- MSIMB 2050 or
- IMB 2050 - PIMB RESEARCH SEMINAR - the Department/Program Seminar and Journal Club/Conference are taken each fall and spring term until graduation

Advanced Elective Courses (6 credits total)

A large number of courses are available and are listed on the following Web site: www.pimb.pitt.edu/curriculum.php - Students are required to select courses in more than one of the following disciplines: molecular genetics, biochemistry, cell biology, and developmental biology.

Critical European Culture Studies Program

The PhD Program in Critical European Culture Studies offers a flexible interdisciplinary curriculum that appreciates the idea of Europe as a historically dynamic discourse. This new graduate program offers students discipline-specific training while fortifying it with a focus on broader issues such as transnationalism, migration, and cultural identity. It allows students to work across disciplinary boundaries to explore in depth the culture of Europe and develop new configurations in European and national cultural studies: European Studies and German/Russian/Polish/English/French/Italian/etc. These may include literary, historical, anthropological, media-based, and other studies.

Contact Information

Program Director: Professor Randall Halle
E-mail: rhalle@pitt.edu

Graduate Administrator: Jennifer Berkebile
E-mail: JES379@pitt.edu

Main Office: 454 Cathedral of Learning
412-624-6564
www.cecs.pitt.edu

Admissions

Admission Requirements:

- a Master's degree in a field related to Critical European Culture Studies
- proficiency in English (for non-native English speakers, TOEFL, IELTS, or Duolingo scores should be provided),
- proficiency in a second European-related language. Proficiency in this European language should be at a level sufficient to study at a European University and may be demonstrated by:

1) semester-length enrollment in a European University OR

2) a minimum score of Advanced Low or the equivalent on the ACTFL/OPI or a similar score on a nationally or internationally recognized scale (such as the Common European Framework of Reference for Languages).

Affiliated Faculty

Dietrich School of Arts and Sciences Faculty

PhD

Critical European Culture Studies, PhD

Credit Requirement:

The requirements for the PhD are at least 72 graduate-level credits, including language courses, elective courses in a single discipline and five required core courses. The core required courses are an Introduction to Literary and Theory Course, a Theory of Europe Course, a EU Studies Core Course, a Pedagogy Course and a research methodology course (ethnography, digital humanities, oral history, translation studies, or any other suitable methodology course that serves the students research interests and goals).

PhD Qualifying Examination:

Students take the PhD qualification exam during their 3rd semester in the program. They provide a reading list composed of all the texts read in the graduate courses up to this point. In addition to that they also submit two papers, one written in English and the other in their chosen primary European language.

Supervised Teaching Practicum:

A hands-on teaching practicum is an academic requirement of the doctoral program for students to learn about university-level teaching. This experience will serve as preparation for scholarly and professional careers. Students will be supported by a pedagogy seminar to prepare and aid them.

Comprehensive Examination:

A hands-on teaching practicum is an academic requirement of the doctoral program for students to learn about university-level teaching. Topics include pedagogy. This experience will serve as preparation for scholarly and professional careers. Students will be supported by a pedagogy seminar to prepare and aid them.

Dissertation Overview:

Upon completion of the comprehensive examination and all other requirements, during the 5th semester, the student files an application for admission to candidacy for the Doctor of Philosophy. In consultation with a dissertation advisor the student presents a prospectus of a dissertation to a doctoral committee. The dissertation prospectus (10-15 pages) completed by the student gives a brief introduction to the topic, previous and related research done on the topic, and the specific lines of inquiry, including methodologies and specific skills used, that the dissertation will pursue. In addition, students should address how work on the dissertation will embed them in academic and non-academic networks. Students should also address how the outcome of their dissertation will address non-academic audiences? (for example, Cultural institutions, NGOs, Governmental institutions, the creative and cultural industry). After the advisor approves this prospectus, the student will defend the prospectus to the doctoral committee. Faculty members affiliated with CECS from at least three different departments should constitute the members of the doctoral committee.

Language Requirement:

By the time they defend their dissertation overviews, the students must also demonstrate an intermediate-level proficiency in a third language (in addition to English and the other, primary research language) on one of the following ways:

- passing an intermediate-level language sequence with a grade of "B" or better;
- take a nationally recognized exam such as the OPI, verifying intermediate proficiency;
- or take a departmental exam verifying such proficiency.

Dissertation Defense:

The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and is open to the University community. The dissertation should engage a European-related question and include ethnographic, oral historical, digital, or other methodological approaches relevant to the chosen problematic of the research project. Due to the interdisciplinary nature of the program and the dissertation committees, the dissertation must be written in English.

Cultural Studies Program

The Graduate Program for Cultural Studies is a certificate-granting intellectual center for interdisciplinary cultural critique and analysis. The program fosters the intensive study of cultural formations, past and present, from around the world. In its course offerings and other activities, the program draws upon over one hundred faculty affiliate members and ninety enrolled graduate certificate students from many of Pitt's departments and schools. The program's varied faculty members and students consistently exchange ideas about studying culture, beyond national boundaries and disciplinary divisions. The program stands as an institutional forum for responding to the increasing global need to engage, through interdisciplinary and post disciplinary lenses, the problematics of culture.

The program addresses debates concerning the theory of texts and their production; the relationship between culture and politics; the formation of disciplines and institutions; and the nature of cultural antagonisms and crises. It features a variety of recent methodologies of historical and textual interpretation, and offers students opportunities to work with faculty and other students from the following departments, programs, and schools: Anthropology, Bioethics, Classics, Communication, East Asian Languages and Literatures, Education, English, Film and Media Studies, French and Italian Languages and Literatures, Gender, Sexuality, and Women's Studies, German Languages and Literatures, Hispanic Languages and Literatures, History, History and Philosophy of Science, History of Art and Architecture, Law, Library Science, Linguistics, Medicine, Music, Philosophy, Political Science, Public and International Affairs, Public Health, Religious Studies, Slavic Languages and Literatures, Social Work, Sociology, and Theatre Arts.

The program offers a master's certificate and doctoral certificate in cultural studies, which enhance MA and PhD degrees in the disciplines.

Contact Information

Program Director: Professor Michael Sawyer
E-mail: michael_sawyer@pitt.edu

Graduate Administrator: Jennifer Berkebile
E-mail: jes379@pitt.edu

Main Office: 401C Cathedral of Learning
Phone: 412-624-7232

Fax: 412-624-7232
E-mail: cultural@pitt.edu
www.culturalstudies.pitt.edu/

Admissions

Students who wish to apply to the certificate program must be enrolled in a graduate or professional program at the University of Pittsburgh and must be in good academic standing. A student may earn either a master's certificate or a doctoral certificate, but not both.

Publications

Cultural studies faculty edit journals of international renown, including *boundary 2* and *Critical Quarterly*, leading publications in the study of culture. The Program Director is co-editor of the *Oxford History of Popular Print Culture, vol. 5, United States, to 1860.*

Affiliated Faculty

http://www.culturalstudies.pitt.edu/faculty

Certificate

Cultural Studies, Doctoral Certificate

This interdisciplinary program is concerned with cultural critique and analysis. The program fosters the intensive study of cultural formations, past and present, from around the world. The methodologies employed derive from the most advanced historical, social, and literary models. The program, open to students who are and must be discipline-trained and discipline-oriented, provides a transcultural-critical expertise not generally available in specific departments. The faculty is drawn from twenty-five areas of the humanities and social sciences at the University. The program is open to any student enrolled full time in any graduate or professional program at the University of Pittsburgh; certificates are granted at both Master's and PhD levels. Two fellowships are offered annually to outstanding students who have passed their doctoral comprehensive examinations.

Requirements for the Doctoral Certificate

The following are course requirements (27 credits) for the doctoral certificate in cultural studies:

- Common Seminar (CLST 2050)
- Three core courses (one from each group): A, B, or C (courses are listed at http://www.culturalstudies.pitt.edu/courses)
- One designated cultural studies course (D) in the student's home department or school
- One designated cultural studies course (D) outside the student's home department

Students from departments without second language requirements are expected to demonstrate the ability to use primary and secondary texts in one language other than English. Courses are regularly offered in the language departments toward the achievement of this level of reading proficiency and those departments will schedule individual written examinations to demonstrate this ability.

Virtually all of the program's courses are cross-listed with offerings in other departments and schools. Each cross-listed course counts for credit both in its home department and in the cultural studies program. Thus, the certificate program normally requires only one or two extra courses beyond those mandated by students' disciplinary degree program.

Cultural Studies, Master's Certificate

This interdisciplinary program is concerned with cultural critique and analysis. The program fosters the intensive study of cultural formations, past and present, from around the world. The methodologies employed derive from the most advanced historical, social, and literary models. The program, open to students who are and must be discipline-trained and discipline-oriented, provides a transcultural-critical expertise not generally available in specific departments. The faculty is drawn from twenty-five areas of the humanities and social sciences at the University. The program is open to any student enrolled full time in any graduate or professional program at the University of Pittsburgh; certificates are granted at both Master's and PhD levels. Two fellowships are offered annually to outstanding students who have passed their doctoral comprehensive examinations.

Requirements for the Master's Certificate

Following are course requirements (15 credits) for the master's certificate in cultural studies:

- Common Seminar (CLST 2050)
- One core course from group A or B (courses are listed a http://www.culturalstudies.pitt.edu/coursest)
- One designated cultural studies course (D) in the student's home department or school
- One designated cultural studies course (D) outside the student's home department or a course from group C

Digital Studies and Methods Program

Graduate Certificate in Digital Studies and Methods

This certificate offers graduate students at the University of Pittsburgh the opportunity to acquire a proactive, mindful engagement with digital methods in the humanities and allied social sciences. While interpretive scholars have been applying computational methods to their work for as long as there have been digital computers, the arrival of the World Wide Web witnessed a more expansive group of humanists and social scientists, armed with a new array of interpretive possibilities, joining the conversation about how computing can productively enrich their research. In these recent years, such scholars have turned to using the computer not only as a revolutionary programmable calculator but also as a medium of connection, capable of supporting a wide number of approaches to scholarly investigation, interpretation, and expression. In sum, they focus on what it means to be human in a world where the dominant force-for-change seems to be technology. The Graduate Certificate in Digital Studies and Methods is designed to welcome students into this community.

Being a mode of inquiry with an expansive set of methods and tools, the use of digital techniques within the humanities and allied social sciences requires a pedagogical approach that relies on not only lecture and seminar time, but also hands-on workshop opportunities where students can apply the techniques they have been learning and discussing. To this end, this certificate includes traditional classroom hours as well as studio-based learning experiences that provide the hands-on, peer- and mentor-supported experience that this digitally-attentive approach to interpretive scholarship requires.

The methods, skills, and techniques that the students enrolled in this certificate might encounter include: network analysis, topic modeling, digital visualization techniques, geographic information systems (GIS), effective data modeling practices, and approaches to text analysis focused on the use of markup languages.

Contact Information

Graduate Advisor: Alison Langmead
Mailing Address: 104 Frick Fine Arts
Physical Address: 116 Frick Fine Arts (Visual Media Workshop)
412-648-2407
adlangmead@pitt.edu

Enrollment

The graduate certificate in Digital Studies and Methods (DSAM) consists of courses totaling 15 credit hours. Any student enrolled in a graduate program at the University of Pittsburgh, and who is in good academic standing according to the guidelines of their unit of matriculation, is eligible to apply.

Certificate

Digital Studies and Methods Certificate

Graduate Certificate in Digital Studies and Methods

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Department of East Asian Languages and Literatures

The Department of East Asian Languages and Literatures (EALL) offers an interdisciplinary Master of Arts in East Asian Studies (IDMA), focusing on China, Japan, or Korea.

Contact Information

Department Chair (EALL): Elizabeth Oyler
Main Office: 2701 Cathedral of Learning
Graduate Administrator: Jennifer Berkebile
412-624-5227
Fax: 412-624-3458

E-mail: JES379@pitt.edu
http://deall.pitt.edu/graduate

Admission and Application Form: To apply, go to http://deall.pitt.edu/graduate/apply and click on Apply Yourself.

The interdisciplinary Master of Arts degree in East Asian studies (IDMA) combines advanced language training with study in the social sciences and humanities focusing on East Asia. It is designed for graduate students who plan Asia-related; or for those who want intensive area training before pursuing a doctoral program in a particular discipline. The IDMA is typically a two-year program. It is designed for students who have already had at least two years of Chinese, Japanese, or Korean language study. The interdisciplinary nature of the program comes not from specially constructed interdisciplinary courses but from taking a planned complement of graduate-level courses in different departments. The strength of this interdisciplinary approach lies in the fact that students are able to elect to work with faculty in several disciplines, as well as to take courses in different areas in the humanities and social sciences. The applicant's academic interests must be compatible with the expertise of the East Asian faculty at the University of Pittsburgh.

Applicants for admission must submit a 500-600 words statement in English that identifies the student's academic and intellectual goals through discussing a book that has influenced them in applying to the IDMA program. They must submit transcripts of all college-level work, three letters of recommendation in English, and a writing sample in English. International applicants whose first language is not English are required to submit the TOEFL administered by the Educational Testing Service: The required TOEFL score of 90 (with at least a score of 22 in all of the four sections of speaking, listening, reading, and writing); the required minimum IELTS of 7.0 (with at least 6.5 in each of its four sections). The deadline each year for submitting applications is January 15. Notification can be expected by the middle of March. The program admits students only for the fall term.

Financial Assistance

Current as well as prospective students in Asian Studies are eligible to apply for a variety of scholarships and fellowships administered by the Asian Studies Center. See the Web site https://www.ucis.pitt.edu/asc/students/graduate-students/funding for descriptions of awards.

The dean of the Dietrich School of Arts and Sciences has approved some Tuition Reduction Scholarships for out-of-state students accepted into the IDMA program each year. As a result, most IDMA students pay in-state tuition rates.

Faculty

The Asian Studies faculty affiliated with the IDMA Program comprise an outstanding group of specialists in the social sciences and humanities. They share a common dedication to teaching and a vigorous commitment to scholarly research as well as service to the profession. Academic disciplines of individual faculty members and their teaching specializations are noted on the website above.

Dietrich School of Arts and Sciences Faculty

Course Note

Not all courses are offered every term. Students should consult with their academic advisers for course selections. 30 credits of graduate courses are required for the degree. For more detailed information about the requirement, refer to the department website: http://deall.pitt.edu/graduate/requirements.

Master's

East Asian Studies, MA

The interdisciplinary Master of Arts degree in East Asian studies (IDMA) combines advanced language training with study in the social sciences and humanities focusing on East Asia. It is designed for graduate students who plan Asian-related careers; or for those who want intensive area training before pursuing a doctoral program in a particular discipline. The IDMA is typically a two-year program. It is designed for students who have already had at least two years of Chinese, Japanese, or Korean language study. The interdisciplinary nature

of the program comes not from specially constructed interdisciplinary courses but from taking a planned complement of graduate-level courses in different departments. The strength of this interdisciplinary approach lies in the fact that students are able to elect to work with faculty in several disciplines, as well as to take courses in different areas in the humanities and social sciences. The applicant's academic interests must be compatible with the expertise of the East Asian faculty at the University of Pittsburgh. IDMA students are eligible to apply for a variety of scholarships and fellowships administered by Asian Studies. See the Web site www.ucis.pitt.edu/asc and click on Funding for descriptions of awards.

Requirements for the MA

Requirements for the IDMA

The interdisciplinary Master of Arts in East Asian Studies (IDMA) is intended primarily for predoctoral students who want intensive area training before pursuing a doctoral program in a particular discipline, or for those planning professional careers in government, business, journalism, or pre-college teaching.

Credit Requirements: Students must earn a minimum of 30 credits of course work (excluding language credits) in two or more departments with an overall GPA no lower than 3.0. In addition, EAS 2005 - APPROACHES TO EAST ASIA , a research methodology course, must be taken in the first year.

Language Requirement: Students must have successfully completed two years of Chinese, Japanese, or Korean language training in order to apply to the program and must continue their language study as part of their graduate work. A minimum of three years' college-level language study or its equivalent is necessary to fulfill the language requirement for the degree.

Course Specialization: Students who specialize in one country (China, Japan, or Korea) must take a least one 3-credit course on either of the other two countries. For example, those who specialize in Japan must take at least one 3-credit course on China or Korea.

Thesis: Students must complete a culminating Master's thesis-level project in consultation with their academic advisor and two additional graduate faculty members. These three faculty members serve as the student's thesis committee. There are three options for the project: a conventional Master's thesis, a portfolio consisting of three papers in lieu of a thesis, or a translation project with critical commentary.

Presentation: In preparation of the thesis project, each IDMA student must give a talk on their topic in the EALL Colloquium series.

Oral Comprehensive Examination: When course work and thesis are completed, the student must pass an oral comprehensive examination administered by the student's faculty committee.

Department of Economics

The aim of the programs in economics at the University of Pittsburgh is to prepare students to be professional economists in academia, business, or government.

The normal time to complete the PhD is five years. Graduate students may apply for a Master of Arts (MA) under specific circumstances as described below.

1. **Continuing Master's Degree**
   Continuing students may apply for an MA in economics after they have passed all preliminary examinations and have at least 30 credits in graded coursework at the 3000 level. In addition, their GPA must be 3.0 or higher in all courses counting toward the 30-credit minimum.
2. **Non-continuing Master's Degree**
   The Graduate Committee may recommend that a MA in economics be awarded to a student who is leaving the PhD program either voluntarily or because of dismissal. The requirements for the terminal master's degree are: 1) either passing each of the seven first year courses with a minimum grade of B or passing one of the preliminary exams; and, 2) completing 30 credits of graduate level coursework with a cumulative GPA of 3.0.

Continuing students do not qualify for a non-continuing master's degree.

The department also offers a stand-alone Master of Science (MS) through the Master of Science in Quantitative Economics (MQE) program. The MQE program is just 8 months, or 2 semesters (Fall and Spring). The program begins at the end of August and ends at the end of April, the following year.

Faculty members have a wide variety of research interests. Currently, the department's strengths are greatest in the following fields:

- Comparative Systems and Development Economics
- Econometrics
- Economic History
- Experimental Economics
- International Economics
- Labor Economics
- Macroeconomics
- Microeconomic Theory
- Public Economics
- Urban Economics

Contact Information

Department Chair: Luca Rigotti (luca@pitt.edu)
Director of Graduate Studies: Alistair Wilson (alistair@pitt.edu)

Director of MQE: David Dejong (dejong@pitt.edu)
Main Office: 4700 Wesley W. Posvar Hall
412-648-1730
www.econ.pitt.edu

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Economics, Graduate Administrator Dane Youkers, 4700 Wesley W. Posvar Hall, Pittsburgh, PA 15260. Phone: 412-648-2305. E-mail: dcy14@pitt.edu.

Admissions

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a career statement that addresses the applicant's personal and professional goals and the reasons for pursuing doctoral study in economics. Submission of the Graduate Record Examination is optional. International applicants whose first language is not English are required to submit official scores from either the TOEFL administered by the Educational Testing Service with a minimum score of 90 on the internet-based test (with at least a score of 22 in all four sections). Applicants may also submit scores from the IELTS administered by the University of Cambridge, Local Examinations Syndicate. The minimum acceptable score is 7.0, with at least a score of 6.5 in each of the 4 sections (taking the academic writing and reading modules). The department also accepts Duolingo scores, with a minimum of 120. Applications must be received by January 15 for the PhD program. The MQE program accepts applications for each fall term on a rolling basis; international students must apply by June 1 and domestic students must apply by July 31. The department admits students only for the fall term.

Doctoral

Economics, PhD

Requirements for the PhD

Credit Requirement

The minimum requirement is 72 credit hours. Of these, 45 credit hours must be in graded course work. Core courses include:

- **ECON 3001 - INTRO TO MATHEMATICAL METHODS**
- **ECON 3010 - MATHEMATICAL METHODS OF ECONOMIC ANALYSIS**
- **ECON 3020 - ECONOMETRIC THEORY 1**
- **ECON 3030 - MICROECONOMIC THEORY 1**
- **ECON 3040 - MACROECONOMIC THEORY 1**
- **ECON 3050 - ECONOMETRIC THEORY 2**
- **ECON 3060- MICROECONOMIC THEORY 2**
- **ECON 3070 - MACROECONOMIC THEORY 2**
- **ECON 3080 - EMPIRICAL METHODS**
- **ECON 3210 - TEACHING ECONOMICS**
- **ECON 3220 - RESEARCH METHODS IN ECONOMIS**
- **ECON 3900 - COMPREHENSIVE PREPARATION**

- ECON 3001 - INTRO TO MATHEMATICAL METHODS
- ECON 3010 - MATHEMATICAL METHODS OF ECONOMIC ANALYSIS
- ECON 3020 - ECONOMETRIC THEORY 1
- ECON 3030 - MICROECONOMIC THEORY 1
- ECON 3040 - MACROECONOMIC THEORY 1
- ECON 3050 - ECONOMETRIC THEORY 2
- ECON 3060 - MICROECONOMIC THEORY 2
- ECON 3070 - MACROECONOMIC THEORY 2
- ECON 3080 - EMPIRICAL METHODS
- ECON 3210 - TEACHING PRACTICUM
- ECON 3220 - RESEARCH METHODS IN ECONOMICS
- ECON 3990 - RESEARCH AND DISSERTATION PHD

Additional Requirements

Preliminary Examinations

The PhD preliminary exams consist of a four-hour exam in microeconomic theory and a second four-hour exam in macroeconomic theory. These exams are offered in June after the first year of study. If a student fails either or both preliminary examinations, a second attempt is offered two months later in August. Students must pass both exams by the second attempt to continue in the program.

Minimum GPA

All students must attain a minimum GPA of 3.00 in 3000-level course work in economics as well as maintain a minimum GPA of 3.00 in all courses qualifying for graduation to be certified for the PhD in economics, as well as to qualify for continued financial assistance.

Comprehensive Exam Requirement (Research Paper)

All students are required to complete a single authored, original research paper demonstrating their ability to do research in economics. This is typically begun in the latter half of the second year and completed in the first term of the third year. The paper is reviewed by two faculty members, who may ask for revisions or additions. Following their approval of the paper, the student is certified as having completed the comprehensive examination requirement.

Field Requirements

Students are required to take coursework in two major fields, consisting of two graded courses and one graded seminar in each field, and one minor field consisting of two graded courses. The two major fields must be completed within separate areas of research, as follows:

- Microeconomics
- Macroeconomics
- Applied Microeconomics
- Experimental Economics
- International, Comparative, and Developmental Economics
- Econometrics

The list of fields offered within each area is periodically updated by supervising faculty members within the relevant area.

Dissertation Overview (Admission to Candidacy)

Following successful completion of the comprehensive examination, the student begins to work full time on the doctoral dissertation. This involves searching for a topic, finding a faculty advisor, and beginning preliminary research. When a topic is selected and preliminary research is underway, the student, in consultation with the advisor, forms a dissertation committee. A dissertation overview is held at which the student presents his proposal for doctoral research, preliminary findings, and a strategy for completing the work to the dissertation committee. If the dissertation committee approves of the topic and research strategy, the student can file an application for admission to candidacy for the Doctor of Philosophy.

Dissertation Defense

The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and is open to the University community.

Joint Degree

Quantitative Economics/Public Administration, MS/MPA

The proposed joint degree program will require that students complete all of the typical requirements for MQE program. Students will also complete all the required GSPIA MPA coursework, except for 3 quantitative courses whose content is replaced by the quantitative training in the MQE classes. Joint degree students also have the number of required MPA elective courses reduced by one relative to the normal MPA degree. Finally, both the MQE and MPA program require a capstone project. Joint degree students will be able to choose whether to do their capstone project through the MQE program or through the MPA program. Thus, the required plan of study is as follows:

MQE/MPA Joint Degree Requirements

All MQE/MPA students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by the student's career advisors in advance. Students with at least three years of relevant full-time work experience may petition their career advisor for a waiver of this requirement during their first semester.

Plan of Study (if opting for SPIA Capstone) 39 SPIA credits & 27 MQE credits

Year 1 - Fall (15 credits)

- ECON 2811 - INDIVIDUALS, FIRMS, AND MARKETS
- ECON 2812 - INCENTIVES AND INFORMATION
- ECON 2821 - QUANTITATIVE METHODS
- ECON 2822 - ECONOMIC INFERENCE FROM DATA
- ECON 2801 - COMMUNICATING ECONOMIC INSIGHTS

Year 1 - Spring (12 credits)

- ECON 2813 - GLOBAL ECONOMICS AND FINANCE
- ECON 2814 - EVIDENCE-BASED ANALYSIS IN LABOR, PUBLIC AND HEALTH ECONOMICS
- ECON 2824 - BIG DATA AND FORECASTING IN ECONOMICS
- ECON 2823 - APPLICATIONS OF ECONOMIC ANALYSIS TECHNIQUES
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

SPIA required Internship

All MQE/MPA students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by the student's career advisors in advance. Students with at least three years of relevant full-time work experience may petition their career advisor for a waiver of this requirement during their first semester.

Year 2 - Fall (12 credits)

PIA 2xxx Concentration Required Course or Elective

PIA 2xxx Concentration Required Course

- OR PIA 2096 - CAPSTONE SEMINAR:
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2028 - PUBLIC POLICY ANALYSIS

Year 2 - Spring (12 credits)

- PIA 2xxx Concentration Required Course
- PIA 2xxx Concentration Required Course
- PIA 2xxx Concentration Required Course or Elective Course
- PIA 2xxx Concentration Required Course or Elective Course
    - OR
- PIA 2096 - CAPSTONE SEMINAR:

Year 3 - Fall (12 credits)

PIA 2xxx Concentration Required Course

PIA 2xxx Concentration Required Course or Elective Course

Total Credits: 66

Plan of Study (if opting for MQE Capstone project) 30 MQE credits & 36 SPIA credits

Year 1 - Fall - if opting for MQE capstone project

- ECON 2811 - INDIVIDUALS, FIRMS, AND MARKETS
- ECON 2812 - INCENTIVES AND INFORMATION
- ECON 2821 - QUANTITATIVE METHODS
- ECON 2822 - ECONOMIC INFERENCE FROM DATA
- ECON 2801 - COMMUNICATING ECONOMIC INSIGHTS

Year 1 - Spring (15 credits)

- ECON 2813 - GLOBAL ECONOMICS AND FINANCE
- ECON 2814 - EVIDENCE-BASED ANALYSIS IN LABOR, PUBLIC AND HEALTH ECONOMICS
- ECON 2824 - BIG DATA AND FORECASTING IN ECONOMICS
- ECON 2823 - APPLICATIONS OF ECONOMIC ANALYSIS TECHNIQUES
- ECON 2841 - DATA DESIGN FOR ECONOMIC APPLICATIONS (CAPSTONE)

SPIA required Internship

All MQE/MPA students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by the student's career advisors in advance. Students with at least three years of relevant full-time work experience may petition their career advisor for a waiver of this requirement during their first semester.

Year 2 - Fall (12 credits)

- PIA 2xxx Concentration Required Course
- PIA 2xxx Concentration Required Course or Elective Course
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT

Year 2 - Spring (12 credits)

PIA 2xxx Concentration Required Course

PIA 2xxx Concentration Required Course or Elective

- PIA 2096 - CAPSTONE SEMINAR:
- PIA 2028 - PUBLIC POLICY ANALYSIS

Year 3 - Fall (12 credits)

- PIA 2xxx Concentration Required Course

- PIA 2xxx Concentration Required Course
- PIA 2xxx Concentration Required Course or Elective Course
- PIA 2xxx Concentration Required Course or Elective Course

Total Credits: 66

Master's

Quantitative Economics, MS

Program Description

The MS in Quantitative Economics (MQE) program in the Department of Economics trains professionals to become experts who can inform economics and business decisions with sophisticated, state-of-the-art data analysis.

Students acquire the knowledge needed to formulate economic questions surrounding alternative policy and business strategies; identify the data needed to answer these questions; read and interpret data; produce forecasts that support core business and policy decision making; build the skills needed to effectively present and communicate data-driven knowledge.

The program is a professional 8-month program to be completed during the Fall and Spring semesters. The degree requires 30 credits, equally divided into 10 courses of 3 credits each, over two semesters. Each semester is split into two terms that are 7 weeks long, and each term includes 3 courses, with one of them running over two terms. All students are required to participate in a summer course in mid-August that will strengthen their skills in math and computer programming. MQE offers intensive Career Services that prepare students for the workplace, help them network and make mentor connections. The MS in Quantitative Economics qualifies as a STEM designated degree program.

Fall	**Session 1**	Individuals, Firms, and Markets	Quantitative Methods	Communicating Economic Insights
	Session 2	Incentives and Information	Economic Inference from Data	
Spring	**Session 1**	Financial Econometrics	Applications of Economic Analysis Techniques	Data Design for Economic Applications (Capstone)
	Session 2	Evidence-Based Analysis in Macro, International and Microeconomics	Big Data and Machine Learning in Economics	

Program Requirements

Applicants must hold a bachelor's degree from a recognized college or university, or have completed an equivalent level of education that the University of Pittsburgh deems comparable to a bachelor's degree. Applicants must have demonstrated mastery in calculus I and a basic understanding of economics and basic computer programming skills with a minimum 3.0 cumulative GPA in the total undergraduate program. For foreign students, language-test scores above certain thresholds will be required.

Submission of personal statement with a consideration for a student's ability to overcome challenges and assert strength in relevant skills.

Two letters of recommendation, preferably from an academic source, must be submitted online. Letters should be written on letterhead stationery and signed by the recommender. Applications can be submitted prior to receipt of letters.

International applicants must submit test scores in the Test of English as a Foreign Language (TOEFL), IELTS (International English Language Testing System) score (required of applicants whose official native language is not English even if English was the medium of instruction in the foreign schools attended by the applicant) or the Duolingo English Test. The required TOEFL score is 90 (with a minimum of 22 in each section), the required IELTS score is 7.0 (with a minimum of 6.5 in all sections), or the required Duolingo English Test score is 110 or higher. Applicants who have completed or are about to complete a bachelor's degree or graduate degree from a regionally accredited institution in the United States are exempt from submission of the Duolingo English Test, TOEFL or IELTS. Exemptions on a case-by-case basis are possible for applicants who hold a degree or are currently enrolled in an institution in which the only language of instruction is English. When requesting that TOEFL scores be sent to the University of Pittsburgh use code 2927.

Academic Support

The students will be academically supported by the MQE director and program director. The students will be supported in their professional development through workplace-readiness workshops, networking events and mentoring programs.

Students are required to maintain a GPA average of at least 3.0 and receive a grade of B or higher in all courses. A student failing to meet these requirements will be terminated from the program.

Contact Information

Department of Economics Chair: Luca Rigotti
MQE Director: David DeJong
E-mail: mqeinfo@pitt.edu
www.mqe.pitt.edu

Department of English

The Department of English offers the following degrees and certificate:

Master of Arts (MA)
Master of Fine Arts (MFA)
Doctor of Philosophy (PhD)
Certificate in Composition, Literacy and Pedagogy

Contact Information

Director of Graduate Studies: Michael Sawyer
Main Office: 617 Cathedral of Learning
412-624-6549
Fax: 412-624-6639
E-mail: engrad@pitt.edu
http://www.english.pitt.edu/graduate/

Additional information concerning the department's graduate program may be obtained from the Graduate Administrator, Department of English, University of Pittsburgh, Pittsburgh PA 15260. Phone: 412-648-3303. E-mail: engrad@pitt.edu. Web site: www.english.pitt.edu/graduate.

Admissions

Applicants for admission must submit an online application, transcripts of all college-level work, three letters of recommendation, a personal statement, and a writing sample (which varies by degree-please consult the application requirements link above). International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing Service with a minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section, the IELTS administered by the University of Cambridge, Local Examinations Syndicate with a minimum score of 7.0 (with at least 6.5 in each of its four sections) or Duolingo English test with a minimum score of 120. Applications to the MA and PhD program will be accepted for fall term admission until December 10, and applications to the MFA program are due January 7. Newly admitted students enter the program in the fall semester only.

Certificate in Composition, Literacy and Pedagogy

http://www.composition.pitt.edu/graduate/certificate

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at https://www.composition.pitt.edu/graduate/certificate.

Faculty

Dietrich School of Arts and Sciences Faculty

Certificate

Composition, Literacy and Pedagogy Certificate

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Certificate in Composition, Literacy and Pedagogy

http://www.composition.pitt.edu/graduate/certificate

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at http://www.composition.pitt.edu/graduate/graduate_more.html

Certificate

This graduate certificate recognizes sustained, advanced study in composition, literacy, pedagogy and rhetoric at the University of Pittsburgh. It can be awarded to students who have earned the MA, MFA, or PhD degree in the Department of English, and to those earning graduate degrees in other departments, programs, and institutions.

To qualify for the certificate, students must successfully complete ENGLIT 2500 - SEMINAR IN PEDAGOGY (or an equivalent course in writing pedagogy), and a set of additional courses described below: the MA and MFA certificate will require three (3), and the PhD certificate five (5) additional courses. These courses are selected from among an array of seminars that represent intersecting strands of work in the Composition Program:

- **Composition**, including study of the theories and practices of writing, within and beyond the field of Rhetoric and Composition;
- **Literacy**, including research into public rhetorics and the literacies of diverse groups in the larger culture beyond the academy;
- **Pedagogy**, including historical and critical inquiry into issues of schooling, teaching, and the institutions of academic writing;
- **Rhetoric**, including the history and theory of rhetoric and its functioning in institutional, political and literary spheres of communication.

Students interested in the certificate should see the Director of Composition for initial advising. He or she will identify qualifying courses for the certificate in English and may approve courses in other departments at the University of Pittsburgh. One course of Directed Study may also be accepted for the certificate, with the approval of the Director of Composition. In order to graduate with this certificate, students must apply to the certificate program at least one semester in advance of their graduation. The application form can be obtained from the Graduate Administrator in the Department of English (engrad@pitt.edu (mailto:engrad@pitt.edu)).

To qualify for the Graduate Certificate in composition, Literacy, Pedagogy, and Rhetoric, students are further required to produce a teaching portfolio. The portfolio must be submitted to the Director of Composition at least 3 weeks before the end of the semester in which the student plans to graduate. The portfolio assembles materials that document at least one of the following:

- An ability to design and teach an effective undergraduate course or communitybased writing workshop;
- Significant work in support of teaching: for instance, as a mentor to beginning teachers, or as an assistant in the administration of the Composition Program, the Western Pennsylvania Writing Project, or the Writing Center;
- Demonstrated ability as a writing tutor in the Writing Center, in other university support services, or in afterschool programs for children.

Portfolios characteristically include teaching materials such as syllabi, assignments, exercises, and observations by peers and faculty members. Administrative documents may include reports, proposals, newsletters, Web pages, and other materials that demonstrate the work of the position, as well as statements of evaluation. Portfolios are reviewed by a committee of the composition faculty.

Notice that students have been awarded the Graduate Certificate in Composition, Literacy, Pedagogy, and Rhetoric appears on their final transcript for the MA, MFA, or PhD degree.

Composition, Literacy and Pedagogy Certificate, MA

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Certificate in Composition, Literacy and Pedagogy

http://www.composition.pitt.edu/graduate/certificate

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at http://www.composition.pitt.edu/graduate/graduate_more.html

Composition, Literacy and Pedagogy Certificate, MFA

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Certificate in Composition, Literacy and Pedagogy

http://www.composition.pitt.edu/graduate/certificate

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at http://www.composition.pitt.edu/graduate/graduate_more.html

Composition, Literacy and Pedagogy Certificate, PhD

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Certificate in Composition, Literacy and Pedagogy

http://www.composition.pitt.edu/graduate/certificate

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at http://www.composition.pitt.edu/graduate/graduate_more.html

Doctoral

English, PhD

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Requirements for the PhD

General Requirements. The PhD requires 72 credit hours, 41 of which must be in courses at the 2000 or 3000 level, with a minimum grade point average of 3.00. Required courses are a one-credit practicum, Introduction to Graduate Study; Seminar in Pedagogy (3 credits); two pedagogy training courses, Writing Pedagogy 1 (3 credits) and Writing Pedagogy 2 (3 credits); a PhD Writing Workshop (3 credits); and a one-credit professional development practicum. Additionally, three core courses in at least two programs of the department (Composition, Film, and Literature) are required. The remaining credits are earned through elective seminars, independent studies in preparation of the PhD project and dissertation research credits. PhD candidates must fulfill a language requirement by demonstrating reading knowledge of two languages other than English, advanced study in one language other than English, or beginning knowledge of a new language.

Earning the MA. PhD students may elect to earn an MA as they progress in the PhD program, although they are not required to do so. If they wish to earn the MA, they must successfully complete the two core courses listed above with a grade of B or better, and either complete the master's research paper (outlined above under "Requirements for the MA Degree"), or successfully pass their PhD comprehensive examinations. Application for the MA must be made before the end of the student's fourth year in the PhD program.

The Comprehensive Exams. The University requires a comprehensive examination prior to initiating dissertation work. The exam is meant to demonstrate a breadth of knowledge in tandem with the ability to work on a focused area or an interrelated set of questions. In English, the PhD comprehensive exam process requires composing a preliminary exam proposal and bibliography; expanding the preliminary proposal into an annotated bibliography with a synthesizing introduction; a written exam responding to questions posed by a student's faculty committee; and an oral exam. Through this process, students demonstrate expertise in disciplinary subfields relevant to their research area, with an eye to both historical/genealogical and theoretical exploration defined by a set of questions or problems. The exam bibliography and synthesis should be useful for both dissertation work and for teaching after PhD completion.

The Dissertation. After students have passed their comprehensive examinations, they will register for independent study credits in order to write a prospectus for the dissertation. The student should choose a dissertation director and a committee at this time. Once a dissertation committee has been formed, the student will submit a formal dissertation prospectus to them for approval. When the dissertation committee has approved the prospectus, the dissertation director and student will submit an application for admission to doctoral candidacy. Once students have passed their dissertation prospectus and have been admitted to doctoral candidacy, they should begin the work of researching and writing the dissertation. Normally students will complete the dissertation during the fifth year in the program. Once the dissertation is completed, students must successfully defend their dissertation in order to earn the PhD.

Master's

English, MA

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Requirements for the MA

General Requirements. The MA requires the completion of 30 credit hours, including a one-credit Introduction to Graduate Studies and a core course for one of the programs of the PhD (in Composition, Film, or Literature). MA students must complete a master's research paper in an elective course of their choice (see below).

Master's Research Paper. All MA students must also complete a master's research paper in an elective course of their choice. The master's research paper should be of professional article length, defined by the Modern Language Association (MLA) as 6,000-8,000 words not including documentation. Students must engage in primary research beyond course readings and/or what is ordinarily required for a term paper, and the master's research paper must reflect that research. Students must consult an instructor, and receive the instructor's approval, no later than the end of the add/drop period if they wish to write their master's research paper for that instructor's seminar. The instructor of the seminar will be solely responsible for evaluating the paper. The master's research paper must be completed no later than the last day of the spring term of a student's second year, or fourth term in residence. In order for the master's research paper to count toward earning the MA, a student must receive a grade of B or better on the paper and as a final grade for the course in which the paper was completed.

English, MFA

Graduate and Professional Degrees

The MFA in English allows students to specialize in one of three areas of concentration in creative writing: poetry, fiction, and nonfiction. The degree also integrates courses in literature and literary history.

Requirements for the MFA

General Requirements. The MFA requires 36 credit hours with a minimum grade point average of 3.0, plus the completion of a final manuscript in the student's major area of concentration. The degree requires a combination of writing workshops, graduate-level readings courses, and English courses outside the Writing Program (in Composition & Rhetoric, Literature, or Film). Further information about requirements can be found in the English Department's graduate handbook. There are no language requirements for MFA students.

The Final Manuscript. The final manuscript is equivalent to the MA comprehensive examination. It consists of a book-length manuscript of the student's best work in the area of major interest - 150 pages (typed, double-spaced, standard format) for fiction and nonfiction, and 50 pages for poetry. The manuscript shall be submitted to a committee of three English graduate faculty members, at least two of which must be writing graduate faculty, and chaired by a faculty member in the student's primary genre. There is an option to have a fourth, external member, either from another department at the University of Pittsburgh or at another University. The chair of the manuscript committee is assigned to the student, but the student may choose the remaining members of their committee. The Writing Program Director must approve the student's committee composition.

Film and Media Studies Program

The Film and Media Studies Program is an interdisciplinary program offering courses in history, aesthetics, theory, and critical studies. The Film and Media Studies Program offers the following graduate degrees and certificates:

PhD in Film and Media Studies (in conjunction with five Associated Departments)
MA Certificate in Film and Media Studies
PhD Certificate in Film and Media Studies

Contact Information

Director of Graduate Studies: Professor Robert Clift
E-mail: robertclift@pitt.edu

Graduate Administrator: Jesse Daugherty
412-624-6549
E-mail: JED110@pitt.edu

www.filmandmedia.pitt.edu

Admissions

Applicants will submit an application to the Film and Media Studies PhD program, identifying an Area of Concentration from the list of associated departments (e.g. English, French, Hispanic, History of Art and Architecture, and Slavic). The name of the Associated Department will appear on the student's transcript when the degree is granted. The application will be vetted simultaneously by Film and Media Studies and the Associated Department. Only one application fee is required.

Students who have already entered graduate programs in associated departments are welcome to apply to the Film and Media Studies PhD through the normal application process. If accepted, they are eligible to transfer a maximum of 24 credits towards the Film and Media Studies PhD degree requirements and can petition to waive required courses that have been fulfilled, following normal University, School, and Program regulations.

Students who wish to enroll in the graduate certificate programs in Film and Media Studies (whether MA or PhD) must be matriculated for a graduate degree in a department of the Dietrich School of Arts and Sciences or in another school within the University. Students interested in pursuing a Film and Media Studies certificate at any point in their career may do so by filing the appropriate form with the Film and Media Studies Program.

Affiliated Faculty

Certificate

Film and Media Studies Doctoral Certificate

Eligibility

Students engaged in an A&S doctoral program at Pitt can enroll in the Film and Media Studies Doctoral Certificate Program at any point in the course of their study by submitting a completed Graduate Certificate Application Form to filmandmedia@pitt.edu or 454 Cathedral of Learning. The doctoral certificate is awarded only after the completion of all degree requirements for the PhD in the student's home department, school, or program.

Course Work

Six film and Media Studies courses (18 credits) including:

Core Course:

- ENGFLM 2451 - FILM HISTORY/THEORY or
- ENGFLM 2452 - FILM HISTORY/THEORY 2

Five Electives:

- At least two courses must be outside the student's home department
- Can include a second core course

Research Paper

The PhD Certificate requires a research paper be written in the field of Film and Media Studies (approx. 25-30 pp. in length) and evaluated by a Film and Media Studies faculty member who teaches one of the seminars that the student takes for his/her Certificate requirements.

The procedure for so doing is as follows:
At the beginning of a Film and Media Studies course that counts for the Certificate the student will inform the faculty member teaching the course that he/she wishes for his/her seminar to count as well as the official Research Paper for the Certificate Program. The faculty member will then require of the student something more ambitious than the normal seminar paper (see Guidelines for Certificate Research Paper below) and meet with the student during the term to advise him/her.

At the end of the course the student has two options: (1) submit the Certificate Research Paper for both the course and Certificate requirements or (2) submit a paper that satisfies the course requirements and continue to work on the expanded Certificate Research Paper over the following semester. The paper should be turned in for the Certificate requirement no later than at the end of the semester following the course in which the paper was conceived.

Guidelines for Certificate Research Paper

The research paper that qualifies for the MA and/or PhD Certificates in Film and Media Studies should go beyond the average seminar paper for a course, though (as per above) it should begin as such a seminar paper in conjunction with a member of the Film and Media Studies faculty. In essence, the research paper should aspire to be one publishable in an academic journal (though there is no requirement that it actually be published).

This paper might go beyond a standard seminar paper in any or several of the following ways: (1) have a demonstrated original point of view or approach to a given topic; (2) articulate a clear and demonstrated argument about a topic that clarifies important issues in media studies; (3) involve substantial research with primary sources; (4) forge new theoretical or historical terrain; (5) consider hitherto ignored media texts. It will be up to the Film and Media Studies instructor/advisor to determine how the paper might meet some of the above standards.

Additional Conditions

- Only two directed study courses (supervised by Film and Media faculty) can be counted toward the doctoral certificate.
- All courses must be passed with a B or higher.
- Students should notify the program director of their intention to file for graduation at the beginning of their final semester.

Film and Media Studies Master's Certificate

Eligibility

Students engaged in an A&S master's program at Pitt can enroll in the Film and Media Studies Master's Certificate Program at any point in the course of their study by submitting a completed Graduate Certificate Application Form to filmandmedia@pitt.edu or 454 Cathedral of Learning. The master's certificate is awarded only after the completion of all degree requirements for the MA in the student's home department, school, or program.

Course Work

Four Film and Media Studies courses (12 credits) including:

Core Course:

- ENGFLM 2451 - FILM HISTORY/THEORY or
- ENGFLM 2452 - FILM HISTORY/THEORY 2

Three Electives

- One outside home department
- Can include a second core course

Research Paper

The MA Certificate requires a research paper in the field of Film and Media Studies (approx. 25-30 pp. in length) to be written for and evaluated by a Film and Media Studies faculty member who teaches one of the seminars that the student takes for his/her Certificate requirements.

The procedure is as follows:
At the beginning of a Film and Media Studies course that counts for the Certificate, the student will inform the faculty member teaching the course that he/she wishes for his/her seminar to count as the official Research Paper for the Certificate Program. The faculty member will then require something more ambitious than the normal seminar paper (see Guidelines for Certificate Research Paper below) and meet with the student during the term to advise him/her.

At the end of the course the student has two options: (1) submit the Certificate Research Paper for both the course and Certificate requirements or (2) submit a paper that satisfies the course requirements and continue to work on the expanded Certificate Research Paper

over the following semester. The paper should be turned in for the Certificate requirement no later than the end of the semester following the course in which the paper was conceived.

Guidelines for Certificate Research Paper

The research paper that qualifies for the MA and/or PhD Certificates in Film and Media Studies should go beyond the average seminar paper for a course, though (as per above) it should begin as such a seminar paper in conjunction with a member of the Film Studies faculty. In essence, the research paper should aspire to be one publishable in an academic journal (though there is no requirement that it actually be published). Such a paper might go beyond a standard seminar paper in any or several of the following ways:

1. Have a demonstrated original point of view or approach to a given topic
2. Articulate a clear and demonstrated argument about a topic that clarifies important issues in media studies
3. Involve substantial research with primary sources
4. Forge new theoretical or historical terrain
5. Consider hitherto ignored media texts.

It will be up to the Film and Media Studies instructor/advisor to determine how the paper might meet some of the above standards.

Additional Conditions

- Only one directed study course (supervised by Film and Media Studies faculty) can be counted toward the master's certificate.
- All courses must be passed with a B or higher.
- Students should notify the program director of their intention to file for graduation at the beginning of their final semester.

Doctoral

Film and Media Studies, PhD

Requirements for the PhD

General Requirements. The PhD requires 72 credits. All Film and Media Studies PhD students will be required to fulfill the requirements of their associated department as well as the Film and Media Studies requirements. These required courses will bring together students from all six associated departments so that they will have an opportunity to interact with each other. This core of required courses will also ensure that students have a common and coherent thread in their Film and Media Studies doctoral experience. PhD students must take three core courses in Film and Media Studies (7 credits): A two-course (6 credit) sequence taken in any order (Film History/Theory I ENGFLM 2451 and Film History/Theory II ENGFLM 2452) and a one credit Film Studies Proseminar FILMG 2905, as well as four elective Film and Media Studies courses (in any department). Of the total six required seminars, the student must take at least two courses taught by a member of the faculty outside of the student's associated department. These courses can include the two required core courses as well as any of the four electives. Language and teaching requirements are determined by associated departments.

Comprehensive Exam. The comprehensive exam will be taken in the student's associated department. While the exam structure will differ from department to department, in all cases:

- one component (or more) of the exam will focus on Film and Media Studies
- a second component of the exam will focus on the departmental field (including its relation to cinema)
- at least one member of the exam committee in the student's associated department will be a member of the graduate faculty in Film and Media Studies.

The Dissertation. The dissertation will be completed in the associated department and must involve film and/or media studies as subject matter incorporated with the student's area of concentration (as determined by the dissertation director). The chair of the dissertation committee will be a graduate faculty member in the student's associated department who is also member of the interdisciplinary Film and Media Studies graduate faculty. The external member of the committee will be a member of the Film and Media Studies graduate faculty from outside the associated department.

Courses

Film and Media Studies

- ENGFLM 2453 - FILM HISTORY AND THE NON-THEATRICAL
- ENGFLM 2456 - FILM STUDIES AS A DISCIPLINE
- ENGFLM 2464 - LOW LIGHT: NARRATIVE AESTHETICS OF FILMING DARKNESS
- ENGFLM 2493 - MEDIA / ECOLOGY
- ENGFLM 2705 - THE (RE-) ANIMATED HUMAN
- FMST 2151 / ENGFLM 2451 - FILM HISTORY/THEORY 1
- FMST 2152 / ENGFLM 2452 FILM HISTORY/THEORY 2
- FMST 2153 - PROSEMINAR IN FILM AND MEDIA STUDIES
- FMST 2155 / ENGFLM 2455 - FILM AND MEDIA HISTORIOGRAPHY
- FMST 2220 - NEW CHINESE CINEMA
- FMST 2235 - JAPANESE CULTURE AND SOCIETY THROUGH CINEMA
- FMST 2327 - RUSSIAN FILM SYMPOSIUM
- FMST 2341 - CONTEMPORARY LATIN AMERICAN FILM
- FMST 2411 - FILM AND LITERATURE
- FMST 2415 / ENGFLM 2500 - WOMEN DIRECTORS IN FILM AND TELEVISION
- FMST 2416 / ENGFLM 2467- CINEMA AND TRAUMA
- FMST 2417 / ENGFLM 2661 - QUEER THEORY, QUEER CINEMA
- FMST 2421 / ENGFLM 2710 - GLOBAL FILM STARDOM
- FMST 2422 / ENGFLM 2496 - MEDIA AND MOBILITY
- FMST 2425 / ENGFLM 2425 - BLACK TIME: AFROFUTURISM, AFROPESSIMISM, AND BEYOND
- FMST 2440 / ENGFLM 2491 - FILM SOUND: HISTORY, THEORY, AESTHETICS
- FMST 2485 / ENGFLM 2457 - ETHNOGRAPHIC FILM AND MEDIA
- FMST 2508 - TELEVISION STUDIES
- FMST 2510 / ENGFLM 2700 - ANIMATION THEORY
- FMST 2520 - FILM COMEDY
- FMST 2524 / ENGFLM 2485 - GENRE AND FILM MELODRAMA
- FMST 2525 / ENGFLM 2695 - HORROR FILM
- FMST 2526 / ENGFLM 2480 - WAR AND CINEMA
- FMST 2540 / ENGFLM 2000 - ESSAY FILM/DOCUMENTARY FILM
- FMST 2542 / ENGFLM 2459 - DOCUMENTARY THEORY & PRACTICE
- FMST 2570 / ENGFLM 2494 - KEY CONCEPTS IN NEW MEDIA
- FMST 2660 / ENGFLM 2660 - SEXUAL REPRESENTATION AND CINEMA
- FMST 2760 - THEORY/TECHNOLOGY/MEDIA FROM PLATO TO VIDEO GAMES
- FMST 2902 - DIRECTED STUDY FOR THE MA
- FMST 2907 - INTERNSHIP IN FILM AND MEDIA
- FMST 3902 - DIRECTED STUDY FOR THE PHD

Department of French and Italian

The Department of French and Italian offers programs leading to the MA in Italian, a PhD in French with an MA *en route* and the PhD in French. Students may also apply for the PhD in Film Studies with a Concentration in French (granted by Film Studies). The following tracks are offered at the MA level in French and Italian:

French
Italian

The following tracks are offered at the PhD level in French:

French
Film and Media Studies with a Concentration in French

In addition, the department encourages students to participate in various interdisciplinary programs, such as African Studies; Cultural Studies; Digital Studies and Methods; European Union Studies; Film and Media Studies; Gender, Sexuality, and Women's Studies; Global Studies, Medieval/Renaissance Studies, and West European Studies, where students may work toward a graduate certificate in conjunction with their degree.

Contact Information

Department Chair: John Walsh
Main Office: 1328 Cathedral of Learning
412-624-5220
Fax: 412-624-6269
E-mail: frit@pitt.edu
www.frit.pitt.edu/

Graduate Administrator: Jennifer Berkebile

412-624-5227

E-mail: JES379@pitt.edu

Additional information concerning the department's graduate program may be requested from the University of Pittsburgh, Department of French and Italian, Assistant to the Directors of Graduate Studies, 1328 Cathedral of Learning, Pittsburgh, PA 15260. Phone: 412-624-5220. Fax: 412-624-6263. E-mail: frit@pitt.edu.

Graduate Degree Programs

Admissions

Students accepted into the graduate program must meet the following criteria:

- They should have completed an undergraduate major (or equivalent) in the language, literature, media, and culture they propose to study at the graduate level or substantial coursework in a related field.
- They must be able to enroll in courses that are taught entirely in French and/or Italian. This presupposes a high level of skill in speaking, reading, and writing in their major language.
- It is recommended that incoming students have a reading knowledge of German, a second Romance language, or Latin.

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a personal statement, and samples of their writing in the target second language and in English. International applicants whose first language is not English are required to submit either the TOEFL: a minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section (TOEFL scores submitted must not be more than two years old), IELTS: score of 7.0, with at least 6.5 in each of its four sections. IELTS scores submitted must not be more than two years old, or Duolingo English Test: score of 120. Duolingo scores submitted must not be more than two years old. For a complete list of required items for admission, go to https://www.frenchanditalian.pitt.edu/graduate/admissions.

Applications for fall term admission will be accepted until April 15. For funding consideration, applications must be completed by January 15 for French and February 1 for Italian. The department admits students only for the fall term.

Faculty

https://www.frenchanditalian.pitt.edu/people

Doctoral

Film and Media Studies with a Concentration in French

The PhD in Film Studies at the University of Pittsburgh is an interdisciplinary and interdepartmental degree that stresses the history, theory, and aesthetics of international cinema, video, television, and new media. While the student will earn a PhD in Film Studies (granted by the Film Studies Program), he or she will also be a full member of French, fulfilling all requirements for the PhD in French. French will appear as an Area of Concentration on the student's transcript. Thus, the student graduating with a PhD in Film Studies will be doubly qualified: in film studies as well as in French Studies.

Students must fulfill all of the requirements for the PhD in French (listed above) and the following additional requirements:

Core Courses in Film Studies (7 credits):

a two-course (6 credit) sequence taken in any order:

- ENGFLM 2451 - FILM HISTORY/THEORY
- ENGFLM 2452 - FILM HISTORY/THEORY 2
- 1 credit Film Studies Proseminar ENGFLM 2905

Note:

This will not count toward seminar credit within the French program and will be given on aSatisfactory/Unsatisfactory basis.

Electives in Film Studies (12 credits):

- Four elective Film Studies courses (in any department).

Note:

Of the total six required seminars, the student must take at least two courses taught by a member of the faculty outside of French. These courses can include the two required core courses as well as any of the four electives.

Additional Requirements

*Teaching Practicum***:** All Film PhD students are required to complete a teaching practicum as part of their academic requirements for at least one film course. If the Department of French and Italian does not offer a film course or does not have available opportunities in a film course, students will complete their teaching practicum in the undergraduate course *Introduction to Film* (or another comparable introductory course developed in the future).

Credit Requirement: Minimum of 72 hours, including the master's degree, earned from any suitable combination of formal course work, independent study, research, teaching or dissertation work as detailed elsewhere in this bulletin.

Preliminary Examination/Evaluation: The two required core courses in Film Studies (Film History/Theory I and II) will serve as the preliminary exam in Film Studies. Successful completion of these two classes with a grade of B or better will constitute passing the preliminary examination.

To maintain funding, students must also pass the required preliminary evaluation conducted by the French faculty at the end of the first year of enrollment.

Comprehensive Examination: The Comprehensive Exam must contain at least one component focusing on Film Studies, and at least one component on French Studies (including its relation to cinema).

At least one member of the exam committee will be a member of the graduate faculty in Film Studies.

Dissertation Committee: The dissertation will be completed in the Department of French and Italian and must involve film and/or media studies as subject matter incorporated with French Studies (as determined by the dissertation director).

The Chair of the dissertation committee will be a graduate faculty member in the Department of French and Italian who is also a member of the interdisciplinary Film Studies graduate faculty. The external member of the committee will be a member of the Film Studies graduate faculty from outside the Department of French and Italian. It is expected that students will have been exposed to these faculty members in taking the required Film Studies courses (taught by the interdisciplinary Film Studies faculty), elective Film Studies courses (outside the student's associated Department), and in the Proseminar (taught by the interdisciplinary faculty).

French, PhD

Requirements for the PhD

Before students may be considered for admission to candidacy for the PhD, they must complete successfully a minimum of eight 2000-level courses (24 credits) beyond the MA level, five of which must be in French (a minimum of 72 credits). In addition, the candidates must present a *précis* of their emerging dissertation research area at the end of their first year, satisfy PhD language requirements, and pass written and oral comprehensive examinations. Upon admission to candidacy, the candidate will write and defend a doctoral dissertation. The course work must include:

FR 2710 (if not taken at the MA level) and an additional course in literary or cultural theory.

With the advisor's consent students are free to take some of the additional required courses in other departments. Students in French are encouraged to pursue certification in one of the various programs offered by the University (African Studies, Cultural Studies, European Union Studies, Film Studies, Gender, Sexuality and Women's Studies, Global Studies, Medieval and Renaissance Studies, West European Studies). However, only three exterior courses may count towards the degree in French.

Dissertation Committee

The dissertation committee should include one faculty member with expertise in each of the two major periods/areas.

Credit Requirement: Minimum of 72 hours, including the master's degree, earned from any suitable combination of formal course work, independent study, research, teaching or dissertation work as detailed elsewhere in this bulletin.

Preliminary Examination/Evaluation: Students in the PhD program will undergo a preliminary evaluation at the end of the first full year of residence. The written *précis* will serve as the preliminary evaluation.

Comprehensive Examination: Students must take written and oral comprehensive examinations on a topic with historical coverage and an topic in the area of specialization. Candidates will work with a faculty advisor and a committee to prepare the reading list in the areas chosen. The purpose of the comprehensive examinations is to ensure that the candidate can develop a relevant and original approach to the study of French and Francophone literature, media, and culture. These examinations should be passed at least eight months (two terms) before the degree is to be awarded. Students may schedule their examinations only after passing all preliminary examinations and language and other requirements..

Prospectus Review: As soon as the comprehensive examinations have been passed, students and their advisor should agree on a dissertation committee including at least three members of the department (including the director) and one member chosen from another department in an area of expertise relevant to the dissertation topic. Usually during the third year, but in no case later than the first term of their fourth year, students must submit a prospectus to the director for circulation among the committee members. The scope, size, organization, and format of the prospectus are specified in a separate departmental document, which PhD students should receive or request as soon as they pass their comprehensive examinations.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and is open to the University community.

Joint Degree

French, MA/PhD

Requirements for PhD with MA en route

This degree is intended for students who wish to pursue the Doctor of Philosophy (PhD) degree in French but who do not already hold an MA in this field or in a closely-related discipline. Students must first successfully complete the requirements for the MA in French listed below, normally within their first two years of full-time enrollment. Students doing the PhD with the MA en route will be awarded an MA degree at the completion of these requirements:

- A minimum of ten one-term courses is required, for a total of 30 credit hours. These courses will include FR 2710 - INTRODUCTION TO LITERARY AND CULTURAL THEORY: LANGUAGE, GENDER, HISTORY, FR 2903 - MA RESEARCH PAPER DIRECTED STUDY, and FR 2910 - COMPREHENSIVE EXAMINATION MA.
- Comprehensive examination: the comprehensive examination is a written examination and is given in two sessions on separate days during the fourth semester of the MA en route program. An oral interview is held after completion of the written exams to discuss the results of the exams and the MA research paper.
- Seminar Paper: each candidate must revise a paper written for a seminar under the guidance of the instructor of that seminar.
- Second language: candidates must demonstrate a reading knowledge of a second Romance Language, or German, or Latin.

To ensure the acquisition of a broad knowledge of French-language literature, media, and culture, candidates must take at least one seminar in each of the following four areas: Middle Ages/Renaissance, Early Modern, Post-Revolution/Modern, and Global South) before they reach candidacy.

Before students may be considered for admission to candidacy for the PhD, they must successfully complete a minimum of five 2000-level courses (15 credits) beyond the MA, two of which must be in French. In addition, the candidate must pass written and oral comprehensive examinations. The PhD language requirement will normally be satisfied at the MA level. The eight courses must include:

1. FR 2710 (if not taken at the MA level) and an additional course in literary or cultural theory.
2. With the adviser's consent, students are free to take some of the additional required courses in other departments. Students in French are encouraged to pursue certification in one of the various programs offered by the University (African Studies, Cultural Studies, European Union Studies, Film Studies, Gender, Sexuality, and Women's Studies, Global Studies, Medieval and Renaissance Studies, West European Studies). However, only three exterior courses may count towards the degree in French.

Upon admission to candidacy, the candidate will write and defend a doctoral dissertation.

Master's

Italian, MA

Requirements for the MA in Italian

A minimum of ten one-term courses is required. These courses will includeITAL 2710 - INTRODUCTION TO LITERARY AND CULTURAL THEORY: LANGUAGE, GENDER, HISTORY - ITAL 2903 - MA FINAL PROJECT DIRECTED STUDY, and ITAL

2910 - COMPREHENSIVE EXAMINATION MA . Other program requirements may require enrollment in ITAL 2970 - TEACHING PRACTICUM, though this does not count toward the required ten. Candidates must also fulfill the following additional requirements:

- Comprehensive Examination
  - The MA comprehensive examination is a two-component written examination consisting of a General Knowledge and a Field Exam and is given in on separate days during the second year of the MA program; an oral interview is held after completion of the exams to discuss the comprehensive exam results, as well as the student's final project.
- Final Project
  - Each candidate must complete a final faculty-guided project, selected by the student in consultation with the Italian faculty, and in alignment with their future plans beyond completion of the MA in Italian. Students may select from (but are not limited to) the following options:

• Presentation on previously executed teaching demo (cluster or module consisting of multiple lessons, planned in consultation with appropriate faculty)

• Syllabus development

• Podcast

• DH project

• Annotated translation

• Conference paper (with reflections on expansion)

• Publishable article

- Second Language
  - Candidates must demonstrate a reading knowledge of Latin or German or a Romance language other than Italian. Other languages will be considered upon petition.
- Proposal/Overview (N/A)
- Dissertation and Final Examination (N/A)

Gender, Sexuality, and Women's Studies Program

The Gender, Sexuality, and Women's Studies Program offers graduate certificates in Gender, Sexuality, and Women's Studies at both the master's and doctoral levels. The interdisciplinary curriculum draws upon faculty expertise in the arts, humanities, and social sciences; and in business, law, library and information science, nursing, medicine, public and international affairs, public health, and social work. The program provides opportunities for students who wish to focus their study on women, gender, and sexuality or who wish to add these areas as a subspecialty.

Contact Information

Program Director: Professor Frayda Cohen
E-mail: frcst5@pitt.edu

Graduate Administrator: Jennifer Berkebile
E-mail: gsws@pitt.edu

Main Office: 401 Cathedral of Learning

Phone: 412-624-7232
E-mail: gsws@pitt.edu
www.gsws.pitt.edu

Admissions

The graduate certificate programs admit only students already enrolled in other graduate degree programs at Pitt. Interested students can find information about the certificate programs at https://www.gsws.pitt.edu/academics/graduate-studies and should contact the program Director for advising.

Faculty

Dietrich School of Arts and Sciences Faculty

Certificate

Gender, Sexuality, and Women's Studies Doctoral Certificate

Requirements for Doctoral Certificate

The doctoral-level certificate requires 18 credits as detailed below:

- GSWS 2252 - THEORIES OF GENDER AND SEXUALITY
- At least two other courses must be outside the candidate's home department, including at least one course with a GSWS course number
- At least three courses in one field, determined in consultation with the program director
- No more than 2 courses may be Directed Study

Note:

All candidates for graduate certificates must maintain a 3.00 average in courses for the certificate and submit a research paper to be read by at least one faculty member affiliated with the program. Students should notify the program director of their intention to graduate at the beginning of their final term. Students not in the Dietrich School must apply to graduate in A&S Graduate Studies. This certificate program is available only to students who are enrolled in other graduate degree programs at the University of Pittsburgh.

Gender, Sexuality, and Women's Studies Master's Certificate

Requirements for Master's-Level Certificate

The master's-level certificate requires 12 credits as detailed below:

- GSWS 2252 - THEORIES OF GENDER AND SEXUALITY
- At least one other course must be outside the candidate's home department
- At least two of the total courses must be in one field, determined in consultation with the program director
- No more than 1 course may be a Directed Study

Note:

All candidates for graduate certificates must maintain a 3.00 average in courses for the certificate and submit a research paper to be read by at least one faculty member affiliated with the program. Students should notify the program director of their intention to graduate at the beginning of their final term. Students not in the Dietrich School must apply to graduate in A&S Graduate Studies. This certificate program is available only to students who are enrolled in other graduate degree programs at the University of Pittsburgh.

Department of Geology and Environmental Science

The department offers programs that lead to the MS or PhD in Geology and Environmental Science and a Professional MS in Geographical Information Systems and Remote Sensing.. The principal objective of the graduate programs is to provide a broad and strong foundation upon which students may base careers. The PhD program is designed to educate scientists for basic or applied research and teaching. Graduate research may involve specialization in geology, geochemistry, geophysics, planetary science, and environmental science.

Contact Information

Department Chair: Nadine McQuarrie
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412-624-8780
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www.geology.pitt.edu

Research and Facilities

Please visit www.geology.pitt.edu to find out more about research and analytical facilities available in the Department of Geology and Environmental Science

Admissions

Prospective graduate students must meet Dietrich School of Arts and Sciences requirements for entrance into graduate programs.

Doctoral

Geology and Environmental Science, PhD

Students in the PhD program have opportunities to participate in research programs encompassing many fields of current interest in geology, geochemistry, volcanology, geographic information systems (GIS), remote sensing, planetary geology, paleoclimatology, hydrology, and environmental science. In general, the research is interdisciplinary, collaborative, and employs techniques such as traditional field-based studies, advanced geochemical analytical work, sophisticated remote sensing and GIS analysis, and advanced computer modeling of natural systems. Many students enter the program with an undergraduate or MS degree in the geosciences; however, students with degrees in other natural sciences or in engineering are often admitted.

Requirements for the PhD

The minimum course requirement for the PhD degree is seventy-two (72) credits. A minimum of twenty-four (24) credits must be from formal courses and at least eighteen (18) of the credits must be taken within the Department of Geology and Environmental Science. Up to thirty (30) credits may be accepted from a Master of Science degree or graduate study toward the PhD from another institution. No course numbered below 2000 may be applied toward graduation requirements. A minimum grade point average of 3.0 must be maintained for all formal courses taken. Students with full graduate status will be placed on probation if the cumulative grade point average falls below the minimum grade point level. Ph.D. Students admitted to the graduate program take a suite of six courses in their first two years in residence

that constitute the Preliminary Examination. Students will be considered to pass the Preliminary Exam when they have achieved a grade of B or better in each of the courses.

A graduate student seeking the PhD degree must complete a Comprehensive Overview Examination. The written and oral comprehensive overview exams must be taken before the 7th semester of residence in the Ph.D. program, typically during third year. The written exam (i.e., the proposal or manuscript) must be passed before the oral exam. After passing both written and oral examinations (as well as the requirements of the preliminary exam), the student is admitted to "Ph.D. candidacy." Therefore, it is to the student's advantage to complete all requirements as soon as possible. However, the student does not need to complete all degree plan classes before the comprehensive overview exams. In particular, examining committees can require additional course work be taken as an outcome of the oral comprehensive overview exam.

Each Ph.D. candidate must prepare a dissertation demonstrating successful completion of the research project as well as competency in the methods and techniques of scientific investigation in the field of her/his area of specialization. The dissertation must be clearly, logically, and carefully written. The Major Advisor must approve of the content, format, and grammar prior to submission of the dissertation to the Dissertation Committee. The dissertation should contain an introductory statement, including appropriate justification of the research, a description of the methods and observations of the investigation, evaluation of the significance and meaning of the results, and a final summary.

Each Ph.D. candidate must formally defend her/his submitted dissertation with a public presentation followed by a meeting with the Dissertation Committee. The dissertation will be formally accepted or rejected by the Dissertation Committee at the defense and the committee will decide what, if any, revisions should be made. A report on the results of the defense and on acceptance of the dissertation, signed by each member of the Dissertation Committee, must be submitted to the Dean of Graduate Studies for approval.

Each Ph.D. student must submit at least one manuscript to a peer-review journal prior to graduation and present research results at both a departmental colloquium and at a meeting of a national or international scientific organization.

Complete descriptions of the most recent degree requirements are available at www.geology.pitt.edu.

Master's

Geographical Information Systems & Remote Sensing, MS

Curriculum & Course Information:

General Information: The GIS/RS Professional-M.S. program in the Department of Geology & Environmental Science is a multidisciplinary, multi-departmental, non-research degree. Notionally, designed to be completed in two academic years (plus one summer), the program length can be changed to slightly shorter or longer depending on the student's work limitations. The required courses are centered in the Geology and Environmental Science Department and focus on GIS and RS core proficiencies. Students are also required to take at least one course in the Schools of Business, Law, and Information Sciences. A large degree of flexibility is designed into the 41 credit program so that the student can tailor their coursework to fit specific future career goals, personal interests, and time constraints of work/family life.

First Semester:

Skill Sets: GIS and Remote Sensing fundamental principles & software use; communication proficiency; exposure to geospatial professionals

Total Credits: 10

Second Semester:

Skill Sets: advanced GIS/RS proficiency; introduction to computer programming

Total Credits: 9

Summer Semester:

Skill Sets: work experience utilizing geospatial analysis tools; compilation of digital dossier; oral/written presentation experience

Total Credits: 4

Third Semester:

Skill Sets: statistical data analysis; methodology of information science; introduction to business administration

Total Credits: 9

Fourth Semester:

Skill Sets: advanced GIS/RS proficiency; awareness of comparative law; personalized elective expertise; data mining & database management

Total Credits: 9

Geology and Environmental Science, MS

Students in the MS program have opportunities to participate in research programs encompassing many fields of current interest in geology, geochemistry, volcanology, geographic information systems (GIS), remote sensing, planetary geology, paleoclimatology, hydrology, and environmental science. In general, the research is interdisciplinary, collaborative, and employs techniques such as traditional field-based studies, advanced geochemical analytical work, sophisticated remote sensing and GIS analysis, and advanced computer modeling of natural systems. many students enter the program with an undergraduate degree in the geosciences; however, students with degrees in other natural sciences or in engineering are often admitted.

Requirements for the Master's Degree

The minimum course requirement for the MS degree is thirty (30) credits beyond the baccalaureate. A minimum of twelve (12) credits must be from formal courses within the Department of Geology and Environmental Science numbered 2000 or higher. Each MS candidate prepares a thesis demonstrating successful completion of the research project as well as competency in the methods and techniques of scientific investigation in the field of the student's area of specialization. The thesis should serve as a source of publishable material, and all MS students must present research results at a meeting of a national or international scientific organization. Each MS student publicly defends their thesis before a Thesis Committee consisting of at least three faculty members from the Department of Geology and Environmental Science. Complete descriptions of the most recent degree requirements are available at www.geology.pitt.edu.

Department of German

**German is currently not accepting graduate applications.*

The Department of German offers a PhD program that includes the MA degree as a required step toward the PhD. The program trains future scholars in German Studies and prepares them to be competitive on the national job market. It encourages interdisciplinary work and students are required to pursue a certificate or related area in programs such as Cultural Studies, Film Studies, Women Studies, European Studies, or in another related area.

Contact Information

Director of Graduate Studies: Randall Halle
412-648-2614
Fax: 412-624-6318
E-mail:rhalle@pitt.edu
http://www.german.pitt.edu/

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of German, 1518 Cathedral of Learning, Pittsburgh, PA 15260. Phone: 412-624-5909. E-mail: grmndept@pitt.edu.

For more on each of the following programs, visit http://www.german.pitt.edu/graduate/.

Admissions

All applicants apply for the PhD program. Applicants should have a BA or MA in German or a related field. Students with training in related fields will be considered for full graduate status if their background in German language and culture is sufficient to succeed in graduate-level courses. For admission to the PhD, students completing their MA at the University of Pittsburgh must pass a preliminary evaluation in their final semester of study. For students entering with an MA from another institution, this evaluation takes place by the end of their first year of study at the University of Pittsburgh.

Applications should include:

- an Application Form;
- a Statement of Intent (Please describe your intellectual background, research interests, and academic goals);
- 3 Letters of Recommendation;
- Official Transcripts from all undergraduate and graduate study (non-US degrees must be accompanied by a notarized English translation);
- an audio recording (Non-native speakers should supply a recording in which they 1) speak freely about a topic and 2) read formally a passage from a literary or academic text);
- a Writing Sample (a research paper or selection from a thesis of about 20 pages that offers an example of the applicant's ability to conduct research and provide evidence of strong writing skills. It may be in either English or German.);
- TOEFL scores (Required of Foreign Students: minimum score of 550 [paper-based test] / 80 [internet-based test]) or the IELTS administered by the University of Cambridge, Local Examinations Syndicate with a minimum score of 6.5 (taking the academic and reading modules); and
- an Application fee of $50 (Please contact the Director of Graduate Studies if this represents a financial hardship).

Applicants are required to submit all materials for fall term admissions by January 2. Students who would like to be considered for fellowships are encouraged to submit their applications before the New Year. Applications submitted after the deadline will be considered only if space is available. Applications are submitted online at app.applyyourself.com/?id=up-as.

Faculty

http://www.german.pitt.edu/people/

Doctoral

German, PhD

Requirements for the PhD

The requirements for the PhD consist of: (1) at least 72 credits of course work, (2) a language requirement, (3) the PhD comprehensive examination, (4) the dissertation prospectus, (5) the dissertation, and (6) the completion of a certificate program or approved work in a related area. Specific details are:

- minimum 72 credits of course work, broken down as follows:
    - 30 credits from the MA
    - at least 12 seminars total (for students entering Pitt with an MA from another institution) / at least 18 seminars total (for students entering Pitt with a BA-seminars taken at the MA level count towards this requirement)
        - of these seminars, at least 6 seminars (for students with an MA from another institution) / at least 12 seminars (for students entering Pitt with a BA) should be taken in the German department.
        - at least 6 of the above seminars should be in certificate-related courses (see below).
    - at least 2/3 of the seminars taken must be taken for a letter grade;
- Language requirement: High level of oral proficiency in German (superior on OPI scale, 3 on ILR scale); reading knowledge of another language;
- Comprehensive Examination: A written examination, evaluated by a committee of 3 faculty members. Demonstrates the student's foundation in German culture from the Enlightenment to the present, as well as the student's ability to situate a specific focus within this larger context. The PhD comprehensive examination needs to be completed with an average grade of A-. The examination may be retaken only one time and needs to be retaken by the next academic term. Before completing the PhD comprehensive examination, students have to submit to their examination committee two research/seminar papers that demonstrate their scholarly potential;
- Dissertation Prospectus: 10-15 pages, submitted in the semester following the comprehensive examination. After approval by the doctoral committee, students are admitted to PhD candidacy, after which the student meets annually with the dissertation committee;
- Dissertation Defense: The dissertation must be approved by the dissertation committee after a public oral defense; and
- Completion of a certificate program or work in a related area (at least 18 credits). Approved certificates include Cultural Studies, Film Studies, and Women Studies, and West European Studies, and other related areas can be defined by the student in consultation with the Director of Graduate Studies (for example, a recently developed area of concentration is Philosophy and Literature).

Master's

German, MA

Requirements for the Master's Degree

The Master of Arts normally takes two years of study. The 30 credits include nine graduate seminars, at least six taken within the department, and a 3 credit MA project (between 35 and 50 pages long). In addition, all entering students must enroll in GER 2110 - INTRODUCTION TO LITERARY AND CULTURAL THEORY .

In addition to the satisfactory completion of courses, students must demonstrate a high level of proficiency in writing both in German and English by submitting for departmental approval at least one paper written in German and one paper written in English by the time of the preliminary evaluation. They must also demonstrate reading proficiency in an additional language by the end of their last term of study.

Department of Spanish and Portuguese

The Department of Spanish and Portuguese offers a five-year Doctor of Philosophy (PhD) with an en route Master of Arts (MA) sequence. Unlike other Spanish departments, we concentrate on Latin American Literature and Culture, including Brazil. Within that broader context, we also offer an interdisciplinary and interdepartmental PhD in film studies, and field specializations in Peninsular, Brazilian, and cultural studies.

Candidates for both the MA/PhD can also earn certificates in Latin American Studies, Cultural Studies, Film Studies, Global Studies and Gender, Sexuality, and Women Studies.

Contact Information

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Fax: 412-624-8505
E-mail: Cwb7@pitt.edu
https://www.spanport.pitt.edu/graduate

For additional information regarding the department's graduate program, or responses to questions that are not answered elsewhere, please contact the University of Pittsburgh's Department of Hispanic Languages and Literatures' Graduate Administrator:
Jennifer Berkebile
JES379@pitt.edu
(412) 624-5227
1301A CL

Admissions

Applicants must submit an online application, application fee of $75, transcripts of all college-level work (along with notarized translations into English, if admitted), three letters of recommendation, a statement of academic goals, and a 15-30-page writing sample (in English, Spanish, or Portuguese; if submitting the sample in English, please also send us a short sample in Spanish).

Applicants whose native language is not English and who have not already completed a degree program in a U.S. college or university are required to submit either the TOEFL (administered by the Educational Testing Service) with a minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section. TOEFL scores submitted must not be more than two years old. The IELTS (administered by Cambridge University, Local Examinations Syndicate) with a minimum score of 6.5 in each of its four sections. Duolingo English Test: score of 120. Duolingo scores submitted must not be more than two years old.

Completed applications for admission in the fall term must be received no later than January 18.

Duration of the Program

It is expected that the MA/PhD program will take five years to complete. As of Fall 2005, incoming students, assuming that satisfactory academic progress is maintained, are entitled to five (5) years of support, whether or not they already have an MA degree when they enter our graduate program. However, students with an MA from another university can elect to receive only four (4) years of funding and will be entitled to transfer up to 24 credits upon successfully passing the MA Comprehensive/PhD Preliminary examinations during their fourth semester. The decision to do so must be submitted to the departmental graduate office in writing by the end of the first week of their second term in graduate program (normally first week of January).

Faculty

http://www.hispanic.pitt.edu/people/faculty

Joint Degree

Spanish and Portuguese, MA/PhD

Requirements for the PhD with En Route MA

The en route MA requires a minimum of 30 credits; 24 credits must be in substantive courses in the department, meeting major field and minor field requirements; the remaining 6 credits can consist of any combination of courses taken outside of the department (including transfer credits), a maximum of 1 Independent Reading and 1 Directed Study course.

Other requirements may include enrollment in teaching methodology and language learning to assist students new to the department, unless a waiver is obtained.

In addition to the minimum of 30 credits, during the fourth year of full-time study (or its equivalent):

- Students must complete a long paper in the department, which is graded and serves as one part of the MA Comprehensive/PhD Preliminary examination.
- Students must also sit for the two-day MA Comprehensive/PhD Preliminary examination

Including the MA-level work, a minimum of 72 credit hours must be attained for the PhD. Students who have received the en route MA and are working toward the PhD in the department must take a total of 48 credits of substantive courses in the department. The remaining 24 credits may consist of courses taken outside of the department, credits transferred from other institutions, directed study, or PhD comprehensive exam/overview. Up to a maximum of 12 credits of PhD dissertation research credits are permitted to count toward these 24 credits.

Students who enter the department with an MA in Spanish or a related field from another institution must complete 30 credits of substantive course work out of the 72 total credits required for the PhD. The remaining 42 credits can be distributed among credits transferred from the institution from which they earned their MA's (normally, up to 24 are allowed, in exchange for the fifth year of funding), courses taken in other departments at the University of Pittsburgh, directed study and PhD comprehensive exam/overview credits, and up to 12 credits of PhD dissertation research.

PhD Preliminary Exam: Students who enter the department with an MA in Spanish from another institution must pass the two-day PhD Preliminary examination in the fourth term of graduate study in the department, after which they can petition for the transfer of credits and continue on for the PhD.

Language Requirement: Candidates for the PhD degree must give evidence of their ability to read a third language (Portuguese, French, Italian, etc.) prior to presenting their dissertation proposal. The Department strongly encourages the learning of the Portuguese language.

PhD Comprehensive Exam/Dissertation Overview: After completing 60 credits of coursework and fulfilling the Portuguese requirement, students take the PhD Comprehensive exam made up of questions based on their proposal for doctoral research, which must also be defended before their proposed doctoral committee. Upon successful completion of this two-step exam process, the student is formally nominated to candidacy for the doctoral degree.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and is open to the University community. The dissertation must be presented in English unless prior permission is obtained for it to be presented in a language other than English.

Department of History

The Department of History, which offers the degree Doctor of Philosophy (PhD), is committed to training area specialists with a global perspective. Our students learn how to research, interpret and teach the histories and historiographies of particular places from comparative, cross-cultural, transnational and global perspectives. The graduate program provides training in historical research and teaching to students who wish to find careers in colleges, universities, and other settings where the skills of the historian can be used. To advance this purpose, the department encourages a climate of intellectual inquiry and active research that embraces graduate students and faculty members alike. The hallmark of the program is the high measure of independence and flexibility it allows students in shaping a curriculum that meets their needs, within the limits of faculty expertise and available resources.

Contact Information

Department Chair: Michel Gobat
Main Office: 3505 Wesley W. Posvar Hall
412-648-7454

Email: mgobat@pitt.edu

Director of Graduate Studies: Niklas Frykman (niklas.frykman@pitt.edu)

Main Office: 3511 Posvar Hall

Graduate Administrator: L.J. Woolcock-Srolovic (LIW151@pitt.edu)

www.history.pitt.edu

Admissions

Admission to the graduate program in history is highly competitive. Candidates must present a career statement, a sample of their written work on a historical topic, undergraduate and/or graduate transcripts and two letters of recommendation. TOEFL, IELTS, or Duolingo scores are required of all applicants whose primary language is not English. Students interested in the graduate program should contact the graduate administrator by e-mail: L.J. Woolcock-Srolovic (LIW151@pitt.edu), or apply online at https://gradcas.liaisoncas.org/apply/.

Degree Requirements

The minimal requirements for the degrees established by the Graduate Faculty of the University and by Dietrich School of Arts & Sciences A&S Graduate Studies, as described elsewhere in this bulletin, should be read in conjunction with the specific departmental requirements for these degrees in the following sections.

Doctoral

History, PhD

The graduate program in history is committed to training area specialists with a global perspective. Our students learn how to research, interpret and teach the histories and historiographies of particular places from comparative, cross-cultural, transnational and global perspectives. Close cooperation with the interdisciplinary programs in Latin American Studies, Russian and East European Studies, West European Studies, and Asian Studies, coordinated under the University Center for International Studies, strengthen the international orientation of the program, with graduate students from Europe, Asia, and Latin America joining American students pursuing PhD degrees.

Requirements for the PhD

Prerequisite for admission is a Master of Arts in History or equivalent preparation (plus approval, for those previously enrolled in the department). Students entering the program with an MA from another institution must pass a preliminary examination at the end of the first year in the program. They must complete 9 credits in order to sit for the one-hour oral examination.

The coursework and comprehensive exam portion of the PhD program should take no more than one year beyond the MA. Required doctoral coursework includes successful completion post-MA of two graduate courses in History and the completion of the department pedagogy program.

Breadth Requirement: Ph.D. students entering the program with a B.A. must fulfill the Breadth Requirement by the end of their fifth year. This requirement is intended to help students think more broadly about their dissertation and intellectual trajectory as well as future career paths. It may be fulfilled as follows: a) a second foreign language; b) two skill-based courses agreed-upon with their advisor including but not limited to statistics, digital humanities, oral history/ethnography, and computer programing; c) two courses agreed-upon with their advisor that will permit students to enhance their knowledge in an interdisciplinary area including Gender, Sexuality & Women's Studies, Cultural Studies, or an area of the student's design; or d) in consultation with the DGS and their advisor, 6 credit hours or the equivalent accrued from internships and/or courses designed to enhance students' ability to utilize their professional skills in diverse career environments.

Comprehensive Exam:

For students entering with a BA, the comprehensive exam needs to take place by February 1 of their third year. At the end of their first year, students must meet with their advisor and the DGS to: a) constitute a comps committee consisting of three members, all of whom need to have Graduate Faculty status; and b) identify any coursework completed in their first year that could be included in the comps portfolio. At the end of their second year, students and their full comps committee will agree upon the contents of the comps portfolio that will form the basis of the oral exam.

Students will work with faculty members who are members of the Graduate Faculty to develop expertise in: a regional field (Asia, Europe, Latin America, or United States); and a transregional or global field defined by the student in consultation with their advisor(s). Students may fulfill this requirement in one of the following ways: a) a field in world or global history; b) a field in a transregional history such as Atlantic history or Eurasian history; or c) a thematic field with transregional scope such as gender or empire.

The portfolio will consist of: a) two to three historiographic essays in the regional field as well as a bibliography of 40-50 books; b) two to three historiographic essays in the transregional or global field as well as a bibliography of 30-40 books; and c) an annotated teachable undergraduate course syllabus that demonstrates students' ability to translate their knowledge of the historiography and recent research trends in a given field into the composition of an undergraduate course.

Students complete the comprehensive exam through an oral examination, which will take place no later than February 1 of their third year. The oral examination will be a maximum of two hours in duration and should focus on the portfolio. Students should be able to discuss the essays, the bibliographies, and the course syllabus.

Dissertation overview: After having selected a suitable dissertation topic in consultation with their advisor, students will present a written overview to their Ph.D. committee describing the purpose, scope, and method of the proposed study and the sources upon which it will be based. A PhD committee is composed of at least four members, all of whom must be members of the Graduate Faculty. There must be three graduate faculty members from the candidate's department and at least one graduate faculty member external to the candidate's department. With the acceptance of this prospectus at the overview examination and the approval of the assistant dean of graduate studies, the student is formally admitted to candidacy for the PhD.

Dissertation defense: The doctoral thesis, directed and evaluated by the student's Ph.D. committee, is expected to demonstrate the student's capacity to carry out independent, original research. Only if the dissertation is judged to demonstrate such competence, after formal defense in a final oral examination, does the department recommend the awarding of a degree.

For further details regarding the graduate program in history and the specific exam requirements, please see the latest version of the Handbook of the Graduate Program in History, which can be downloaded from the History Department Website.

Master's

History, MA

The graduate program in history is committed to training area specialists with a global perspective. Our students learn how to research, interpret, and teach the histories and historiographies of particular places from comparative, cross-cultural, transnational, and global perspectives. Close cooperation with the interdisciplinary programs in Latin American Studies, Russian and East European Studies, West European Studies, and Asian Studies, coordinated under the University Center for International Studies, strengthen the international orientation of the program, with graduate students from Europe, Asia, and Latin America joining American students pursuing PhD degrees.

Requirements for the Master's Degree

While the History Department does not offer a terminal Master's degree, for students admitted with funding, graduate students get the Master's degree while working towards their PhD. The requirements for being awarded the Master of Arts in History should be met within two years. 30 credits are required for the degree. Students must take six credits in seminars or directed studies in transregional or global fields (the six credits may be in different transregional/global fields); and six credits in seminars or directed studies in a regional field (Asia, Europe, Latin America, or the United States). In addition, students must take three credits of graduate-level coursework outside of the discipline of history.

First Research Tool: The Master's degree requires the completion of the first research tool, which consists of reading proficiency in one foreign language. Students select, in consultation with their advisor, the language most useful to their specialization. Students are urged to complete language preparation before entering graduate school, not only to lighten their workload, but also because some seminars require the use of a second language.

Research paper: To complete their MA degree, students write a research paper of approximately 10,000 words, which is kept as part of their permanent record and is considered equivalent to a Master's thesis. This paper must be based on original research and should be potentially publishable.

MA committee: In consultation with their advisor, students create a three-person committee for their MA examination, usually chaired by their advisor. At least two of the committee members must be members of the Graduate Faculty. Before students can sit for their MA exam, the chair of the MA committee must approve the final version of the research paper.

MA examination and admission to the Ph. program: The MA examination will be a one-hour oral examination. Questions will be based on the MA research paper. At the conclusion of the examination, the committee will inform the student of its decision as to whether or not it recommends that the student be awarded the MA degree. If the student has expressed a desire to enter the PhD program, the committee will also make a determination as to whether or not it recommends admission into the PhD program. At the earliest opportunity, the MA committee's evaluation of the examination must be reported to the department, which must approve admission into the PhD program.

Department of History and Philosophy of Science

The graduate program in the history and philosophy of science offers MA and PhD degrees through a combination of coursework and dissertation research. The department also offers an area of concentration in classics, philosophy and ancient science. The department supports scholarship in the history and philosophy of general science and in history and philosophy of particular sciences. It has special strengths in the history and philosophy of physical, biological, medical, cognitive and neurosciences. See http://www.hps.pitt.edu/graduate/areas.php.

Contact Information

Department Chair: David Wallace
Main Office: 1101 Cathedral of Learning
412-624-5896
Fax: 412-624-6825
E-mail: David.wallace@pitt.edu
www.hps.pitt.edu

Admissions

Applicants for admission to the graduate program in history and philosophy of science will be expected to have a suitable undergraduate degree and to have some knowledge of the natural or social sciences. Applications are online. The deadline for completed applications is December 5. While the department awards both PhD and MA degrees, students admitted to the MA track are generally pursuing another graduate degree at the university.

Degree Requirements

The graduate program consists of a series of seminars (approximately four to six are offered each term). These range from general surveys of the field and methods of research to specialized research seminars on selected topics in history and philosophy of science. These courses are divided into three areas:

- Area 1: Core sequence: a three-term introduction at the graduate level to history and philosophy of science
- Area 2: History of science
- Area 3: Philosophy of science

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

History and Philosophy of Science, PhD

The department offers a comprehensive program of study leading to the PhD. It combines core and elective seminars with more advanced, supervised study and encourages continued study of a particular science outside the department. All periods of the history of science are supported, including ancient, and 16th century to present science; as is work in general philosophy of science (confirmation, explanation, realism, scientific change, etc.) and in the philosophy of particular sciences (biology, physics, psychology, cognitive science, medical sciences, etc.).

PhD Degree Requirements:

A minimum of 72 credits with an MA in history and philosophy of science or completion of MA requirements.

1. Further distribution of studies requirements: At least nine hours at the 2000 level, or a graduate degree from the University of Pittsburgh in one of the following:
    - Philosophy, exclusive of philosophy of science and logic
    - History, exclusive of history of science
    - A field of natural sciences, social science, mathematics, or computer science
      (courses taken toward the MA degree may be counted toward the requirement for the PhD)
2. Formal Methods Requirement: (a) Proficiency in basic symbolic logic (equivalent to PHIL 2499), and (b) further coursework, at either the upper-level undergraduate or graduate level, involving formal methods in an area approved by the DGS.
3. Satisfactory fulfillment of the comprehensive requirements, which are:
    - Core Seminar Examinations: Students must pass the end-of-term examinations in each of the Core Seminars.
    - Research papers: Students must submit a research paper in the history of science and a research paper in the philosophy of science. Both must pass at the PhD level.
4. Submission of a significant and acceptable dissertation on a topic in history and philosophy of science. Both the dissertation prospectus and dissertation must be presented and defended, the dissertation defense is open to the publi
5. All students must complete the hands-on teaching practicum.

These requirements are specific departmental requirements, in addition to the general requirements for the MA and PhD degrees laid down by the Dietrich School of Arts and Sciences.

Master's

History and Philosophy of Science, MA

MA Degree Requirements

A. Distribution-of-Studies Requirement:

1. Nine hours from Area 1 (Core Seminars).

2. Nine hours from Area 2 (History of Science).

3. Nine hours from Area 3 (Philosophy of Science).

B. Core Examination Requirement: Students must pass the end-of-term examination in each of the Core Seminars.

C. Language Requirement: Good reading knowledge of a second language besides English.

D. Research Paper Requirement: Students must submit a research paper in the history of science and a research paper in the philosophy of science. Evaluations of papers will be limited to a master's pass-fail. A master's pass on both papers is required for the M.A. degree.

D. Course Credit Requirement: A minimum of 30 credit hours at the 2000 level.

Department of History of Art and Architecture

The University of Pittsburgh's PhD program in History of Art and Architecture (HAA) provides close mentoring from internationally renowned scholars dedicated to maintaining and building on the program's tradition of excellence and inclusivity. Students in our graduate program enjoy five years of fully funded support regardless of whether they enter with a BA or an MA degree. Because ours is solely a PhD program, we do not admit applicants seeking a terminal MA degree, nor do we offer advanced degrees in Architectural Practice or Design. Students entering without an MA in the discipline from another approved institution are expected to complete an MA degree in the second year of our program as a stepping-stone in their progress toward the PhD.

We strongly encourage applicants to explore our web site (www.haa.pitt.edu) for more information on faculty members, graduate program requirements, and the application process. Our program emphasizes learning and innovative research through our Constellations framework, which fosters faculty-student collaboration in the classroom and beyond on themes that inform the discipline's most adventurous and generative work. While our students acquire specialized knowledge of a particular art-historical subfield, they also produce conceptually ambitious and methodologically innovative research for their PhD. We urge all prospective students to contact a potential advisor (or advisors) from among our graduate faculty before applying to discuss your interests and find out more specific information about how they can be accommodated.

Contact Information

Ian A. Bennett
Graduate Administrator
E-mail: iab5@pitt.edu

Admissions

Applicants for admission must submit: an online application, copies of transcripts of all college-level work, three letters of recommendation, a personal statement outlining the applicant's intellectual and professional goals, and a sample of academic work that demonstrates the applicant's scholarly ability.

Applicants are expected to have successfully completed four courses of art or architectural history at the undergraduate level. However, exceptions can be made for other courses and competencies that provide students with a grounding in the visual and/or spatial arts.

Competency in languages other than English is necessary for advanced degree work in our program. Admitted students are expected to demonstrate competency in a research language other than English before or shortly after beginning coursework; the language chosen should be appropriate for their area of study. Native and/or heritage speakers of a language other than English fulfill this requirement if their competency sufficiently facilitates research in their chosen field. All other applicants are strongly encouraged to have at least two years/four semesters of college-level instruction in the research language, with a grade of B+ or better, or equivalent knowledge prior to admission. Certification in a second research language relevant to the student's area of study and professional goals is expected for award of the PhD. Students in coursework have opportunities to acquire additional language skills both on campus and beyond. Our program embraces global perspectives on art and architecture, and we welcome applicants who will contribute diverse language skills that are essential to this mission.

Applicants from outside the U.S. must meet University of Pittsburgh requirements for English language proficiency scores. Please consult the International Students page for Graduate Study in the Dietrich School of Arts and Sciences regarding minimum requirements on TOEFL, IELTS, and Duolingo English Test scores for admission.

Applications must be received by December 15. Applicants are notified of their status in spring, and admitted students enter the program the following fall.

Faculty

https://www.haa.pitt.edu/people/faculty

Doctoral

Film and Media Studies - History of Art and Architecture Concentration, PhD

Degree Requirements

The University of Pittsburgh's PhD program in History of Art and Architecture (HAA) provides close mentoring from internationally renowned scholars dedicated to maintaining and building on the program's tradition of excellence and inclusivity. Students in our graduate program enjoy five years of fully funded support regardless of whether they enter with a BA or an MA degree. Because ours is solely a PhD program, we do not admit applicants seeking a terminal MA degree, nor do we offer advanced degrees in Architectural Practice or Design. Students entering without an MA in history of art and architecture or film and media studies from another approved institution are expected to complete an MA degree in the second year of our program as a stepping-stone in their progress toward the PhD. Students who have been admitted into the Film and Media Studies PhD with a concentration in History of Art and Architecture must satisfy degree requirements for both programs (for more information please visit the Film and Media Studies website).

For those entering without an MA, all graduate coursework completed in our program before conferral of the MA degree counts toward our PhD requirements. Doctoral students must complete 72 credit hours, of which 30 must be completed in the first two years for the MA. Students entering with an approved MA from another institution may transfer 24 credits; they must also complete nine graduate-level classroom (i.e. seminar or lecture) courses during their first two years in our program. Graduate students without an MA must complete three additional graduate-level classroom courses (for a total of twelve). After required classroom courses have been completed, the remaining required credits for the PhD may be fulfilled through additional coursework or independent studies directed toward comprehensive exam and prospectus preparation, and dissertation research. The final requirement for the degree is the successful defense of the dissertation.

Course work

The PhD requires a total of 72 credits.

12 graduate-level classroom courses (for students without an MA)/9 graduate-level classroom courses (for students with an approved MA) are part of this requirement. Students typically complete this requirement in the first two years. The normal course load is 3 courses per semester (9 credits). The courses must include:

- HAA 2005 - METHODS RESEARCH AND SCHOLARSHIP and HAA 2007 - HISTORIOGRAPHY (Methods and Historiography are alternated every other fall semester and must be taken in the student's first and second year.)
- ENGFLM 2451 - FILM HISTORY/THEORY 1 and ENGFLM 2452 - FILM HISTORY/THEORY 2 (to be taken in any order).
- FILMG 2905 - PROSEMINAR IN FILM AND MEDIA STUDIES .
- Four or five HAA graduate seminars (depending on MA status)
- Three or five elective courses (depending on MA status), in HAA or in other departments

The remaining credits may be amassed through various independent study options and additional courses if necessary.

In line with the department's research Constellations, students are expected to take courses on many different historical and geographical topics, while at the same time acquiring in-depth knowledge and expertise in a specific subfield. In consultation with the student's individual advisor(s) and Director of Graduate Studies, students should select their courses with these two objectives in mind.

Languages

Competency in languages other than English is necessary for advanced degree work in our program. Admitted students are expected to demonstrate competency in a research language other than English before or shortly after beginning coursework; the language chosen should be appropriate for their area of study. Native and/or heritage speakers of a language other than English fulfill this requirement if their competency sufficiently facilitates research in their chosen field. All other applicants are strongly encouraged to have at least two years/four semesters of college-level instruction in the research language, with a grade of B+ or better, or equivalent knowledge prior to admission. Certification in a second research language relevant to the student's area of study and professional goals is expected for award of the PhD.

Certification in research languages may be achieved in the following ways:

- through passage of a departmentally administered exam.
- completion through the intermediate level (typically the third semester) of a language, taken at the University of Pittsburgh during the period of the student's graduate study, with a grade of B+ or better in the final semester.
- completion of two graduate level reading courses in a research language or the second level of a two-part tiered sequence of reading courses (e.g., German for Reading 2), taken at the University of Pittsburgh, with a grade of B+ or better in the final semester.
- completion of an accredited language immersion program, in the United States or abroad.
- certification of language qualification attained at another accredited graduate degree program.

Graduate students will establish a schedule for completion and certification of the language requirement in consultation with their academic advisors. All students are strongly encouraged to be certified in both languages as early in their time in the program as possible. Pre-MA students must be certified in at least one of the two languages required for the PhD by the fourth semester review if they wish to continue in the PhD program. No student will become ABD without completing language requirements.

The MA Paper and Degree

In the case of students who did not earn an approved MA degree in history of art and architecture or film and media studies at another institution prior to entering our program, the MA is typically granted at the end of the second year of study as a required step toward the PhD. The MA degree requires a total of 30 graduate credits including:

- HAA 2005 (Methods).
- HAA 2007 (Historiography).
- a minimum of 3 additional HAA graduate seminars.
- One graduate-level cognate course outside HAA.
- HAA 2000 Research and Thesis MA Degree (up to 6 credits).
- at least one research language certified.
- an MA paper passed by majority vote of the graduate faculty.

The MA paper is a 25-to 45-page paper with an original argument based on original research. The paper functions as a demonstration of the student's ability to carry out research and writing of PhD caliber. Ideally, it will be based on a seminar paper written in the first year, which is then reworked and polished over the following summer and fall. In some cases, with the approval of a faculty advisor, the student may embark on a new paper not already written in a seminar.

Fourth Semester Review

In their fourth semester, all students (except for those who entered with an MA) undergo a review for continuation in the PhD program. Students submit a dossier including:

- their completed MA paper, including a one-page abstract.
- all faculty evaluations of the student's course work to date.
- a one-page form that summarizes their proposed dissertation field and lists the course requirements they have met and relevant research languages they have passed. This document must be approved and signed by the student's advisor and certified by the Director of Graduate Studies.

The graduate faculty then reviews the dossier to make sure the student's work demonstrates the ability to complete a dissertation successfully. More specifically, the faculty looks for evidence of ability to carry out original research in the student's field, to master secondary literature, to frame an original argument, and to write lucidly.

If the graduate faculty makes a positive determination, the MA is granted, and the student is officially approved to continue in the PhD program. All graduate coursework done to this date counts toward the PhD degree. A dissertation committee is named, consisting of the student's advisor and two other faculty members drawn from HAA.

If the faculty determines that the student's work does not merit continuation in the PhD program, the student may be granted a terminal MA degree providing they have met the MA requirements and the graduate faculty by majority vote deems the MA paper creditable.

Preliminary Exam

In the first semester (for students entering with an approved MA) or fifth semester (for students entering without an approved MA), the first of the student's annual PhD committee meetings is held. The student presents a three-page description of the dissertation topic, and the student and committee together decide on comprehensive exam areas and procedures. Once the student's committee reviews and approves the dissertation topic and exam areas, the "prelim" is passed.

Comprehensive Exams

Doctoral students normally take their comprehensive exams in the third or fourth year (or second or third year if they are entering with an approved MA), after they have completed their coursework requirements. While a committee member from outside the department is not required at this stage, it is recommended to have an outside member participate both in the formulation of the exam contents and in the exam evaluation. The comprehensive exams have two broad goals. The first goal is to test whether the student has sufficient knowledge of their subfield(s) of specialization to carry out the dissertation. The student should be able to articulate the state of research in their subfield(s) and conversant with current trends in scholarship. The second goal is to test whether the student has sufficient knowledge to teach one or more broadly defined areas.

Upon passing the comprehensive exams, the student prepares a dissertation prospectus that must be approved by a dissertation committee consisting of four members, including one faculty member from outside HAA.

Teaching and Mentoring Portfolio

Graduate students must produce portfolios that demonstrate their proficiency as teachers and mentors of undergraduate students to advance to candidacy. Students will develop the components of the portfolio in the context of HAA 2970 - TEACHING OF ART HISTORY. Thereafter, they should include the teaching portfolio with the materials they send to their PhD committee for their annual meetings. PhD committees give further feedback to the student as appropriate, especially as the student's thinking about pedagogy evolves and as they prepare for the job market.

Dissertation

The dissertation is an in-depth research project designed to make an original scholarly contribution to the student's subfield. Our department accepts modifications to the traditional ca. 200-page manuscript format. For example, students in our program have graduated with dissertations that include, in addition to a shorter written component, digital humanities and/or curatorially related dimensions. Ideally, students begin to focus their dissertation topic early in their graduate career, within the first two years. The MA paper can serve as part of the final dissertation. As soon as possible, students should design their curriculum to enrich and advance their dissertation project.

Once the student completes the dissertation, they must pass a defense, normally a two-hour conversation with the committee, including the external faculty member.

Time to Degree

The PhD degree is designed to take five to seven years to complete, depending on the student's subfield. Actual time to degree varies depending on many factors, including the language preparation and/or specialized skills needed to conduct dissertation research.

For more details on degree requirements, the student-advisor relationship, and other related matters, please see the HAA's Graduate Program Handbook (https://www.haa.pitt.edu/graduate/handbook-resources).

History of Art and Architecture, PhD

Degree Requirements

The University of Pittsburgh's PhD program in History of Art and Architecture (HAA) provides close mentoring from internationally renowned scholars dedicated to maintaining and building on the program's tradition of excellence and inclusivity. Students in our graduate program enjoy five years of fully funded support regardless of whether they enter with a BA or an MA degree. Because ours is solely a PhD program, we do not admit applicants seeking a terminal MA degree, nor do we offer advanced degrees in Architectural Practice or Design. Students entering without an MA in the discipline from another approved institution are expected to complete an MA degree in the second year of our program as a stepping-stone in their progress toward the PhD.

For those entering without an MA, all graduate coursework completed in our program before conferral of the MA degree counts toward our PhD requirements. Doctoral students must complete 72 credit hours, of which 30 must be completed in the first two years for the MA. Students entering with an approved MA from another institution may transfer 24 credits; they must also complete nine graduate-level classroom (i.e. seminar or lecture) courses during their first two years in our program. Graduate students without an MA must complete three additional graduate-level classroom courses (for a total of twelve). After required classroom courses have been completed, the remaining required credits for the PhD may be fulfilled through additional coursework or independent studies directed toward comprehensive exam and prospectus preparation, and dissertation research. The final requirement for the degree is the successful defense of the dissertation.

Course work

The PhD requires a total of 72 credits.

12 graduate-level classroom courses (for students without an MA)/9 graduate-level classroom courses (for students with an approved MA) are part of this requirement. Students typically complete this requirement in the first two years. The normal course load is 3 courses per semester (9 credits). The courses must include:

- HAA 2005 - METHODS RESEARCH AND SCHOLARSHIP and HAA 2007 - HISTORIOGRAPHY (Methods and Historiography are alternated every other fall semester and must be taken in the student's first and second year.)
- Four or five HAA graduate seminars (depending on MA status)
- Three or five elective courses (depending on MA status), in HAA or in other departments

The remaining credits may be amassed through various independent study options and additional courses if necessary.

In line with the department's research Constellations, students are expected to take courses on many different historical and geographical topics, while at the same time acquiring in-depth knowledge and expertise in a specific subfield. In consultation with the student's individual advisor(s) and Director of Graduate Studies, students should select their courses with these two objectives in mind.

Language Requirement

Competency in languages other than English is necessary for advanced degree work in our program. Admitted students are expected to demonstrate competency in a research language other than English before or shortly after beginning coursework; the language chosen should be appropriate for their area of study. Native and/or heritage speakers of a language other than English fulfill this requirement if their competency sufficiently facilitates research in their chosen field. All other applicants are strongly encouraged to have at least two years/four semesters of college-level instruction in the research language, with a grade of B+ or better, or equivalent knowledge prior to admission. Certification in a second research language relevant to the student's area of study and professional goals is expected for award of the PhD.

Certification in research languages may be achieved in the following ways:

- through passage of a departmentally administered exam.
- completion through the intermediate level (typically the third semester) of a language, taken at the University of Pittsburgh during the period of the student's graduate study, with a grade of B+ or better in the final semester.
- completion of two graduate level reading courses in a research language or the second level of a two-part tiered sequence of reading courses (e.g., German for Reading 2), taken at the University of Pittsburgh, with a grade of B+ or better in the final semester.
- completion of an accredited language immersion program, in the United States or abroad.
- certification of language qualification attained at another accredited graduate degree program.

Graduate students will establish a schedule for completion and certification of the language requirement in consultation with their academic advisors. All students are strongly encouraged to be certified in both languages as early in their time in the program as possible. Pre-MA students must be certified in at least one of the two languages required for the PhD by the fourth semester review if they wish to continue in the PhD program. No student will become ABD without completing language requirements.

The MA Paper and Degree

In the case of students who did not earn an MA degree in history of art and architecture at another institution prior to entering our program, the MA is typically granted at the end of the second year of study as a required step toward the PhD. The MA degree requires a total of 30 graduate-level credits including:

- HAA 2005 (Methods).
- HAA 2007 (Historiography).
- a minimum of 3 additional HAA graduate seminars.
- One graduate-level cognate course outside HAA.
- HAA 2000 Research and Thesis MA Degree (up to 6 credits).
- at least one research language certified.
- an MA paper passed by majority vote of the graduate faculty.

The MA paper is a 25-to 45-page paper with an original argument based on original research. The paper functions as a demonstration of the student's ability to carry out research and writing of PhD caliber. Ideally, it will be based on a seminar paper written in the first year, which is then reworked and polished over the following summer and fall. In some cases, with the approval of a faculty advisor, the student may embark on a new paper not already written in a seminar.

Fourth Semester Review

In their fourth semester, all students (except for those who entered with an MA) undergo a review for continuation in the PhD program. Students submit a dossier including:

- their completed MA paper, including a one-page abstract.
- all faculty evaluations of the student's course work to date.
- a one-page form that summarizes their proposed dissertation field and lists the course requirements they have met and relevant research languages they have passed. This document must be approved and signed by the student's advisor and certified by the Director of Graduate Studies.

The graduate faculty then reviews the dossier to make sure the student's work demonstrates the ability to complete a dissertation successfully. More specifically, the faculty looks for evidence of ability to carry out original research in the student's field, to master secondary literature, to frame an original argument, and to write lucidly.

If the graduate faculty makes a positive determination, the MA is granted, and the student is officially approved to continue in the PhD program. All graduate coursework done to this date counts toward the PhD degree. A dissertation committee is named, consisting of the student's advisor and two other faculty members drawn from HAA.

If the faculty determines that the student's work does not merit continuation in the PhD program, the student may be granted a terminal MA degree providing they have met the MA requirements and the graduate faculty by majority vote deems the MA paper creditable.

Preliminary Exam

In the first semester (for students entering with an approved MA) or fifth semester (for students entering without an approved MA), the first of the student's annual PhD committee meetings is held. The student presents a three-page description of the dissertation topic, and the student and committee together decide on comprehensive exam areas and procedures. Once the student's committee reviews and approves the dissertation topic and exam areas, the "prelim" is passed.

Comprehensive Exams

Doctoral students normally take their comprehensive exams in the third or fourth year (or second or third year if they are entering with an approved MA), after they have completed their coursework requirements. While a committee member from outside the department is not required at this stage, it is recommended to have an outside member participate both in the formulation of the exam contents and in the exam evaluation. The comprehensive exams have two broad goals. The first goal is to test whether the student has sufficient knowledge of their subfield(s) of specialization to carry out the dissertation. The student should be able to articulate the state of research in their subfield(s) and conversant with current trends in scholarship. The second goal is to test whether the student has sufficient knowledge to teach one or more broadly defined areas.

Upon passing the comprehensive exams, the student prepares a dissertation prospectus that must be approved by a dissertation committee consisting of four members, including one faculty member from outside HAA.

Teaching Practicum and Mentoring Portfolio

Graduate students must produce portfolios that demonstrate their proficiency as teachers and mentors of undergraduate students to advance to candidacy. Students will develop the components of the portfolio in the context of HAA 2970 - TEACHING OF ART HISTORY. Thereafter, they should include the teaching portfolio with the materials they send to their PhD committee for their annual meetings. PhD committees give further feedback to the student as appropriate, especially as the student's thinking about pedagogy evolves and as they prepare for the job market.

Dissertation

The dissertation is an in-depth research project designed to make an original scholarly contribution to the student's subfield. Our department accepts modifications to the traditional ca. 200-page manuscript format. For example, students in our program have graduated with dissertations that include, in addition to a shorter written component, digital humanities and/or curatorially related dimensions. Ideally, students begin to focus their dissertation topic early in their graduate career, within the first two years. The MA paper can serve as part of the final dissertation. As soon as possible, students should design their curriculum to enrich and advance their dissertation project.

Once the student completes the dissertation, they must pass a defense, normally a two-hour conversation with the committee, including the external faculty member.

Time to degree

The PhD degree is designed to take five to seven years to complete, depending on the student's subfield. Actual time to degree varies depending on many factors, including the language preparation and/or specialized skills needed to conduct dissertation research.

For more details on degree requirements, the student-advisor relationship, and other related matters, please see HAA's Graduate Program Handbook (https://www.haa.pitt.edu/graduate/handbook-resources).

Master's

History of Art and Architecture, MA (for admitted PhD students only)

General requirements

The University of Pittsburgh's PhD program in History of Art and Architecture (HAA) provides close mentoring from internationally renowned scholars dedicated to maintaining and building on the program's tradition of excellence and inclusivity. Students in our graduate program enjoy five years of fully funded support regardless of whether they enter with a BA or an MA degree. Because ours is solely a PhD program, we do not admit applicants seeking a terminal MA degree, nor do we offer advanced degrees in Architectural Practice or Design. Students entering without an MA in the discipline from another approved institution are expected to complete an MA degree in the second year of our program as a stepping-stone in their progress toward the PhD.

Six credits (two courses) may be transferred from another approved graduate program.

Requirements

In the case of students who did not earn an MA degree in history of art and architecture at another institution prior to entering our program, the MA is typically granted at the end of the second year of study as a required step toward the PhD. The MA degree requires a total of 30 graduate-level credits including:

- HAA 2005 (Methods).
- HAA 2007 (Historiography).
- a minimum of 3 additional HAA graduate seminars.
- One graduate-level cognate course outside HAA.
- HAA 2000 Research and Thesis MA Degree (up to 6 credits).
- at least one research language certified.
- an MA paper passed by majority vote of the graduate faculty.

Language Requirement

Competency in languages other than English is necessary for advanced degree work in our program. Admitted students are expected to demonstrate competency in a research language other than English before or shortly after beginning coursework; the language chosen should be appropriate for their area of study. Native and/or heritage speakers of a language other than English fulfill this requirement if their competency sufficiently facilitates research in their chosen field. All other applicants are strongly encouraged to have at least two years/four semesters of college-level instruction in the research language, with a grade of B+ or better, or equivalent knowledge prior to admission. Certification in a second research language relevant to the student's area of study and professional goals is expected for award of the PhD.

The MA Paper

The MA paper is a 25-to 45-page paper with an original argument based on original research. The paper functions as a demonstration of the student's ability to carry out research and writing of PhD caliber. Ideally, it will be based on a seminar paper written in the first year, which is then reworked and polished over the following summer and fall. In some cases, with the approval of a faculty advisor, the student may embark on a new paper not already written in a seminar.

It must be submitted by a deadline in January of the student's fourth semester.

Interdisciplinary Programs

Doctoral

Computational Modeling & Simulation, PhD

Requirements

Course Requirements

http://cmsp.pitt.edu/course-requirements

All students enrolled in the program will be required to satisfy the following requirements:

1. Two courses (3 credits each) in Numerical Methods
2. Two courses (3 credits each) in Scientific Computing/Programming
3. Two courses (3 credits each) from a participating department outside Computer Science, Math, and Statistics, in the Dietrich School of Arts and Sciences or the Swanson School of Engineering
4. 12 credits in a concentration area in a participating department in the School of Arts and Sciences or in the Swanson School of Engineering
5. Enrollment in the Computational Modeling and Simulation Seminar series for all fall and spring semesters in residence

A minimum of 30 credits from categories I-IV are required, there can be overlap in courses satisfying requirement IV and those satisfying I, II, and III.

Preliminary Exam

A student will satisfy the preliminary exam requirements by passing (grade B or higher) the six courses in areas I-III described above. In the case that a student received one grade below B in one of the three main areas, he/she can counter that with a grade of B or above in an additional approved course in that area. If a student receives two grades below B, he/she will no longer be able to continue in the he program. Students who do not meet these requirements but who have an overall grade average of B or better, have the option of doing a literature-based Master's thesis.

Proposal Presentation and Comprehensive Exam

The proposal presentation and comprehensive exam will be taken by the end of the student's seventh semester at Pitt and will focus on the progress that the student has made to date on his/her research. It will consist of a written report/proposal prepared by the student on his/her research, followed by an oral comprehensive examination. The exam will be administered by the doctoral committee of four graduate faculty members, three of whom are affiliated with the CMS program and at least one of whom will be from outside the student's research department. Beyond the four graduate faculty members, the student may add external committee members from outside the graduate faculty.

If a student does not pass the proposal presentation and comprehensive exam, he/she will have the option of continuing in the program for another semester and submitting a Master's thesis based on independent research. The student's committee will decide on whether the thesis warrants awarding the MS degree.

Dissertation/Thesis Defense

Every graduate student has to write and defend a thesis or dissertation before being awarded a MS or PhD degree. All theses and dissertations are submitted online. Visit the EDT Web site for more information on the process.

Interdisciplinary Studies - Medical Informatics Concentration, PhD

Requirements for the PhD

Students pursuing the Doctor of Philosophy degree in ISP must complete a program of study approved by an advisory committee of faculty. A total of 72 graduate credits are required for this degree. This program must include:

(a) The required courses:

- ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS
- ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS

- ISSP 2160 - FOUNDTNS OF ARTIFICIAL INTELLGNC or
- CS 2710 - FOUNDTNS OF ARTIFICIAL INTELLGNC

- INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM

(b) Two courses from the following:

- ISSP 2170 - MACHINE LEARNING or
- CS 2750 - MACHINE LEARNING

- ISSP 2230 - INTRO NATURAL LANGUAGE PROCSSNG or
- CS 2731 - INTRO NATURAL LANGUAGE PROCSSNG

(c) A theory course from both A and B

A

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

B

- CS 2110 - THEORY OF COMPUTATION
- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS

(d) an additional course from either A or B

(e) four advanced courses numbered 2000 or higher

(must be approved by advisor)

(f) GPA of 3.0 or better

(g) Successful defense of a proposal and doctoral dissertation

Concentration Requirements

The curriculum assumes that a student already has training in a health care field. If this is not so the faculty will select a set of courses that teaches the student basic medical knowledge, and the student may take these courses as electives.

Master's

Computational Modeling & Simulation, MS

Requirements

Course Requirements

http://cmsp.pitt.edu/course-requirements

All students enrolled in the program will be required to satisfy the following requirements:

1. Two courses (3 credits each) in Numerical Methods
2. Two courses (3 credits each) in Scientific Computing/Programming
3. Two courses (3 credits each) from a participating department outside Computer Science, Math, and Statistics, in the Dietrich School of Arts and Sciences or the Swanson School of Engineering
4. 12 credits in a concentration area in a participating department in the School of Arts and Sciences or in the Swanson School of Engineering
5. Enrollment in the Computational Modeling and Simulation Seminar series for all fall and spring semesters in residence

A minimum of 30 credits from categories I-IV are required, there can be overlap in courses satisfying requirement IV and those satisfying I, II, and III.

Preliminary Exam

A student will satisfy the preliminary exam requirements by passing (grade B or higher) the six courses in areas I-III described above. In the case that a student received one grade below B in one of the three main areas, he/she can counter that with a grade of B or above in an additional approved course in that area. If a student receives two grades below B, he/she will no longer be able to continue in the he program. Students who do not meet these requirements but who have an overall grade average of B or better, have the option of doing a literature-based Master's thesis.

Proposal Presentation and Comprehensive Exam

The proposal presentation and comprehensive exam will be taken by the end of the student's seventh semester at Pitt and will focus on the progress that the student has made to date on his/her research. It will consist of a written report/proposal prepared by the student on his/her research, followed by an oral comprehensive examination. The exam will be administered by the doctoral committee of four graduate faculty members, three of whom are affiliated with the CMS program and at least one of whom will be from outside the student's research department. Beyond the four graduate faculty members, the student may add external committee members from outside the graduate faculty.

If a student does not pass the proposal presentation and comprehensive exam, he/she will have the option of continuing in the program for another semester and submitting a Master's thesis based on independent research. The student's committee will decide on whether the thesis warrants awarding the MS degree.

Dissertation/Thesis Defense

Every graduate student has to write and defend a thesis or dissertation before being awarded a MS or PhD degree. All theses and dissertations are submitted online. Visit the EDT Web site for more information on the process.

Interdisciplinary Studies - Medical Informatics Concentration, MS

Requirements for the Master's Degree

Overlapping with ISP requirements of the Dietrich School of Arts and Sciences (A&S). Students should speak with their advisors to make sure they complete both sets of requirements.

Students pursuing the Master of Science degree in ISP must complete a minimum of 24 credits including:

(a) First year students are encouraged, but not required, to take the following:

- ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS (fall)
- ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS (spring)
- INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM

(b) The required courses:

- ISSP 2160 - FOUNDTNS OF ARTIFICIAL INTELLGNC or

Two courses from the following:

- ISSP 2170 - MACHINE LEARNING or
- CS 2750 - MACHINE LEARNING

- ISSP 2230 - INTRO NATURAL LANGUAGE PROCSSNG or
- CS 2731 - INTRO NATURAL LANGUAGE PROCSSNG

(c) A theory course from both A and B

A

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

B

- CS 2110 - THEORY OF COMPUTATION
- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS

(d) Four advanced courses numbered 2000 or higher

(must be approved by advisor)

(e) GPA of 3.0 or better

(f) MS-Level Project

Approved by the faculty after an oral prospectus presentation, involving significant research, design, or development work and a written report.

Concentration Requirements

http://www.isp.pitt.edu/about/degrees

The curriculum assumes that a student already has training in a health care field. If this is not so the faculty will select a set of courses that teaches the student basic medical knowledge, and the student may take these courses as electives.

Department of Linguistics

The Department of Linguistics offers the degrees of Master of teaching English to Speakers of Other Languages (TESOL) and Master of Arts and Doctor of Philosophy in both Linguistics and Applied Hispanic Linguistics, with areas of concentration in Applied Linguistics and Sociolinguistics. The MA Program requires a minimum of 10 courses (30 credits). The Dietrich School of Arts and Sciences requires a minimum of 72 credits beyond the baccalaureate for a PhD degree.

Master of Arts in Linguistics

Master of Arts in Teaching English to Speakers of Other Languages (TESOL)

Doctor of Philosophy in Linguistics

Master of Arts and Doctor of Philosohy in Hispanic Linguistics

Students may fulfill requirements for the TESOL Certificate in conjunction with their graduate study or as a stand-alone post baccalaureate certificate.

Contact Information

Department Chair: Matt Kanwit
Main Office: 2816 Cathedral of Learning
412-624-5900
Fax: 412-624-6130
E-mail: lingpitt@pitt.edu
www.linguistics.pitt.edu

Graduate Administrator: Jennifer Berkebile

412-624-5227

E-mail: jes379@pitt.edu

The best and most current information is at the department website. Potential applicants are encouraged to thoroughly explore this site for further information. **See especially the Graduate Handbook**.

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Linguistics, Graduate Administrator, 2816 CL, Pittsburgh, PA 15260. Phone: 412-624-5227.

In addition to graduate and undergraduate education in the field of linguistics, the Department of Linguistics is responsible for the following programs and centers:

Less Commonly Taught Languages Center
Robert Henderson Language Media Center
TESOL Certificate Program

Admissions

In order to be admitted to graduate standing in linguistics, students must meet the admission requirements of the Dietrich School of Arts and Sciences and have at least two years, or the equivalent, of university-level study of a second language. The Graduate Record Examination is required for all applicants. PhD applicants must also submit samples of written work in linguistics. To be considered for financial aid for the PhD program, complete applications should be received by December 1. Applicants for Hispanic Linguistics must be fluent in Spanish in addition to the above admissions requirements (determined by interview following review of other application materials).

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Linguistics, MA/PhD

The PhD programs in linguistics (also referred to as the MA/PhD program) combine a solid foundation in the core areas of linguistic theory (phonetics, phonology, morphology, syntax) with courses in specialized fields of applied linguistics, Hispanic linguistics and sociolinguistics language. Within applied linguistics, students may choose from topics such as second language acquisition, language teaching methodology, and bilingualism. The department also offers a certificate in teaching English to speakers of other languages (TESOL). In sociolinguistics, students may focus on discourse analysis, variation and change, and socio-phonetics. In Hispanic linguistics, students may focus on phonetics, sociolinguistics, and second language acquisition.

Required Core Courses for the PhD (all concentrations)

The following courses are required of all students in the PhD program. Students entering with an MA degree from another institution may petition to have coursework from that MA degree apply to the PhD degree at Pitt (see also the Preliminary exam requirement for students with an existing MA).

Courses normally required to be taken in the first year:

- LING 2578 - PHONETICS AND PHONEMICS
- LING 2144 - RES METHODS IN APPLIED LING
- LING 2773 - MORPHOLOGY
- LING 2777 - SYNTACTIC THEORY
- LING 2579 - PHONOLOGY

Required courses that can be taken any time:

One course in sociolinguistics/language change.

- LING 2267 - SOCIOLINGUISTICS

Required upper level course:

Choose one advanced level core course approved by the student's advisor and DGS or Chair.

Applied Linguistics PhD Course Requirements:

In addition to core requirements above.

Required Courses:

- LING 2146 - SECOND LANGUAGE ACQUISITION
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- A course in psycholinguistics or first language development
- A course in statistics
    - One of the following:
        - LING 2147 - CUR ISSUES IN SECOND LANG LRNG
        - LING 2149 - ADV SECOND LANGUAGE ACQUISITION

Hispanic Linguistics PhD Requirements:

In addition to core requirements above.

Required Courses:

- LING 2394 - SPANISH DIALECTOLOGY
- LING 2391 - PHONOLOGY OF SPANISH
- Two Special Topics courses in Hispanic Linguistics
- A course in statistics

Other Hispanic Linguistics requirements:

Entrance requirement: Advanced Low Proficiency in Spanish as measured by an OPI or equivalent. Students are also interviewed by faculty in Spanish during the admissions process.

In core courses, students are encouraged to work on topics in Hispanic linguistics and to use Spanish sources.

Further specialization within Hispanic Linguistics:

Students may wish to focus on Applied Spanish Linguistics or Spanish Sociolinguistics, but these are not official ARCOs. The following are suggested courses.

Applied Spanish Linguistics:

- Second Language Acquisition
- Approaches and Methods of TESOL
- Techniques and Procedures of TESOL

Spanish Sociolinguistics:

- Language Contact

- Discourse Analysis
- Variation Analysis

Sociolinguistics PhD Course Requirements:

In addition to core requirements above.

Required Courses:

- LING 2267 - SOCIOLINGUISTICS (if not already taken)
- LING 2441 - FIELD METHODS IN LINGUISTICS
- SOC 2102 - SOCIOLGCL THRY POST CLASSICAL
- A statistics course
- Two of the following:
- LING 2761 - DISCOURSE ANALYSIS
- LING 2274 - LANGUAGE CONTACT
- LING 2269 - CURRN ISSUES IN SOCIOLINGUISTICS
- LING 2860 - INTRO TO HISTORICAL LINGUISTICS

Other MA/PhD Requirements:

Language requirement:

Native speakers of English:

1. three semesters of a language taught at the college level plus
2. at least one semester with a grade of B or better in a language that is not Germanic, Greek, Italic (Romance, including Latin), or Slavic.

Non-native speakers of English:

1. English-language proficiency
2. At least one semester with a grade of B or better in a language that is not Germanic, Greek, Italic (Romance, including Latin), or Slavic.

Candidates for the Hispanic Linguistics ARCO:

1. English-language proficiency
2. At least one semester with a grade of B or better in a language that is not Germanic, Greek, Italic (Romance, including Latin), or Slavic,
3. Satisfactorily completing the Spanish language proficiency required of candidates. See the DGS to set up a language exam.

Preliminary exam:

Students entering without an MA:

The preliminary exam is fulfilled by attaining a grade of B+ or better on the final exam of all core courses with a B+ grade or better, and by submitting a portfolio of written work from coursework. See the Graduate Handbook for procedures.

Students entering with an MA:

Students entering with an MA degree may petition to have core courses waived. In order to waive phonetics, phonology, morphology or syntax, a student must demonstrate knowledge by providing course syllabi and passing an oral interview. In order to fulfill the portfolio requirement when entering with an MA, a student must submit an identical portfolio as outlined above from their MA coursework by the end of their first semester of study. Students will be notified of the outcome by the end of the next semester.

Comprehensive exam:

Two comprehensive papers are required to fulfill the comprehensive exam requirement for the Linguistics PhD. The topics of the two papers must be substantially different. Although the topics can be in the same specialty of linguistics, at least one paper should involve linguistic form or structure (for example, by analyzing the acquisition of a particular syntactic construction, by investigating variation of a phonological variable, or by doing a theoretical analysis in syntax or phonology). Both papers have a paper and presentation portion, but only one of the presentations must be public in department colloquium. The second paper can be presented to the readers only, but it is possible to present it publicly.

Dissertation proposal:

When the student has successfully completed the PhD comprehensive examination, they must prepare a dissertation proposal and present it in a formal dissertation proposal defense. A dissertation proposal must have at least two main elements: a knowledge essay and a proposal. The dissertation advisor will determine exactly the format for these two elements. See the Graduate Handbook for procedures.

Dissertation:

After being admitted to candidacy, the student will conduct dissertation research and write a dissertation primarily in consultation with the main advisor, with secondary consultation with committee members when needed. A dissertation defense should be scheduled at least six months in advance. The dissertation draft should be submitted to the committee at least one month before the defense, and the defense draft must be approved by the advisor. See the Graduate Handbook for specific procedures and further advice.

Master's

Linguistics, MA

The degree programs in linguistics combine a solid foundation in the core areas of linguistic theory (phonetics, phonology, syntax) with courses in specialized fields of applied linguistics, Hispanic linguistics and sociolinguistics/sociology of language. Within applied linguistics, students may choose from topics such as second language acquisition, language teaching methodology, and the development of teaching materials/tests. The department also offers a certificate in teaching English to speakers of other languages (TESOL). In sociolinguistics, students may focus on discourse analysis, variation and change, and socio-phonetics. In Hispanic linguistics, students may focus on phonetics, sociolinguistics, and second language acquisition.

Requirements:

Required Courses for all linguistics MA degrees:

- LING 2578 - PHONETICS AND PHONEMICS
- LING 2579 - PHONOLOGY
  or
- LING 2773 - MORPHOLOGY
- LING 2777 - SYNTACTIC THEORY
- LING 2144 - RES METHODS IN APPLIED LING

Other MA Requirements:

Comprehensive exam:

Students must attain a B+ in all core courses. If the grade is lower than a B+, a student must re-take the final exam the following year-or take an exam through other arrangements-and attain a grade of B+ on the exam, or retake the course.

Language requirement:

Proficiency in one second language is required for the MA degree. This requirement is satisfied by examination for students whose native language is English. Students whose native language is not English and who complete their MA work with a grade point average of B (3.0) or better will have fulfilled this requirement automatically.

Teaching English to Speakers of Other Languages (TESOL), MA

This one-year degree is available beginning in Fall 2020. It consists entirely of 30 credits (15 per semester) of coursework and is intended for students who wish to teach English as a Second Language to adults both in the United States and internationally.

The curriculum is fixed, and all courses are required.

Admission Requirements

The requirements for entry to the program will be the same as for the two-year MA.

Contact Information

Chair: Professor Matt Kanwit (mkanwit@pitt.edu)

Admissions and Advisor One-year MA/TESOL and Two Year MA: Dr. Amanda Huensch (amh360@pitt.edu)

Program Requirements:

The degree program will require 30 credits. The following summarizes the sequences of courses.

Fall

- TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- LING 2144 - RES METHODS IN APPLIED LING
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- LING 2150 - LANGUAGE LEARNING AND TECHNOLOGY (CALL)
- LING 2194 - PRACTICUM OBSERVATION ESL TEACHING
- LING 2959 - DEPARTMENTAL SEMINAR

Total 15 Credits

Spring

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH

- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- LING 2146 - SECOND LANGUAGE ACQUISITION
- LING 2141 - TEACHING ENGLISH ACROSS CULTURES
- LING 2195 - PRACTICUM ESL TEACHING
  (3 credits)

Total 15 Credits

Note:

The LING 2194 - PRACTICUM/OBSERVATION and LING 2195 - PRACTICUM ESL TEACHING (Fall and Spring) include observation of classes in English as an additional language (EAL) in higher education contexts, supervised practice teaching of adult English language learners, application of course-work content and tools to teaching contexts, and interactions with EAL teaching faculty and students outside the classroom.

Department of Mathematics

The Department of Mathematics offers programs leading to Master of Arts, Master of Science, and Doctor of Philosophy degrees in the mathematical sciences. Students are given ample opportunity to attain scientific excellence by working with an active and broad-based research faculty in diverse areas of pure and applied mathematics..

Contact Information

Department Chair: Dehua Wang
Main Office: 301 Thackeray Hall
412-624-8375

Graduate Administrator: Jay Drummond

E-mail: jad432@pitt.edu

www.mathematics.pitt.edu/

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Mathematics, Graduate Administrator.

Admissions

To qualify for admission to full graduate status, an applicant must have a bachelor's degree in mathematics or a closely related field, a minimum overall QPA of 3.0 (relative to a possible maximum of 4.0) in all undergraduate subjects, and a minimum QPA of 3.25 in the mathematics curriculum. It is desirable that the applicant's undergraduate background include courses in calculus, linear and abstract algebra, differential equations, and real and complex analysis. It is also strongly suggested that applicants provide their scores on the GRE General Test and, if possible, on the GRE Subject Test in mathematics. However, this is not required.

Official TOEFL scores from the Educational Testing Service are required if you are an international student whose native language is not English. International applicants whose first language is not English must attain either a minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section, or an IELTS score of 7.0 (with at least a 6.5 in each of its four sections). Duolingo English Test will also be accepted with a minimum of a 120 score.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Mathematics, PhD

Requirements for the PhD

A student must maintain a B average over 72 credit hours of course work and pass departmental preliminary and comprehensive examinations. The main requirement for the Doctor of Philosophy (PhD) degree in mathematics is the successful completion and defense of a dissertation embodying a substantial piece of original mathematical research. The main stages are listed below.

PhD Preliminary Examination: Students must pass a written preliminary examination on advanced linear algebra and multivariable calculus. The preliminary examination should be attempted as early as possible and must be passed by May of their second year for support to be extended for a third year.

Comprehensive Examination: Students must pass a PhD comprehensive examination demonstrating their competence in their chosen area of mathematics after approximately one year of course work beyond the preliminary examination or within three years of study.

Dissertation Overview: Following successful completion of the comprehensive examination, students file an application for admission to candidacy for the Doctor of Philosophy. At this stage, students present a proposed topic for doctoral research and a research work plan for its execution to be reviewed by their dissertation committee.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and is open to the University community.

Most candidates will require from three to five years of full-time study to complete the degree. Part- time students may be allowed as many as 10 years to finish all requirements.

Additional information and details concerning examinations, requirements, and the advising system can be found in the departmental handbook.

Joint Degree

Mathematics and Computer Science, MA/MS

Requirements for the Dual Degree

The dual degree program requires the completion of a minimum of 45 credits of course work through either a thesis or non-thesis option. The total set of courses taken must include, as a subset, the course requirements for MA degree in mathematics and a MS degree in computer science.

Mathematics/Civil Engineering, MS/MSCE

Joint Master's Degree

A student is able to earn the Master of Science Civil Engineering degree and the Master of Science degree in mathematics at the same time. In general, 42 credits are required, and students must complete the fundamental courses in both areas.

Master's

Mathematics, MA

Degree Requirements

http://www.mathematics.pitt.edu/graduate/graduate-handbook

Requirements for the MA

http://www.mathematics.pitt.edu/graduate/graduate-handbook#mastershttp://www.mathematics.pitt.edu/graduate/graduate-handbook#masters

The MA in mathematics requires completion of at least ten mathematics courses (30 credits) and an oral comprehensive examination. Achievement of an overall course average of B or better is required for all courses.

The master's programs in applied mathematics contain several tracks, each having a selection of required and elective courses. The MA program requires 30 credits (minimum of 7 departmental) and an oral comprehensive examination. An MS option is available that requires a total of 30 credits and a thesis (24 course credits + 6 credits-thesis).

Requirements for the MS

http://www.mathematics.pitt.edu/graduate/graduate-handbook#masters

The MS in mathematics requires completion of at least eight mathematics courses (24 credits) and the completion and defense of a thesis in mathematics (6 credits). Six of the eight courses must be taken at the 2000-3000 level; the remaining ones may be those cross-listed with other departments. Achievement of an overall course average of B or better is required for all courses.

The master's programs in applied mathematics contain several tracks, each having a selection of required and elective courses. The MA program requires 30 credits (minimum of 7 departmental) and an oral comprehensive examination. An MS option is available that requires a total of 30 credits and a thesis (24 course credits + 6 credits-thesis).

Mathematics, MS

Degree Requirements

http://www.mathematics.pitt.edu/graduate/graduate-handbook

Requirements for the MA

http://www.mathematics.pitt.edu/graduate/graduate-handbook#mastershttp://www.mathematics.pitt.edu/graduate/graduate-handbook#masters

The MA in mathematics requires completion of at least ten mathematics courses (30 credits) and an oral comprehensive examination. Achievement of an overall course average of B or better is required for all courses.

The master's programs in applied mathematics contain several tracks, each having a selection of required and elective courses. The MA program requires 30 credits (minimum of 7 departmental) and an oral comprehensive examination. An MS option is available that requires a total of 30 credits and a thesis (24 course credits + 6 credits-thesis).

Requirements for the MS

http://www.mathematics.pitt.edu/graduate/graduate-handbook#masters

The MS in mathematics requires completion of at least eight mathematics courses (24 credits) and the completion and defense of a thesis in mathematics (6 credits). Six of the eight courses must be taken at the 2000-3000 level; the remaining ones may be those cross-listed with other departments. Achievement of an overall course average of B or better is required for all courses.

The master's programs in applied mathematics contain several tracks, each having a selection of required and elective courses. The MA program requires 30 credits (minimum of 7 departmental) and an oral comprehensive examination. An MS option is available that requires a total of 30 credits and a thesis (24 course credits + 6 credits-thesis).

Medieval and Renaissance Studies Program

Students doing graduate work in the Medieval and Renaissance periods require a particularly broad interdisciplinary background. To meet this need, the faculty involved in MRST at the University of Pittsburgh have instituted a certificate program that is designed to enrich the student's work in the major department while allowing the student to undertake inventive interdisciplinary projects.

Each year the MRST Program organizes a series of lectures featuring visiting national and international scholars and distinguished speakers from the Pittsburgh area. We collaborate with PCMRS, the Pittsburgh Consortium for Medieval and Renaissance Studies (www.pcmrs.org), in regularly bringing together faculty and graduate students from Pitt, Carnegie Mellon, Duquesne, and many other area universities.

Contact Information

Director: Chloé Hogg
Department Coordinator: Megan Ponter
Main Office: 454 Cathedral of Learning
Phone: 412-624-6564
E-mail: mep355@pitt.edu
http://www.medren.pitt.edu/

Admissions

Students who are already enrolled in a graduate degree program at Pitt can apply for the Certificate in Medieval and Renaissance Studies at any time during their graduate studies, but are encouraged to applyas early in their program of study as possible. Contact the Department Coordinator, Megan Ponter, at mep355@pitt.edu for a certificate application information.

Requirements for the Certificate

For students wishing to complete the MRST certificate at the graduate level, the most important requirement is a research paper focused on medieval and/or Renaissance Studies. As specified by the University, a MA certificate also requires at least 15 credits (5 courses) and a PhD certificate requires 18 credits (6 courses). Many of these credits may be drawn from coursework already required for the student's degree in the home department (for instance, the requirements for English, HAA, or French and Italian). Working with the Director of MRST, the student will create an individually tailored course of study that gives consideration both to the requirements of home departments and to the importance of interdisciplinary study.

Faculty

Dietrich School of Arts and Sciences Faculty

Certificate

Medieval and Renaissance Studies Doctoral Certificate

This is a certificate program for MA or PhD students in one of the disciplines who desire to pursue additional interdisciplinary work in Medieval or Renaissance studies.

PhD Certificate Requirements

1. A PhD thesis of an interdisciplinary nature focused on medieval and/or Renaissance studies.
2. At least four graduate courses focused on medieval and/or Renaissance studies. We strongly encourage students to take courses outside of their home departments. In some cases-involving, for instance, infrequent course offerings or research abroad-students may petition the Director to reduce the number of courses required.
3. A reading knowledge of one language other than English. We also strongly recommend (but do not require) that PhD certificate candidates acquire a reading knowledge of Latin.
4. A one-page cover letter attached to the thesis. The letter should be addressed to the Program Director and should use direct language and specific examples. In this letter, we would like you to reflect on what you have learned from earning a certificate from the Program in Medieval and Renaissance Studies.

Medieval and Renaissance Studies Master's Certificate

This is a certificate program for MA or PhD students in one of the disciplines who desire to pursue additional interdisciplinary work in Medieval or Renaissance studies.

MA Certificate Requirements

1. A major interdisciplinary research paper in medieval and/or Renaissance studies. This may be either an MA thesis or a substantial term paper (20 - 30 pages).
2. At least two graduate courses focused on medieval and/or Renaissance studies. We strongly encourage students to take courses outside of their home departments. In some cases-involving, for instance, infrequent course offerings or research abroad-students may petition the Director to reduce the number of courses required.
3. We strongly recommend (but do not require) that MA certificate candidates acquire a reading knowledge of at least one language other than English.
4. A one-page cover letter attached to the research paper. The letter should be addressed to the Program Director and should use direct language and specific examples. In this letter, we would like you to reflect on what you have learned from earning a certificate from the Program in Medieval and Renaissance Studies.

Molecular Biophysics and Structural Biology Program

The Molecular Biophysics and Structural Biology graduate program at the University of Pittsburgh and Carnegie Mellon University educates students to conduct research at the interface between biology, chemistry, and physics. The disciplines of Molecular Biophysics and Structural Biology aim to unravel and explain biological phenomena and processes in atomic and molecular detail. Research carried out by program faculty covers a diverse range of topics in Molecular Biophysics and Structural Biology. Areas of study focus on understanding fundamental principles involved in reactions and regulatory interactions in biological systems. Our research projects attempt to answer the key questions, such as: How do proteins fold and can we prevent misfolding? Can we design proteins with novel functions? How does the coordinated interaction between proteins and nucleic acids lead to cellular differentiation and the formation of an organism? How do macromolecules assemble into molecular machines and viruses? How do these assemblies operate? How do signals traverse membranes?

Contact Information

University of Pittsburgh and Carnegie Mellon University
Molecular Biophysics and Structural Biology Graduate Program
Graduate Studies Office
3550 Terrace Street
M240 Scaife Hall
Pittsburgh, PA 15261
412-648-8957
Fax: 412-648-1077
E-mail: MBSBinfo@medschool.pitt.edu
www.mbsb.pitt.edu

Program Co-Directors: Andrew Hinck (UPSOM) and Gordon Rule (CMU)

Admission Requirements and Procedures

Students with at least a baccalaureate degree in physics, chemistry, and mathematics or cellular and molecular biology are encouraged to apply. Admissions are based upon the student's academic record, CV, letters of recommendation, previous research experience, written statement of interest, and a personal interview. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 600 (paper) or 250 (computer) or 100 (iBT), or IELTS score of at least 7.00 is required for admission to the Program. We actively seek qualified applicants from underrepresented minorities and students with disabilities.

Additional information and a link to the online application can be a found at http://www.mbsb.pitt.edu/index.php/apply-for-the-mbsb-program

Training Faculty

Dietrich School of Arts and Sciences Faculty

Degree Requirements

All students enter the Program in the fall session and after performing three rotations identify an advisor and area of research. Areas of research focus include: Macromolecular recognition; Virus, lipid and protein structure and interactions; Principles of protein structure and dynamics; Membrane proteins; Gene regulation and signaling; Cellular biophysics; Chemical structure and dynamics. Methodologies employed comprise NMR spectroscopy, X-ray crystallography, cryo electron microscopy, atomic force microscopy, mass spectrometry, infrared spectroscopy and computational molecular biology. Required coursework is completed during the first two years. Students are required to complete the Comprehensive Exam by August 31 of their second year in the graduate program.

A minimum of 72 credits beyond the baccalaureate degree is required for the PhD degree. The 72 credits are completed by taking required and elective course work as well as dissertation research credits upon being admitted to candidacy.

• MOLBPH 2000 - LABORATORY RESEARCH ROTATIONS - taken during the first fall, spring & summer term of the first year.

• INTBP 2000 - FOUNDTNS OF BIOMEDICAL SCIENCE - taken during the fall term of the first year

• MOLBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE - taken during the fall term of the first year

• MOLBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS - taken during the spring term of the first year

• 09763 - MOLECULAR MODELING AND COMPUTATIONAL CHEMISTRY - taken during the spring term of the first year at Carnegie Mellon University

• INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH - taken during the summer term of the first year

• INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS - taken during the summer term of the first year

• MOLBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOPHYSICS SEMINAR - taken every fall and spring term through graduation

• MOLBPH 2030 - DATA AND LITERATURE CLUB - beginning with the spring term of the first year, D&L Club is taken every fall and spring term through graduation

Advanced Elective Courses (6 Credits Total)

The courses taken here will be chosen on an individual basis based on the background and interests of the individual student. During the first year, the choice will be made by the student in consultation with the First Year Advisor or Dissertation Advisor. Upon proper approval, the elective courses can be taken either at the University of Pittsburgh (both the Dietrich School of Arts & Sciences and the School of Medicine) as well as Carnegie Mellon University.

Additional information on the core curriculum can be found at http://www.mbsb.pitt.edu/index.php/training/curriculum.

Doctoral

Molecular Biophysics and Structural Biology, PhD

Degree Requirements

All students enter the Program in the fall session and after performing three rotations identify an advisor and area of research. Areas of research focus include: Macromolecular recognition; Virus, lipid and protein structure and interactions; Principles of protein structure and dynamics; Membrane proteins; Gene regulation and signaling; Cellular biophysics; Chemical structure and dynamics. Methodologies employed comprise NMR spectroscopy, X-ray crystallography, cryo electron microscopy, atomic force microscopy, mass spectrometry, infrared spectroscopy and computational molecular biology. Required coursework is completed during the first year. Students are required to complete the Comprehensive Exam by August 31 of their second year in the graduate program.

A minimum of 72 credits beyond the baccalaureate degree is required for the PhD degree. The 72 credits are completed by taking required and elective course work as well as dissertation research credits upon being admitted to candidacy.

Courses

- MSMBPH 2000 - LABORATORY RESEARCH ROTATIONS or
- MOLBPH 2000 - LABORATORY RESEARCH ROTATIONS - taken during the first fall, spring & summer term of the first year.
-
- INTBP 2000 - FOUNDTNS OF BIOMEDICAL SCIENCE - taken during the fall term of the first year
-
- MSMBPH 2001 - MOL BIOPHYS 1: STRUCTURE or
- MOLBPH 2001 - MOL BIOPHYS 1: STRUCTURE - taken during the fall term of the first year
-
- MSMBPH 2012 - MB2: BIOMOL INTERC & DYNAMICS or
- MOLBPH 2012 - MB2: BIOMOL INTERC & DYNAMICS - taken during the spring term of the first year
-

- MSMBPH 2013 - MOL BIOPHYS 3: THEORY & SIMUL or
- MOLBPH 2013 - MOL BIOPHYS 3: THEORY & SIMUL - taken during the fall term of the second year
-
- INTBP 2290 - SCNTFC ETHCS RESPONSIBLE RES - taken during the summer term of the first year
- BIOST 2041 - INTRO TO STATISTICAL METHODS 1 - taken during the first summer semester of the first year
-
- MSMBPH 2020 - STRUCL BIOL/MOL BIOPHYS SEM or
- MOLBPH 2020 - STRUCL BIOL/MOL BIOPHYS SEM - taken every fall and spring term through graduation
-
- MSMBPH 2030 - DATA AND LITERATURE CLUB or
- MOLBPH 2030 - DATA AND LITERATURE CLUB - beginning with the spring term of the first year, D&L Club is taken every fall and spring term through graduation

Advanced Elective Courses (6 Credits Total)

The courses taken here will be chosen on an individual basis based on the background and interests of the individual student. During the first year, the choice will be made by the student in consultation with the First Year Advisor or Dissertation Advisor. Upon proper approval, the elective courses can be taken either at the University of Pittsburgh (both the Dietrich School of Arts & Sciences and the School of Medicine) as well as Carnegie Mellon University.

Additional information on the core curriculum can be found at

http://www.mbsb.pitt.edu/index.php/training/curriculum

- MSMBPH 2000 - LABORATORY RESEARCH ROTATIONS OR
- BIOSC 2810 - MACROMOLECULAR STRUCTURE AND FUNCTION -taken during the first fall semester of the first year.

- MSMBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE OR
- MOLBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE -taken during the first fall semester of the first year.

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH -taken during the first summer semester of the first year.

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS -taken during the first summer semester of the first year.

- MSMBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOLOGY SEMINAR OR
- MOLBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOPHYSICS SEMINAR -taken every fall and spring semester through graduation.

- MSMBPH 2030 - DATA AND LITERATURE CLUB OR
- MOLBPH 2030 - DATA AND LITERATURE CLUB -taken every fall and spring semester through graduation.

- Advanced Elective Courses-6 credits total-with the permission of his/her advisor, students are permitted to choose from a number of courses offered at Pitt as well as CMU.

Additional Information

Terminal Masters Degree
The program does not admit students whose goal is to attain a Master's of Science degree. However, it might become necessary for a PhD student to transfer to an MS track for academic reasons or reasons beyond the student's control, e.g., medical circumstances or a change in family circumstances necessitating a long-distance move.

Department of Music

The Department of Music offers the degrees of Master of Arts and Doctor of Philosophy in music.

The graduate program in music consists of four areas of concentration:

- Musicology
- Ethnomusicology
- Composition and Theory
- Jazz Studies

Students may combine work for the MA and PhD degrees with a program of theoretical, historical, or area studies specialization leading to a certificate in Cultural Studies, Medieval and Renaissance Studies, Global Studies, Asian Studies, Latin American Studies, European Union Studies, West European Studies, Russian and East European Studies, Film Studies or Gender, Sexuality, and Women's Studies.

Contact Information

Department Chair: Aaron Johnson
Main Office: 306 Music Building
412-624-4193
Fax: 412-624-4186
E-mail: musicdpt@pitt.edu, music.grad.info@pitt.edu
www.music.pitt.edu

Admissions inquiries concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Music, Director of Graduate Admissions, Dr. Amy Williams, 110 Music Building, Pittsburgh, PA 15260. Phone: 412-624-4120. Fax: 412-624-4186. E-mail: amywill@pitt.edu

Admissions

The deadline for receipt of all elements of the application is **January 5**.

Prospective students should apply online by filling out the online application form (app.applyyourself.com/AYApplicantLogin/fl_ApplicantLogin.asp?id=up-as), paying the application fee and attaching pdf files of the statement of purpose, transcripts, resumé/CV and work samples. Applicants must include letters of recommendation with the online application. Please send all additional application materials (music scores, CDs, test scores) to:

University of Pittsburgh
School of Arts and Sciences
Department of Music
Amy Williams, Director of Graduate Admissions
110 Music Building
4337 Fifth Avenue
Pittsburgh, PA 15260

The elements of the application are:

1. *Application form* and $75 application fee.
2. *Statement of purpose*, an essay of about two pages that describes the applicant's academic background and professional goals.
3. *Undergraduate and graduate transcripts* from all higher education institutions attended. These should be scanned and included with online application. Students will be required to forward official transcripts/translations at the time of matriculation (upon enrollment) to the Graduate School to clear transcript contingencies.
4. *CV or Resumé.*

5. *Three letters of recommendation*, preferably by persons who have taught the applicant in subjects related to the four research subdisciplines, rather than in performance lessons.
6. *Official scores of the general test of the Graduate Record Examination (GRE)*. Please note that international applicants from a country whose official language is not English are exempt from taking the GRE. All others are required to take the test (including international students who hold or will hold a degree from an English-language institution). Applicants are encouraged to take the test by November 1, if possible, so that scores can reach the department by January 5. For information, go to www.gre.org (http://www.gre.org) . The University of Pittsburgh GRE code is 2927.
7. *Samples of work.* Applicants in historical musicology and ethnomusicology should submit two papers on an analytical, historical, or theoretical topic. Applicants in composition and theory should submit three scores and a CD of recent compositions, together with one paper on an analytical or theoretical topic. Applicants in jazz studies should submit a recording that demonstrates their ability to improvise on an original jazz composition and a jazz standard. They should also send a full score of an original work for a large jazz ensemble/orchestra and a full score of an original or standard composition for a small jazz ensemble (up to 9 players). Finally, they should submit a research paper on a style or period in the history of jazz. **Please note:** papers can be submitted online. However, in order to submit two papers, both must be merged into a single pdf document first and then submitted.
8. *TOEFL, IELTS, or Duolingo Exam scores.* International applicants whose country's official language is not English must submit certified scores of one of these exams. TOEFL: a minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section. TOEFL scores submitted must not be more than two years old. IELTS: score of 7.0, with at least 6.5 in each of its four sections. IELTS scores submitted must not be more than two years old. Duolingo English Test: score of 120. Duolingo scores submitted must not be more than two years old.

For information on music department admissions, contact the department's Director of Graduate Admissions, Professor Amy Williams (amywill@pitt.edu) . More general information can be found on the University Graduate Admissions (http://www.asgraduate.pitt.edu/applicationadmission) and the Graduate Studies (http://www.asgraduate.pitt.edu) home pages.

International students are urged to consult the website of the Office of International Services (http://www.ois.pitt.edu).

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Music - Composition and Theory Concentration, PhD

Requirements for the PhD:

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, and dissertation work as detailed in the department's Graduate Handbook which can be downloaded at www.music.pitt.edu/graduate.

The University will accept up to 24 transfer credits for graduate courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies.

PhD candidates must also satisfy the following requirements (distinctions between the various program requirements are detailed):

Language Requirement: For Musicology, reading knowledge of German and one other research language besides English. For Ethnomusicology and Jazz Studies, reading knowledge of a language relevant to the field of specialization and chosen in consultation with the department's Director of Graduate Studies. For Composition and Theory, reading knowledge of one language besides English, chosen in consultation with the department's Director of Graduate Studies.

First Year Evaluation: At the end of the first year of graduate study all first-year students meet with the faculty at a regularly scheduled faculty meeting for an oral interview/evaluation of their progress in the program.

Preliminary Evaluation: The faculty formally evaluates each student in the first year in residence beyond the master's degree, to identify those students who may be expected to complete the PhD degree and to reveal areas of weakness in their preparation that need to be remedied.

Comprehensive Examination: Students take a written comprehensive examination normally during the third year at the completion of their formal course work. The examination in Musicology covers the history of Western music and musical analysis; in Ethnomusicology it covers the intellectual history, theory, and methodologies used in the field, as well as topics in the students' geocultural areas of interest; in Jazz Studies it covers jazz literature and history, performance, and jazz composition and analysis; in Composition and Theory it covers tonal and atonal analysis, 20th and 21st -century musical language, and orchestration.

Dissertation Overview: Following successful completion of the comprehensive examination, students prepare a written prospectus of the dissertation project for review by their dissertation committee. Approval of the overview brings admission to candidacy for the PhD degree.

Dissertation: Candidates in Musicology and Ethnomusicology submit a major work of original scholarship. Candidates in Jazz Studies submit a major work of original scholarship and produce a one-hour recital of original compositions. Candidates in Composition and Theory submit a large-scale composition and work of original scholarship in music theory.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the dissertation committee and is open to the University community.

Music - Ethnomusicology Concentration, PhD

Requirements for the PhD:

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, and dissertation work as detailed in the department's Graduate Handbook which can be downloaded at www.music.pitt.edu/graduate.

The University will accept up to 24 transfer credits for graduate courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies.

PhD candidates must also satisfy the following requirements (distinctions between the various program requirements are detailed):

Language Requirement: For Musicology, reading knowledge of German and one other research language besides English. For Ethnomusicology and Jazz Studies, reading knowledge of a language relevant to the field of specialization and chosen in consultation with the department's Director of Graduate Studies. For Composition and Theory, reading knowledge of one language besides English, chosen in consultation with the department's Director of Graduate Studies.

First Year Evaluation: At the end of the first year of graduate study all first-year students meet with the faculty at a regularly scheduled faculty meeting for an oral interview/evaluation of their progress in the program.

Preliminary Evaluation: The faculty formally evaluates each student in the first year in residence beyond the master's degree, to identify those students who may be expected to complete the PhD degree and to reveal areas of weakness in their preparation that need to be remedied.

Comprehensive Examination: Students take a written comprehensive examination normally during the third year at the completion of their formal course work. The examination in Musicology covers the history of Western music and musical analysis; in Ethnomusicology it covers the intellectual history, theory, and methodologies used in the field, as well as topics in the students' geocultural areas of interest; in Jazz Studies it covers jazz literature and history, performance, and jazz composition and analysis; in Composition and Theory it covers tonal and atonal analysis, 20th and 21st -century musical language, and orchestration.

Dissertation Overview: Following successful completion of the comprehensive examination, students prepare a written prospectus of the dissertation project for review by their dissertation committee. Approval of the overview brings admission to candidacy for the PhD degree.

Dissertation: Candidates in Musicology and Ethnomusicology submit a major work of original scholarship. Candidates in Jazz Studies submit a major work of original scholarship and produce a one-hour recital of original compositions. Candidates in Composition and Theory submit a large-scale composition and work of original scholarship in music theory.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the dissertation committee and is open to the University community.

Music - Jazz Studies Concentration, PhD

Requirements for the PhD:

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, and dissertation work as detailed in the department's Graduate Handbook which can be downloaded at www.music.pitt.edu/graduate.

The University will accept up to 24 transfer credits for graduate courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies.

PhD candidates must also satisfy the following requirements (distinctions between the various program requirements are detailed):

Language Requirement: For Musicology, reading knowledge of German and one other research language besides English. For Ethnomusicology and Jazz Studies, reading knowledge of a language relevant to the field of specialization and chosen in consultation with the department's Director of Graduate Studies. For Composition and Theory, reading knowledge of one language besides English, chosen in consultation with the department's Director of Graduate Studies.

First Year Evaluation: At the end of the first year of graduate study all first-year students meet with the faculty at a regularly scheduled faculty meeting for an oral interview/evaluation of their progress in the program.

Preliminary Evaluation: The faculty formally evaluates each student in the first year in residence beyond the master's degree, to identify those students who may be expected to complete the PhD degree and to reveal areas of weakness in their preparation that need to be remedied.

Comprehensive Examination: Students take a written comprehensive examination normally during the third year at the completion of their formal course work. The examination in Musicology covers the history of Western music and musical analysis; in Ethnomusicology it covers the intellectual history, theory, and methodologies used in the field, as well as topics in the students' geocultural areas of interest; in Jazz Studies it covers jazz literature and history, performance, and jazz composition and analysis; in Composition and Theory it covers tonal and atonal analysis, 20th and 21st -century musical language, and orchestration.

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Dissertation: Candidates in Musicology and Ethnomusicology submit a major work of original scholarship. Candidates in Jazz Studies submit a major work of original scholarship and produce a one-hour recital of original compositions. Candidates in Composition and Theory submit a large-scale composition and work of original scholarship in music theory.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the dissertation committee and is open to the University community.

Music - Musicology Concentration, PhD

Requirements for the PhD:

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, and dissertation work as detailed in the department's Graduate Handbook which can be downloaded at www.music.pitt.edu/graduate.

The University will accept up to 24 transfer credits for graduate courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies.

PhD candidates must also satisfy the following requirements (distinctions between the various program requirements are detailed):

Language Requirement: For Musicology, reading knowledge of German and one other research language besides English. For Ethnomusicology and Jazz Studies, reading knowledge of a language relevant to the field of specialization and chosen in consultation with the department's Director of Graduate Studies. For Composition and Theory, reading knowledge of one language besides English, chosen in consultation with the department's Director of Graduate Studies.

First Year Evaluation: At the end of the first year of graduate study all first-year students meet with the faculty at a regularly scheduled faculty meeting for an oral interview/evaluation of their progress in the program.

Preliminary Evaluation: The faculty formally evaluates each student in the first year in residence beyond the master's degree, to identify those students who may be expected to complete the PhD degree and to reveal areas of weakness in their preparation that need to be remedied.

Comprehensive Examination: Students take a written comprehensive examination normally during the third year at the completion of their formal course work. The examination in Musicology covers the history of Western music and musical analysis; in Ethnomusicology it covers the intellectual history, theory, and methodologies used in the field, as well as topics in the students' geocultural areas of interest; in Jazz Studies it covers jazz literature and history, performance, and jazz composition and analysis; in Composition and Theory it covers tonal and atonal analysis, 20th and 21st -century musical language, and orchestration.

Dissertation Overview: Following successful completion of the comprehensive examination, students prepare a written prospectus of the dissertation project for review by their dissertation committee. Approval of the overview brings admission to candidacy for the PhD degree.

Dissertation: Candidates in Musicology and Ethnomusicology submit a major work of original scholarship. Candidates in Jazz Studies submit a major work of original scholarship and produce a one-hour recital of original compositions. Candidates in Composition and Theory submit a large-scale composition and work of original scholarship in music theory.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the dissertation committee and is open to the University community.

Master's

Music - Composition and Theory Concentration, MA

Requirements for the MA:

All students must apply to and be admitted to the PhD program. Those who do not hold a Master's degree will first complete the necessary requirements for the MA. For the master's degree, students must earn 30 credits with a B average or better in courses numbered 2000 or above, and write a thesis (if required); the University will accept up to six transfer credits for courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies. All entering graduate students enroll in at least four out of five available proseminars (MUSIC 2111, MUSIC 2121, MUSIC 2131, MUSIC 2141, MUSIC 2151) providing perspectives for scholarly research in the field as a whole and in the disciplines represented within the department. Much of the remainder of the MA curriculum consists of more specialized required and elective courses that are specified for each discipline, e.g., Orchestration, Electronic and Computer Music, and private tutorials in composition and analysis for students in Composition and Theory; Field and Lab, area courses and seminars for Ethnomusicology; Introduction to Jazz Literature, Advanced Jazz Composition and Analysis for Jazz Studies; and topical seminars for Musicology. Students in Musicology must demonstrate a reading knowledge of a second research language.

Music - Ethnomusicology Concentration, MA

Requirements for the MA:

All students must apply to and be admitted to the PhD program. Those who do not hold a Master's degree will first complete the necessary requirements for the MA. For the master's degree, students must earn 30 credits with a B average or better in courses numbered 2000 or

above, and write a thesis (if required); the University will accept up to six transfer credits for courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies. All entering graduate students enroll in at least four out of five available proseminars (MUSIC 2111, MUSIC 2121, MUSIC 2131, MUSIC 2141, MUSIC 2151) providing perspectives for scholarly research in the field as a whole and in the disciplines represented within the department. Much of the remainder of the MA curriculum consists of more specialized required and elective courses that are specified for each discipline, e.g., Orchestration, Electronic and Computer Music, and private tutorials in composition and analysis for students in Composition and Theory; Field and Lab, area courses and seminars for Ethnomusicology; Introduction to Jazz Literature, Advanced Jazz Composition and Analysis for Jazz Studies; and topical seminars for Musicology. Students in Musicology must demonstrate a reading knowledge of a second research language.

Music - Jazz Studies Concentration, MA

Requirements for the MA:

All students must apply to and be admitted to the PhD program. Those who do not hold a Master's degree will first complete the necessary requirements for the MA. For the master's degree, students must earn 30 credits with a B average or better in courses numbered 2000 or above, and write a thesis (if required); the University will accept up to six transfer credits for courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies. All entering graduate students enroll in at least four out of five available proseminars (MUSIC 2111, MUSIC 2121, MUSIC 2131, MUSIC 2141, MUSIC 2151) providing perspectives for scholarly research in the field as a whole and in the disciplines represented within the department. Much of the remainder of the MA curriculum consists of more specialized required and elective courses that are specified for each discipline, e.g., Orchestration, Electronic and Computer Music, and private tutorials in composition and analysis for students in Composition and Theory; Field and Lab, area courses and seminars for Ethnomusicology; Introduction to Jazz Literature, Advanced Jazz Composition and Analysis for Jazz Studies; and topical seminars for Musicology. Students in Musicology must demonstrate a reading knowledge of a second research language.

Music - Musicology Concentration, MA

Requirements for the MA:

All students must apply to and be admitted to the PhD program. Those who do not hold a Master's degree will first complete the necessary requirements for the MA. For the master's degree, students must earn 30 credits with a B average or better in courses numbered 2000 or above, and write a thesis (if required); the University will accept up to six transfer credits for courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies. All entering graduate students enroll in at least four out of five available proseminars (MUSIC 2111, MUSIC 2121, MUSIC 2131, MUSIC 2141, MUSIC 2151) providing perspectives for scholarly research in the field as a whole and in the disciplines represented within the department. Much of the remainder of the MA curriculum consists of more specialized required and elective courses that are specified for each discipline, e.g., Orchestration, Electronic and Computer Music, and private tutorials in composition and analysis for students in Composition and Theory; Field and Lab, area courses and seminars for Ethnomusicology; Introduction to Jazz Literature, Advanced Jazz Composition and Analysis for Jazz Studies; and topical seminars for Musicology. Students in Musicology must demonstrate a reading knowledge of a second research language.

Department of Neuroscience

The Center for Neuroscience (CNUP) Training program is an interschool PhD degree-granting program offered cooperatively by the School of Arts and Sciences (Neuroscience, NROSCI) and the School of Medicine (Neurobiology, MSNBIO). The program introduces students to the fundamental issues and experimental approaches in neuroscience and trains them in the theory and practice of laboratory research. Research interests of the training faculty focus on several prominent themes, including behavioral/systems/cognitive, cell and molecular, development/plasticity/repair, and the neurobiology of disease.

We are highly invested in enhancing diversity, which is expressed in multiple forms - race, ethnicity, gender and gender identity, sexual orientation, socioeconomic status, language, culture, national origin, religious commitments, age, (dis)ability status and political

perspective. In addition, we strive to create a community that is equitable, so that all persons have equal opportunity, and inclusive, so that everyone feels welcomed. We hope you share our values and goals.

This large research-based training program offers outstanding opportunities for students to pursue research in laboratories within more than 30 different departments and University centers. Major features of the program include extensive collaborative interactions among its faculty members and its affiliation with Auditory Neuroscience, the Brain Institute, the Center for the Neural Basis of Cognition (a joint program with Carnegie Mellon University), Conte Center for Translational Mental Health Research, Pittsburgh Hearing Research Center, Pittsburgh Institute for Neurodegenerative Diseases, Pittsburgh Center for Pain Research, and other on-campus research centers.

Training is also available for a master's degree through the Department of Neuroscience in the Dietrich School of Arts and Sciences. It is important to note that this is a departmental program rather than a component of CNUP. Thus, training is only available with faculty with primary or secondary appointments in the Department of Neuroscience. Applicants must also arrange for a faculty sponsor before their application will be considered. A more detailed explanation of the program requirements is available on the Department of Neuroscience Web site at https://www.neuroscience.pitt.edu/programs/masters-program/masters-degree-program

Contact Information

Center for Neuroscience
A210 Langley Hall
E-mail: LMD196@pitt.edu
https://www.cnup.pitt.edu/about

Admission Requirements and Procedures

Students are admitted into the CNUP training program on the assumption that they will be able to meet all requirements for the PhD degree. Those that are selected show evidence of a high level of intellectual talent, a strong interest in neuroscience, and a commitment to scholarship and research.

Admission decisions are based on many factors including the candidate's statement of interest and goals in the field of neuroscience, evidence of research experience and accomplishment, letters of recommendation, grades, and personal interviews. An outstanding record in one of these areas may compensate for poorer performance in another area. In general, successful applicants have a BS degree in biology, chemistry, computer science, mathematics, neuroscience, or psychology with a cumulative grade point average of at least 3.40 (on a 4.00 scale).

Success in scientific research requires personal qualities not measured by tests - attributes such as curiosity, creativity, adaptability, self-motivation, passion for research, conscientiousness, persistence, self-organization, grit, resilience, and integrity, just to name a few. Select elect one or two traits you feel are your greatest strengths and provide an example from your life experience that illustrate each trait.

Additional information and a link to our on-line application can be found at: https://www.cnup.pitt.edu/training-programs/phd-graduate-training/application-process

Doctoral

Neuroscience, PhD

Overview of Degree Program

Neuroscience is the study of the structure and function of the nervous system. The field has emerged over the past two decades as one of the fastest-growing disciplines within the biomedical sciences, attracting people from many different disciplines in the natural sciences. By now, the study of mind and brain is arguably the most exciting scientific enterprise of our time.

Understanding the nervous system provides key insights into human nature as well as treatments for a host of devastating neurologic and psychiatric disorders. Our graduate program introduces students to the fundamental issues and experimental approaches in neuroscience and trains them in the theory and practice of laboratory research.

The CNUP Graduate Training Program has been designed to accomplish several objectives:

- To develop competence in conducting laboratory research including planning, executing, reporting, and defending an original piece of research relevant to the study of neuroscience.
- To develop general competence in neuroscience and specific expertise in one or more areas of neuroscience such as behavioral/systems/cognitive, cell and molecular, development/plasticity/repair, and neurobiology of disease.
- To develop a general professional competence in oral and written expression, necessary for a career in science and/or teaching.
- To develop fundamental skills in scientific reasoning required to redefine research questions and devise innovative multidisciplinary strategies as a means for adapting to the continually evolving landscape of neuroscience and neuroscience research.

In formulating the graduate training program, the faculty has been guided by several principles. First, the program should aid each student in the development of an individualized training program based on the student's background and interests.

Second, research experience should form the core of each student's training and as such should not be postponed by a lengthy period of time devoted exclusively to coursework.

Third, students should be able to complete the program in approximately five years.

Fourth, students should be evaluated in terms of those competencies that are important to a research scientist: designing, conducting and evaluating research, both their own and that of others.

Thus, the progress that a student makes in the program is considered primarily in terms of the student's performance as an investigator.

Degree Requirements

Credits: A minimum of 72 credit hours, including a 23-credit course requirement covering fundamental material in cellular and molecular neurobiology, systems neuroscience, and several elective courses.

- MSNBIO 2010 - SCIENTIFIC ETHICS or
- NROSCI 2010 - SCIENTIFIC ETHICS
- MSNBIO 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1 or
- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1
- MSNBIO 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2 or
- NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2
- MSNBIO 2102 - SYSTEMS NEUROBIOLOGY or
- NROSCI 2102 - SYSTEMS NEUROBIOLOGY
- MSNBIO 2624 - GRANT WRITING

Other Requirements

In addition to University requirements for graduate degrees, students are also required to complete a graduate level statistics course, obtain research experience in at least two separate laboratories; attend journal clubs and research seminars; pass a reprint exam following their first year of study, a comprehensive exam, and a doctoral dissertation and defense.

Master's

Neuroscience, MS

The following sections outline the academic courses, the research experiences, and the oral and written examinations (herein referred to as "milestones") that the student must successfully complete prior to being awarded the master's degree. These requirements are described in terms of the academic and research accomplishments expected during each year of the student's progress through the program. Deviations from the outlined sequence and time schedule need to be approved by the Director of Graduate Studies.

MS Degree Requirements

Credits: A minimum of 30 credit hours, including 12 credit hours of graduate course work in courses numbered 2000 or above.

- NROSCI 2102 - SYSTEMS NEUROBIOLOGY
  OR
- NROSCI 2011 - FUNCTIONAL NEUROANATOMY

  AND
- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1
- NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2
  OR
- NROSCI 2012 - NEUROPHYSIOLOGY
- NROSCI 2017 - SYNAPTIC TRANSMISSION
- A graduate-level course in statistics also is strongly recommended though not required

Additional

Students must also participate in a journal club every fall and spring term (this could be either a CNUP journal club or a more specialized journal club), and must attend the neuroscience seminar series (NROSCI 2106). Journal club and seminar series credits should account for no more than 3 of the 12 required course credits. A minimum grade of B is required to pass a course, and a cumulative grade point average of at least 3.0 must be maintained throughout the course of study.

Students must complete at least 12 credit hours of coursework toward the total of 30 credits required for the master's degree.Course credits completed before admission to the Department of Neuroscience Master's Degree program cannot be applied to the credit hour requirements required for the master's degree, although prior coursework may satisfy specific course requirements.

Students are also required to pass two milestones en route to the master's degree: the Reprint Exam and the Master's Thesis Defense. Specific details regarding these milestones are provided later in this document.

Yearly Sequence of Requirements and Expectations

Entering Students

Entering students should schedule an introductory meeting with the Director of Graduate Studies. The purpose of this meeting is to answer any questions that the student may have and to assist the student in getting settled in the program. Prior to the beginning of the student's first term, the student, with the aid of their research mentor and the Director of Graduate Studies, outlines a complete plan of study leading to the Master's Degree.

First Year

The major objectives of the first year are to become actively engaged in laboratory research, to complete core course requirements, and to obtain sufficient experience to pass the Reprint Exam. Participation in journal clubs, research seminars, and involvement in critical assessment of the literature through readings with the mentor and peers is integral to meeting these objectives.

It is required that students participate in the following activities during the fall and spring terms of their first year:

1. laboratory research

2. core courses in neuroscience
3. journal club
4. neuroscience seminar series.

During the summer term at the end of their first year, students should focus primarily on research, although some course work may be appropriate (e.g., statistics). During the first year, the students typically register for 3-9 research credits of Directed Study (NROSCI 2902) per term; the students should register for this course pass/fail.

Students are required to submit a research progress report at the end of the first year of study. This report is due by the last day of final exam week of the second term.

The Reprint Exam (see Section 9.1) must be completed by May 31 of the first year of study.

This assumes that the student initiated study in the program at the beginning of the fall term. Because admission into the program is considered on a rolling basis, it is not unusual for students to enter the program in the spring or summer terms. In these instances, completion of the reprint examination should take place at the end of the first month following the second term of study.

Second Year

After completion of the first year, the only remaining requirements are to finish course requirements and complete a master's thesis project. A list of elective courses currently offered can be obtained from the administrative office. Selection of the coursework that will be used to satisfy the requirements of the program should be made in consultation with their mentor and is subject to approval by the Director of Graduate Studies. However, given the time constraints of completing the degree it is expected that research will be the principal focus of students throughout their program of study.

During each fall and spring term the student is enrolled in the program, the student must participate in:

1. research (registered for as 6-9 credits, NROSCI 2990, pass/fail)
2. journal club
3. neuroscience seminar series (NROSCI 2106).

Department of Philosophy

The Department of Philosophy offers the degrees of Master of Arts and Doctor of Philosophy.

It is possible for students in the Department of Philosophy to plan a combined program with the Department of History and Philosophy of Science by fulfilling specific requirements in each of the departments. The Departments of Classics, Philosophy, and History and Philosophy of Science jointly offer a graduate program leading to the MA and PhD degrees with an area of concentration in classics, philosophy, and ancient science.

Contact Information

Department Chair: James Shaw
Main Office: 1017 Cathedral of Learning
412-624-5775
Fax: 412-624-5377
E-mail: jrs164@pitt.edu
http://www.philosophy.pitt.edu/

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Philosophy, Graduate Administrator, 1017 Cathedral of Learning, Pittsburgh, PA 15260. Phone: 412-383-0422. Fax: 412-624-5377. E-mail: Jes379@pitt.edu

Admissions

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a statement of purpose, and a writing sample. International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing Service or the IELTS administered by the University of Cambridge, Local Examination Syndicate. The required minimum TOEFL score is 90 (with at least a score of 22 in all of the four sections of speaking, listening, reading, and writing). The required minimum IELTS score 7.0 (with at least 6.5 in each of its four sections). Applications will be accepted for fall term admission until January 10. The department admits students only for the fall term.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Philosophy, PhD

Requirements for the PhD

The University requirement for the PhD is 72 credits. The department requires that 36 of these credits must be obtained by taking 12 seminars (including directed studies) offered by the philosophy department (or an approved seminar offered by another department) passed with a grade of at least B, and the remainder are typically satisfied by dissertation research.

Departmental requirements are fully spelled out in the *Handbook of Rules and Policies for Graduate Study in Philosophy at the University of Pittsburgh (PDF)*. In summary, these requirements include:

1. proficiency in basic and advanced logic, normally shown by passing (with a grade of at least B) PHIL 2500
2. proficiency in ethics, metaphysics and epistemology, and philosophy of science
3. proficiency in the history of philosophy, shown by doing three units, where a unit is a graduate seminar or departmental examination covering a historical topic

When these requirements have been satisfied, the student is comprehensively evaluated and starts working on a paper to serve as the basis for comprehensive examination, which is the student is expected to take by the end of his or her seventh term. Students who pass this examination are then allowed to form a dissertation committee and to present this committee a prospectus for a dissertation. If the prospectus is approved, the student is admitted to Ph.D. candidacy and proceeds to writing the dissertation. Once the dissertation is approved for examination, the student must pass a final oral exam on the dissertation and their research.

Master's

Philosophy, MA

M.A. in Philosophy

The department has no regular terminal M.A. program. Students enrolled in the Ph.D. program may apply for an M.A. when they have satisfied the requirements for comprehensive evaluation described in §4.1 of this handbook and been comprehensively evaluated. Except in extraordinary circumstances, students working towards an M.A. in Philosophy who are not enrolled in the Philosophy Ph.D. program are Ph.D. students in other departments at the University who are seeking a "secondary M.A.". Students pursuing a secondary M.A. are supervised by the Director of Graduate Studies and must satisfy the following requirements:

A. The student must satisfy the Area Requirement in the field of metaphysics and/or epistemology, and in addition one of the other Area Requirements (i.e. either ethics or the philosophy of science), as described in §3.3 of this Handbook. These requirements may (but need not) be satisfied by taking the core courses for Ph.D. students (described in §3.4 of this Handbook). But M.A. students may not take the M&E Core Seminar or Ethics Core Seminar in the Fall term: courses in the Core Sequence are open to M.A. students only in the spring term.

B. The student must do at least two units of history (where a "unit" is defined in §3.5 of this Handbook), such that one is in ancient philosophy and the other in modern/nineteenth century philosophy.

C. The student must either pass the Basic Logic Exam or Phil 2499 (or a more advanced logic course), as described in §3.1 of this Handbook.

D. The student must pass (with a grade of B or better) at least 10 courses (30 credits) offered by the Department at the 2000 level or above. Neither Directed nor Independent Studies may count. Courses that are offered by other departments and cross-listed with Philosophy do not automatically count. Students, may, however, petition the Graduate Committee to use them to satisfy this requirement.

None of the courses used to fulfill these requirements can be among those used to fulfill requirements for another degree, including residency requirements for the student's "home" degree. When requirements (A) through (D) have been met, the student must submit to the Graduate Committee a dossier of three papers written for courses taken in our program, together with any available comments from instructors on these papers. This portfolio will be comprehensively evaluated by the Department and, if the evaluation is favorable, the Department will recommend the conferral of the secondary M.A. degree. Students must register for at least one credit in the term of graduation and be registered for a minimum of three credits in the 12-month period preceding the graduation month. Note that the M.A. degree is only conferred upon students with an overall QPA of 3.0 or higher. All requirements for the secondary M.A. degree should be completed within a period of four calendar years from the student's initial registration for graduate study.

To apply to the secondary M.A. program, students must submit the following to the Director of Graduate Studies: a writing sample, copies of undergraduate and graduate transcripts, and a letter of recommendation from the Director of Graduate Studies in the student's home department indicating that the home department supports the student's application to the secondary M.A. Program. The University allows a maximum of six credits taken prior to admission to a secondary M.A. Program to count toward the requirements for the secondary M.A.

Secondary M.A. Programs in other departments

Students enrolled in the regular Ph.D. program in the Department may pursue a secondary M.A. degree in other departments at the University. The University allows a maximum of six credits taken prior to admission to a secondary M.A. Program to count toward the requirements for the secondary M.A. If the secondary M.A. would contribute significantly to the student's philosophical training, or form an integral part of their projected dissertation project, the student may submit a written request to the Graduate Committee that his or her pursuit of the secondary M.A. be officially endorsed by the Department. The Graduate Committee, with the approval of the Chair, may endorse the student's secondary M.A. in which case an additional year of financial support by the Department will be granted, and the timing of requirements will be appropriately adjusted.

Department of Physics and Astronomy

The Department of Physics and Astronomy offers MS and PhD degrees in astrophysics. Both PhD programs provide broad experimental, observational, and theoretical training. Our graduates are prepared for a variety of careers including teaching and research at major academic institutions, research at government and industrial laboratories, data analysis and software development, statistical analysis, quantitative modeling, scientific writing and outreach, technical marketing, corporate leadership at science and engineering firms, and a variety of scientific entrepreneurial endeavors.

Contact Information

Main Office: 100 Allen Hall
412-624-9066 or 412-624-9000
Fax: 412-624-9163
E-mail: pagrad@pitt.edu
www.physicsandastronomy.pitt.edu

Research

Students may perform their MS and/or PhD research in any of several subdisciplines including astrophysics, cosmology, condensed matter physics, particle physics, biophysics, quantum computing, quantum information, and physics education research. Topics in astrophysics and/or cosmology include observational, numerical, and theoretical cosmology; dark matter and dark energy; galaxy formation and evolution; active galactic nuclei and quasars; galactic and intergalactic medium; stellar atmospheres; massive stars; supernovae; and physics of the early universe. Topics in condensed matter physics include nanoscience; nanophotonics; quantum information; quantum kinetics; quantum optics; quantum states of matter; strongly interacting materials; tensor network numerics; superconducting quantum circuits; semiconductor physics; statistical physics; superconductivity; topological phases; ultrafast optics and cold atoms; optical physics and devices. Topics in particle physics include the origin of mass and flavor; the search for new symmetries of nature; neutrino physics; CP violation; heavy quarks; baryogenesis; inflation and early universe physics, precision tests of the Standard Model; effective field theory; and strong interaction field theory. Topics in biophysics include bacteria dynamics, scaling laws of epigenetic expression, turbulence and stochastic fluctuations, theoretical statistical physics of cell sensing and behavior. Topics in physics education research include cognitive issues in learning physics and development and evaluation of research-based curricula for introductory and advanced physics courses. Multidisciplinary thesis research may also be carried out in, for example, particle astrophysics, biophysics, chemical physics, laser physics, materials science, nanoscience, and surface science. This research may be done in cooperation with faculty from other departments at the University.

Admissions

To be considered for admission, a student must have earned a baccalaureate degree in one of the physical sciences, mathematics, astronomy/astrophysics or engineering. Research experience is recommended but not required. Application details are listed on our web site under "How to Apply." A complete application consists of the following.

- • An online application
  • Transcripts (clear downloads) from all college-level institutions attended (unofficial until admitted)
  • Proof of degree(s) either posted on the transcript or in another form
  • Minimum GPA for admission with full status is 3.0 on a 4.0 scale
  • Brief statement of purpose, including rank ordered list of research preferences; in addition to list of textbooks used for intermediate/advanced level physics classes.
  • Evidence of any research experience (recommended but not required)
  • Curriculum Vitae
  • Three letters of recommendation
  • International applicants only: TOEFL (Test of English as a Foreign Language), IELTS or Duolingo English test scores and completed Certification of Financial Responsibility and International Graduate Student Supplemental Form for the Dietrich School of Arts and Sciences (Refer to department's graduate application details website for minimum score information)

Faculty

Department of Physics and Astronomy Faculty

Doctoral

Physics, PhD

Requirements for the Doctor of Philosophy

Physics, Ph.D.

The PhD program in physics, described in more detail in the referenced documents, aims to assure that graduates are well versed in the fundamentals of their fields, have a broad knowledge of contemporary developments, and are experts in the techniques and current state of the subject area of their research.

Students pursuing the PhD in Physics are required to complete core courses in thermodynamics/statistical physics, electrodynamics, and quantum mechanics (PHYS 2541, PHYS 2555, PHYS 2565) and at least one of Dynamical Systems (PHYS 2513) or Quantum Mechanics II (PHYS 2566) within the first two years of graduate study, though for most students we recommend both courses. Students who are already familiar with the material of one or several core courses may directly take the course exam(s) at the start of the term. Students entering with a Masters degree from another institution are encouraged to review Section 4.B of the Graduate Student Handbook, as they may be eligible to take an oral exam to earn exemption from the aforementioned required courses.

At least four classes numbered above 3000 are also required for the degree. Teaching practicum, presentation and attendance of seminars, and writing and an oral presentation of a dissertation give candidates broad experience in the effective communication of their work.

A minimum of 72 graduate credits are required for the PhD degree.

The PhD preliminary evaluation, which also serves as the comprehensive examination for the MS, is based on performance in the core graduate and/or advanced undergraduate courses. All students are required to pass the preliminary examination by the end of the first year.

PhD students are also required to complete the PhD comprehensive examination, which is similarly based on performance in the core graduate courses. This examination should be passed within the first two years of residency. Students who were exempted from a particular core course are deemed to have met the comprehensive examination requirement for that course.

The PhD dissertation research, which is the largest component of the PhD program, must contribute significantly to the advancement of knowledge in physics and/or astronomy. Students will be required to meet annually with their thesis committee and successfully defend their dissertation before this committee and the University community.

Astrophysics, Ph.D.

The PhD in Astrophysics provides students with foundational knowledge in modern astrophysics as well as focused study in several specific subdisciplines. The PhD trains students to perform independent research in several subdisciplines of astrophysics. Individuals earning the Astrophysics PhD are prepared for a variety of careers including teaching and research at major academic institutions, research at government and industrial laboratories, data analysis and software development, statistical analysis, quantitative modeling, scientific writing and outreach, technical marketing, corporate leadership at science and engineering firms and a variety of scientific entrepreneurial endeavors.

The course curriculum for the Astrophysics PhD consists of eight (8) required courses as well as a number of electives. The required courses for the Astrophysics PhD are:

- ASTRON 3540 - Introduction to Astrophysics and Cosmology
- ASTRON 3550 - Stellar Structure
- ASTRON 3580 - Galactic and Extragalactic Astronomy
- ASTRON 3650 - Galactic Dynamics
- PHYS 3701 - Radiative Processes in Astrophysics
- ASTRON 3705 - Statistics and Data Science
- ASTRON 3785 - Cosmology
- ASTRON 3907 - Directed Research

In case any of the core courses on this list are not offered at a given time, substitutes can be approved by the DGS and the Graduate Curriculum Committee.

The number and specific elective courses to be taken by any individual student will be determined in consultation with the academic advisor, thesis committee, and director of graduate studies based on the prior preparation and research area of the student.

At least 72 graduate credits are required for the PhD degree.

All students will be expected to pass a Preliminary Evaluation by the end of their first academic year in the program. To pass the preliminary evaluation, students must achieve a grade of at least B in a minimum of four graduate-level astrophysics courses from the list of required courses and electives (where the research course ASTRON 3907, Directed Research shall be one of those courses), as well as maintaining a GPA of 3.0 or better.

By the end of the second academic year, all students enrolled in the program will be expected to pass the Comprehensive Evaluation. To pass the comprehensive evaluation, students must pass four of the six required graduate courses (not including ASTRON 3907 - Directed

Research) in astrophysics with a grade of B+ or higher. Credit for courses in recognition of work performed at other institutions will be recognized in accordance with current Dietrich School policy.

The PhD dissertation research, which is the largest component of the PhD program, must contribute significantly to the advancement of knowledge in astrophysics. Students will be required to meet annually with their thesis committee and successfully defend their dissertation before this committee and the University community.

Master's

Physics, MS

Requirements for the Master of Science

Physics, M.S.

A minimum of 30 credits (3.0 GPA) is required for the MS for both thesis and non- thesis options. The student must be in compliance with all of the University's degree requirements. At least four physics courses (12 credits) at the graduate 2000-level must be completed with a grade of B (3.00). A 3000-level course can be substituted for one of these, but only with the Academic Advisor's approval. No more than six credits of graduate work completed at another institution may be accepted by the Graduate Committee toward the completion of the residence requirement. Credits earned for PHYS 2997 and PHYS 2998 may not be used to satisfy this requirement. No more than two non-physics graduate-level courses, approved in advance by the Director of Graduate Studies, will be considered for credit for the MS degree. Please refer to department's graduate website for details about the course, directed research, and thesis options for this degree.

The Comprehensive Examination for MS students, which is equivalent to the Preliminary Evaluation for Physics PhD students, is based on performance in the core graduate and/or advanced undergraduate courses.

Department of Political Science

Overview of Department

The Department of Political Science offers the degrees of Master of Arts and Doctor of Philosophy. However, the MA degree functions primarily as a stepping-stone to the PhD. The department does not have a distinct MA program, and does not, except under very unusual circumstances, admit students for graduate study who seek a terminal Master of Arts degree. However, PhD students who, for various reasons, choose to discontinue their training after two years are eligible for a terminal MA, contingent upon the successful completion of the requirements outlined below.

Contact Information

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Graduate Program

The Department of Political Science offers the degrees of Master of Arts and Doctor of Philosophy. However, the MA degree functions as a stepping-stone to the PhD. The department does not have a terminal MA program, and does not admit students for graduate study who

seek a terminal Master of Arts degree. However, PhD students who, for various reasons, choose to discontinue their training after two years are eligible for a terminal MA, contingent upon the successful completion of the requirements outlined below.

The graduate program in political science incorporates five fields:

- American Politics
- Comparative Politics
- Mass Political Behavior
- Political Research Methodology
- World Politics (International Relations)

Students choose two of these fields as areas of specialization. Students may combine work for the MA and PhD degrees with a program of regional or global specialization leading to a certificate in Global Studies, Latin American studies, Asian studies, West European studies, or Russian and East European studies.

Admissions

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a career statement, and scores on the verbal, quantitative, and writing assessment-analytical sections of the Graduate Record Examination. International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing or the IELTS administered by the University. For fall term admission and awards consideration, complete applications must be submitted by early January (see deadlines) 1. The department admits students only for the fall term.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Political Science, PhD

Requirements for the PhD

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, research, teaching practicum, or dissertation work.

Course Requirements: Students must complete at least four graduate seminars from their examination field and at least three graduate seminars from their second field and receive a grade of an A- or above in at least two of these three classes and a grade of B+ above in the other class.

Comprehensive Examination: Students must successfully pass comprehensive examination in one of the department's examination fields in August following the successful completion of the MA qualifying paper. The purpose of the examination is to demonstrate that the student is capable of teaching a graduate-level seminar in the examining field and to assure that the student can synthesize and critically evaluate the literature.

Dissertation Overview: The overview consists of a carefully developed research design for the proposed Ph.D. dissertation. Students are expected to defend dissertation overview at the end of their third year in residence.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and is open to the University community.

Supervised Teaching Practicum: A hands-on teaching practicum is an academic requirement of the doctoral program for students to learn about university-level teaching.

The specifics of the PhD degree requirement can be found at Graduate Student Handbook.

Master's

Political Science, MA

Requirements for the MA

The department does not admit students who intend to pursue a terminal MA degree. Instead, the degree is assumed to be a milestone on the way toward a Ph.D. Terminal MA's are offered only to students who, for personal or professional reasons, cannot or choose not to continue their training beyond a minimum of two years of study.

Preliminary Examination: At the end of the first year of coursework, the full faculty assess the performance of each first-year student. This assessment comprises the college-mandated preliminary examination. Students who have earned a grade of A- or higher in each of their courses in the first year are automatically considered to have passed the preliminary examination. Students who have earned a grade of B+ or lower in one or more courses must submit a remediation plan to the Graduate Education Committee, via the Director of Graduate Studies, to remain in good standing in the program.

Credit Requirement: For the MA degree, students must earn 30 hours of credit with a B+ average or better in courses numbered 2000 level. Credits received from "Directed Reading" and "Directed Research" count toward this requirement, credit from PS 2905 (Teaching and Research in Political Science) does not. These courses must involve the completion of the eight-credit sequence of core courses (PS2000, PS2020, PS2030). These courses should be taken during the first year of graduate work, although they may be deferred to the second year in the case of conflicts in the students' academic schedule and with the permission of the Director of Graduate Studies and the instructor. In addition, students must complete at least four graduate seminars in one of the following fields: American Politics, Comparative Politics, International Relations, Mass Political Behavior, and Political Methodology.

MA Qualifying Paper: Students are required to write an MA qualifying paper and successfully defend it before the entire department by the end of their second year in the program.

The specifics of the MA degree requirement can be found at Graduate Student Handbook.

Department of Psychology

The department offers graduate training leading to a Doctor of Philosophy in psychology. Specialization in the fields of biological and health psychology, clinical psychology, cognitive psychology, developmental psychology, and social psychology is available, along with joint programs in clinical/developmental and clinical/health psychology. A specialization in Cognitive/Neuroscience is also available. The area of concentration in clinical psychology is accredited by the American Psychological Association. All graduate programs emphasize training in science and experimental research methods, including the clinical psychology program, which has the aim of producing the next generation of clinical scientists.

Contact Information

Department Chair: Tessa Warren
Main Office: 3137 Sennott Square
412-624-4502
Fax: 412-624-4428
E-mail: psygrad@pitt.edu
http://www.psychology.pitt.edu/graduate-studies

Admissions

Applications for admission must be submitted online by December 1. Admission is in the fall only. Applicants for admission to graduate study in psychology must submit academic transcripts, 3 letters of recommendation, statement of goals -which include reasons for pursuing a PhD, past research experience, clinical experience (if applicable), and other skills and experiences, and a personal essay about leadership or outreach experiences, employment or athletics that had to be balanced with academic demands, out of classroom learning, challenges one may have overcome, and if desired, any issues relevant to diversity, broadly considered. GRE requirements vary by program and applicants are advised to view the department's webpage for the latest details: https://www.psychology.pitt.edu/graduate/application-process. Applicants to the clinical and joint-clinical programs may also submit scores for the GRE Subject test, which is recommended, not required. Students may obtain information concerning the dates and places of administration of the GRE from the Graduate Record Examination, Educational Testing Service, Princeton, NJ 08541-0001; from www.ets.org; or from the testing service of their own college or university.

International graduate applicants must possess proficiency in English at a level that enables them to succeed in graduate-level studies. Applicants in the following categories meet this requirement: citizens of a country whose official languages include English; graduates of regionally accredited institutions in the U.S.; graduates of institutions whose language of instruction is English **and** located in countries whose official languages include English.

These scores are required for all applicants whose native language is not English. The minimum requirements for each exam are listed below:

TOEFL: a minimum overall score of 4.5 with 4.5 in the speaking, reading, writing sub-section and a 5.0 in the listening sub-section. TOEFL scores submitted must not be more than two years old.

IELTS: score of 7.0, with at least 6.5 in each of its four sections. IELTS scores submitted must not be more than two years old.

Duolingo English Test: score of 120. Duolingo scores submitted must not be more than two years old.

As preparation for graduate study, the department recommends broad undergraduate training including courses in biology, mathematics, the physical sciences, the social sciences, and effective oral and written expression. The department recommends college-level mathematics and 12 credits of psychology, including experimental psychology, statistics, and, for applicants to the clinical program, psychopathology (abnormal psychology).

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Psychology, PhD

Requirements for the PhD

A minimum of 72 credits is required for the PhD. The credits are readily earned in the course of completing the regular requirements. Up to 24 credits may be granted for a master's degree awarded by another institution.

In addition to the credit requirement, the PhD in psychology requires:

1. Demonstration of proficiency in the program-specific core and required courses as described in the following links: biological and health, clinical, cognitive, developmental, and social.
2. Demonstration of competence in research at the master's level, with an oral defense of a master's thesis or equivalent work. (This may be waived for students entering with a master's degree.)
3. Maintenance of a B average (3.0) in all course work.
4. A comprehensive examination in a field of specialization.
5. Demonstration of teaching competence in a formal course setting.
6. A dissertation based on empirical research.

7. An oral examination concerned primarily with the dissertation.

It is possible to complete these requirements in four years, although most students take four to six years to complete the work for a PhD.

Clinical Program Note: Clinical students are also required to complete a one-year internship in an approved setting. This internship normally takes place after the student has met the requirements for admission to doctoral candidacy. For this reason, the minimum time in which a PhD may be earned in clinical psychology is one year longer.

Teaching Practicum: Each student is required to complete a teaching practicum.

Master's

Psychology, MS

Requirements for the Master's Degree

Normally, students are only admitted for graduate study leading to the PhD. If a student wishes, they may also obtain a master's degree by submitting an approved master's thesis and fulfilling the 30 credit course requirement. Satisfactory completion of the program's specific core courses (as described in the following links: biological and health, clinical, cognitive, developmental, and social) constitutes the comprehensive examination for the MS.

Minor

Quantitative Methodology Minor

Students pursuing a doctorate within the major of Psychology may now obtain a Minor in Quantitative Methodology.

Approval to pursue the Minor is contingent on:

A.) Being a student pursuing a graduate degree in Psychology in good standing. Written approval of the student's primary advisor.

B.) Completion of the standard 2-course sequence in graduate statistics in the Department with a grade of B+ or higher, or an approved waiver of this criterion based on equivalent prior coursework. The two required courses are Statistical Analysis 1 (PSY 2005) and Statistical Analysis 2 (PSY 2010).

C.) Completion of 3 additional courses in advanced quantitative methods with a grade of B+ or higher. These courses may be completed within or outside of the Department of Psychology. Courses taken to fulfill this requirement from other departments require approval by the current faculty administrator of the Minor. The psychology department currently offers three advanced quantitative methodological courses on a regular basis: Structural Equation Modeling PSY 2090), Applied Longitudinal Data Analysis (PSY 2575 - Special Topics in Psychology), and Mixed Effects Models (PSY 2575 - Special Topics in Psychology). In addition, students may take advanced quantitative courses in other departments in the college (e.g., Department of Statistics, Department of Political Science), or outside of the college (e.g., School of Education, Carnegie Mellon University Machine Learning program). A list of previously approved courses can be found on KennyNet (Psychology KenneyNet>Programs>Quant folder>Quant resources (open to all). Additional courses can be proposed by trainees and will be approved on an ad hoc basis following a review of the syllabus by a faculty member of the committee.

D.) Enrollment in (1 credit) and attendance of at least one semester's worth (6 lectures) of the Community for Advanced Methodological Learning (CAMeL: https://psychology.pitt.edu/graduate/camel) series, including a presentation of one lecture on a topic approved by the CAMeL organization committee.

E.) Demonstration of mastery of quantitative methodology through the inclusion of an advanced technique as part of a milestone or independent project that has been approved by one of the affiliated faculty.

For the purposes of evaluation, a the following faculty below will constitute the Quantitative Minor committee. This committee will comprise Drs. Scott Fraundorf, Marquis Hawkins, Rebecca Reed (chair), and Colin Vize.

Evaluation of each of the proposed requirements are as follows:

For academic requirements B and C above, successful completion of the coursework with a grade of B+ or higher in each of the 5 courses will be evaluated by a review of the trainee's transcript. The Psychology Department graduate administrator will maintain a list of courses that are approved.

For academic requirement D, confirmation of attendance to CAMeL will be ascertained by review of the sign-in sheets collected at each meeting, and satisfactory presentation will be judged by one of the review committee faculty in attendance on the date of the student's presentation.

Finally, successful completion of requirement E, inclusion of an advanced methodological technique in a milestone project (i.e., Master's Thesis, Comprehensive Exam, or Doctoral Dissertation) or independent project, will be evaluated by one review committee member. The criterion for satisfactory completion will be commensurate with the requirements associated with the milestone project (i.e., the technique would need to be judged to be acceptable for satisfactory completion of the milestone project) or consistent with expected publication standards in the field, should the student choose to pursue an independent project. A review committee faculty member is not required to be part of the milestone project committee, and in the case that there is not an affiliated faculty member on the committee an independent evaluation of the application of the advanced statistical technique will be performed.

If you wish to pursue the Quantitative Minor, please do the following:

At least one year before you plan to graduate, email the Chair of the Quantitative Minor Committee (and cc your faculty mentor) to indicate that you intend to complete the quantitative minor. In this email, outline how you have completed or plan to complete the requirements A through E listed above.

At least one semester before you plan to graduate, complete this survey to obtain final approval for the Quantitative Minor: https://pitt.co1.qualtrics.com/jfe/form/SV_er4NdkNmRKg6Xoa.

Current Chair of the Quantitative Minor Committee: Rebecca Reed, PhD. Additional information can be found here: https://www.psychology.pitt.edu/graduate/additional-training-options/minor-quantitative-methodology.

Department of Slavic Languages and Literatures

The Department of Slavic Languages and Literatures offers a Master of Arts (as a degree leading to the Doctor of Philosophy) and a Doctor of Philosophy, with an area of concentration in Russian literature and culture, including cinema. Students may combine work for the MA and PhD degrees with a program of regional specialization leading to a certificate in Russian, East European & Eurasian Studies; Cultural Studies; Film & Media Studies; Gender, Sexuality, & Women's Studies; Jewish Studies; and others.

Eligible Slavic PhD students may apply, before taking the Slavic PhD comprehensive examinations, to transfer to Pitt's Interdisciplinary Film Studies PhD (with a concentration in Slavic), thereby working towards a single PhD in two disciplines. For information on the Interdisciplinary Film Studies PhD, see http://www.english.pitt.edu/graduate/phd-film-studies.

Contact Information

Department Chair: Bella Grigoryan
Main Office: 1229 Cathedral of Learning
412-624-5906
Fax: 412-624-9714
E-mail: slavic@pitt.edu
www.slavic.pitt.edu

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Slavic Languages and Literatures, Graduate Administrator, Jennifer Berkebile, 1229 Cathedral of Learning, Pittsburgh, PA 15260. Phone: 412-624-5227. Fax: 412-624-9714. E-mail: JES379@pitt.edu.

Admissions

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a career statement, an academic writing sample, and scores on the verbal, quantitative, and writing assessment-analytical sections of the Graduate Record Examination. International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing or the IELTS administered by the University of Cambridge, Local Examinations Syndicate. Applications will be accepted for fall term admission until April 15. For awards consideration, applications must be completed by January 15. The department normally admits students only for the fall term.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Slavic Languages and Literature, PhD

Requirements for the PhD

Credit Requirement: 72 graduate credits (36 beyond the MA), of which 12 may be dissertation credits; at least 60 credits must be completed by the end of the semester in which the PhD examination is to be taken.

Approved Second Area: Nine to 15 credits outside the department (but within the 72-credit total) in an approved second area (e.g., Russian, East European, & Eurasian Studies, Cultural Studies, Film & Media Studies, Gender, Sexuality, & Women's Studies; Jewish Studies, etc.).

Research Languages: Reading competence in a research-relevant language other than Russian or English is required before taking the PhD exam.

MA Examinations: The MA exam serves as the qualifying stage for those students who wish to pursue graduate work at the PhD level.

Supervised Teaching Practicum: A hands-on teaching practicum is an academic requirement of the doctoral program for students to learn about university-level teaching.

PhD Examination: Students take a PhD examination after approximately two years of coursework beyond the MA. For examination procedures visit http://www.slavic.pitt.edu/graduate/examinations.

Dissertation Overview: Following successful completion of the PhD examination, the student files an application for admission to candidacy for the Doctor of Philosophy. At this stage the student presents a proposed topic for doctoral research and a research prospectus for its execution to be reviewed by the dissertation committee.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and is open to the University community.

Master's

Slavic Languages and Literature, MA

Requirements for the MA

For the MA, students must earn 36 hours of graduate credit with a B average or better in courses numbered 1000 or above. At least half of these credits must be in courses numbered 2000 or above. All MA students are required to complete RUSS 2110 - INTRODUCTION TO LITERARY AND CULTURAL THEORY: LANGUAGE, GENDER, HISTORY and either RUSS 2970 - TEACHING PRACTICUM or FACDEV 2200 - PRACTICUM ON UNIVERSITY TEACHING . Courses are chosen in consultation between the student and the Director of Graduate Studies (DGS) and are subject to approval by the latter. The remainder of student coursework is used to develop competence in Russian literature and culture or in an approved second area (see above).

The MA comprehensive exam covers material from a **reading list**. For examination procedures see **https://www.slavic.pitt.edu/graduate/examinations**.

Department of Sociology

The Department of Sociology offers the degrees of Master of Arts and Doctor of Philosophy. However, a terminal Master's degree is infrequently awarded, as students awarded Master's Degrees usually continue in the Department to receive PhD Degrees.

The faculty conduct research and offer courses within two broadly defined areas: 1) social movements and 2) politics and culture. Within each of these areas, graduate students are able to pursue a variety of theoretical, substantive, and methodological interests.

Graduate students are encouraged to combine their work in sociology with multidisciplinary study in a particular area by enrolling in any of the following certificate programs: African Studies, Asian Studies, European Studies, Global Studies, Latin American Studies, Russian and Eastern European Studies, Cultural Studies, or Gender, Sexuality, and Women's Studies.

Contact Information

Department Chair: Lisa Brush
Main Office: 2400 Posvar Hall
412-648-7580
Fax: 412-648-2799
E-mail: lbrush@pitt.edu
www.sociology.pitt.edu/graduate/

Additional information concerning the department's graduate program may be obtained from the graduate administrator, Amber Fontenot (alf@pitt.edu).

Admissions

Qualified students from any discipline are considered for admission. Qualifications include preparation for graduate-level work in sociological theory and both qualitative and quantitative research methods, including a required course in social science applications of multivariable regression models. Applicants must submit to the departmental director of graduate studies transcripts of all college-level work, three letters of recommendation, a career statement, and a brief writing sample. International applicants are also required to submit TOEFL, IELTS (the International English Language Testing System), or DuoLingo scores, unless they hold an undergraduate or graduate degree from an accredited U.S. college or university or from other English-speaking countries. All applications and application fees must be submitted on-line. Applications are accepted for fall term admission until January15. The department admits students only for the fall term.

How to apply: https://www.sociology.pitt.edu/graduate/how-apply

Faculty

Dietrich School of Arts and Sciences Faculty

http://www.sociology.pitt.edu/faculty

Doctoral

Sociology, PhD

Requirements for the PhD

Admission: Prerequisite for admission is a Bachelor of Arts degree or equivalent preparation (plus approval from the Admissions Committee). If a Student has not yet received a Master's Degree at the time of application, the Department will require the student to pursue a Master's Degree at the University of Pittsburgh. The requirements for the Master's Degree are listed below. Those students entering with an MA degree from another institution may petition the Admissions Committee for a transfer of credits but core courses are usually not waived.

Credit Requirement: The PhD program requires 72 credits earned from a combination of the required core course sequences, MA courses, additional graduate sociology seminars, and any suitable combination from course work, independent study, research, and dissertation work as detailed elsewhere in this bulletin.

Required Teaching Practicum: A hands-on teaching practicum is an academic requirement of the doctoral program for students to learn about university-level teaching.

Comprehensive Examination: The PhD comprehensive examination is an individually designed review essay using relevant research literatures to develop research questions for the dissertation and to support those questions with appropriate methodological and theoretical "best practices" in the field and substantive findings related to the dissertation project.

Dissertation Overview: At this stage students will have selected, in consultation with their dissertation committee, a suitable dissertation topic. Students present a written prospectus to their committee describing the purpose, scope, and method of proposed study and the sources upon which it will be based. Students are encouraged to give careful thought early on in their graduate work to possible doctoral research topics and discuss their interests with related faculty.

Final Oral Examination: The final oral examination in defense of the doctoral dissertation is conducted by the dissertation committee and is open to the University community.

Master's

Sociology, MA

Requirements for the Master's Degree

For the MA, students must earn 36 credits in approved graduate courses. The 36 credits must include completion of the nine credit core course sequence: Research Design, Social Theory, Qualitative Methods and Quantitative Methods, as well as at least 14 credits of elective graduate coursework in the sociology program with grades of B or better.

Students also write a Second Year Paper in lieu of a Master's thesis.

Remaining credits may be earned with sociology electives (which may include 3 credits of directed study) or graduate coursework in other programs.

Department of Statistics

The Graduate Faculty offers various programs of study and research in statistics. Degree programs lead to the Master of Arts or Master of Science in applied statistics, the Master of Arts or Master of Science in statistics, and the Doctor of Philosophy in statistics. These may be pursued by full-time and part-time students. The department also provides courses for students engaged in graduate studies in other

disciplines requiring statistics and for individuals requiring specialized statistical skills in the workplace. Full details of all programs and departmental regulations are available on the website at the address listed below.

Contact Information

Chair: Kehui Chen
Main Office:1800 Wesley W. Posvar Hall
412-624-8368
Graduate Administrator: Jay Drummond
E-mail: statadmn@pitt.edu
www.statistics.pitt.edu

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Statistics, Academic Coordinator. 1800 Wesley W. Posvar Hall, Pittsburgh, PA 15260. E-mail: statadmn@pitt.edu.

Admissions

http://www.statistics.pitt.edu/graduate/admissions

A basic requirement for admission to the graduate program in statistics is the completion of a bachelor's degree from an accredited institution in the United States or the completion of a level of education that the University of Pittsburgh deems comparable to a U.S. bachelor's degree. Applicants whose native language is not English and who have not already completed a degree program in a U.S. college or university are required to submit either the TOEFL (administered by the Educational Testing Service) or the IELTS (administered by Cambridge University, Local Examinations Syndicate).

Decisions regarding admission are based on the applicant's official credentials, grade point averages, and the availability of faculty and facilities to meet the applicant's expressed academic or research needs and interests. With limited space available, not all qualified applicants can be admitted.

The minimal course requirements for admission into the graduate programs of the Department of Statistics are:

- Three terms of calculus
- Linear algebra
- One year of probability and statistics, preferably an introductory mathematical statistics sequence

Students lacking some of these prerequisites may be admitted provisionally at the discretion of the Graduate Committee. In addition, students intending to pursue the PhD should either have taken a one-term course in advanced calculus, or be prepared to take such a course in the first year of graduate study.

Requirements for the Master's Degree in Statistics or Applied Statistics

http://www.stat.pitt.edu/graduate-programs

The department encourages its students to obtain a broad background in statistics, including both methods and theory courses, regardless of whether they specialize in applied statistical methodology or in statistical theory. Consequently, two-term sequences in applied statistical methods (STAT 2131-STAT 2132) and intermediate mathematical statistics (STAT 2630-STAT 2640) are common to all master's degree programs offered by the department, and are also generally taken by students whose goal is the PhD in statistics.

Doctoral

Statistics, PhD

Requirements for the PhD

The main requirement for the Doctor of Philosophy in statistics is the successful completion and defense of a dissertation making a substantial and original contribution to statistics, probability, or their application. Prior to embarking on their research, candidates must pass the qualifying exam (see Requirements for the Master's Degree above) at the PhD level. To be admitted to PhD candidacy, candidates must successfully pass an oral PhD Comprehensive examination over an area of research chosen in consultation with their advisory committee. The purpose of the comprehensive examination is to demonstrate that students are able to understand, summarize, and make use of the statistical literature in an area of potential research that is of interest to them. Students who have found a specific topic for their dissertation are encouraged to combine the comprehensive examination with the presentation of the thesis proposal. Students who are not yet ready to present a proposal can still take the comprehensive exam, but must later submit a thesis proposal orally and in writing to their advisory committee.

Course requirements for the PhD are STAT 2631 - THEORY OF STATISTICS 1, STAT 2641 - ASYMPTOTIC METHODS IN STATISTICS, STAT 2661 - LINEAR MODELS THEORY 1, and STAT 2711-STAT 2712 (Probability Theory) or their equivalent. PhD candidates are also required to take at least three credits in statistical consulting; those students anticipating a career involving consulting are advised to take a substantial number of consulting credits. The remaining courses of the 72 credits required for the PhD will be decided in conjunction with the student's advisor and should consist of mainly formal courses prior to the commencement of research for the dissertation.

The department has no second language requirements for the PhD. Although not required, facility in the use of one or more computer programming languages, especially those used in writing statistical software (for example, SAS, R), is highly recommended.

Full-time graduate students usually take between four and five years to complete a PhD. Part-time students may be allowed as many as 10 years to finish all requirements. Additional information concerning examinations and requirements can be found in the Graduate and Professional Bulletin and the Kenneth P. Dietrich School of Arts and Sciences (A&S).

Master's

Applied Statistics, MA

Master of Arts

Department requirements for the Master of Arts in Applied Statistics and Master of Arts in Statistics are the completion of 30 credits and passing the Preliminary Exam, equivalent to receiving grades B or higher in STAT 2630-2640 and STAT 2131-2132.(The same preliminary exam is required for all four master's programs in applied statistics and statistics). .

The Master of Arts in Statistics differs from the Master of Arts in Applied Statistics by replacing the requirements of a two-course sequence in a discipline other than statistics and 3 credits in consulting with the requirement that three additional 3-credit graduate-level statistics courses be taken. Both master's degrees require completion of 30 credits and the passing of the Preliminary Evaluation as explained about.

Applied Statistics

1. Five Required Courses:

- STAT 2630 - INTERMEDIATE PROBABILITY
- STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2
- STAT 2381 - SUPERVISED STATISTICAL CONSULTING

2. Currently four statistics electives (12 credits) are required.

3. Two graduate courses in a field other than statistics to which students might apply statistical methods (6 credits).

Statistics

1. Four Required Courses (12 credits):

- STAT 2630 - INTERMEDIATE PROBABILITY
- STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

2. Six graduate level statistics elective courses (18 credits).

Applied Statistics, MS

Master of Science

The requirements for the Master of Science, either in applied statistics or in statistics for a total of 30 credits.

Applied Statistics

1. Five Required Courses:

- STAT 2630 - INTERMEDIATE PROBABILITY
- STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2
- STAT 2381 - SUPERVISED STATISTICAL CONSULTING

2. One graduate level statistics elective course (3 credits)
3. Two graduate courses in a field other than statistics to which students might apply statistical methods (6 credits)
4. Two graduate level thesis credit courses (6 credits)

Statistics

1. Four Required Courses (12 credits):

- STAT 2630 - INTERMEDIATE PROBABILITY
- STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

2. Four graduate level statistics elective courses (12 credits)
3. Two graduate level thesis credit courses (6 credits)

Statistics, MA

Master of Arts

Department requirements for the Master of Arts in Applied Statistics and Master of Arts in Statistics are the completion of 30 credits and passing the Preliminary Exam, equivalent to receiving grades B or higher in STAT 2630-2640 and STAT 2131-2132.(The same preliminary exam is required for all four master's programs in applied statistics and statistics). .

The Master of Arts in Statistics differs from the Master of Arts in Applied Statistics by replacing the requirements of a two-course sequence in a discipline other than statistics and 3 credits in consulting with the requirement that three additional 3-credit graduate-level statistics courses be taken. Both master's degrees require completion of 30 credits and the passing of the Preliminary Evaluation as explained about.

Applied Statistics

1. Five Required Courses:

- STAT 2630 - INTERMEDIATE PROBABILITY
- STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2
- STAT 2381 - SUPERVISED STATISTICAL CONSULTING

2. Currently four statistics electives (12 credits) are required.

3. Two graduate courses in a field other than statistics to which students might apply statistical methods (6 credits).

Statistics

1. Four Required Courses (12 credits):

- STAT 2630 - INTERMEDIATE PROBABILITY
- STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

2. Six graduate level statistics elective courses (18 credits).

Statistics, MS

Master of Science

The requirements for the Master of Science, either in applied statistics or in statistics for a total of 30 credits.

Applied Statistics

1. Five Required Courses:

- STAT 2630 - INTERMEDIATE PROBABILITY
- STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2
- STAT 2381 - SUPERVISED STATISTICAL CONSULTING

2. One graduate level statistics elective course (3 credits)
3. Two graduate courses in a field other than statistics to which students might apply statistical methods (6 credits)
4. Two graduate level thesis credit courses (6 credits)

Statistics

1. Four Required Courses (12 credits):

- STAT 2630 - INTERMEDIATE PROBABILITY
- STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

2. Four graduate level statistics elective courses (12 credits)
3. Two graduate level thesis credit courses (6 credits)

Teaching of English to Speakers of Other Languages (TESOL) Program

TESOL is an acronym for Teachers of English to Speakers of Other Languages. Professionals in TESOL may be involved in teaching, administration, curriculum development, materials development, assessment, research, and advocacy. They work in a variety of contexts including various age levels, countries, and specialist areas such as English for specific purposes. This TESOL certificate program includes the study of: linguistics at an introductory level, structures of English, theories and practices of teaching second language, second language acquisition or teaching English language learners, materials and curriculum development, and assessment.

Contact Information

Department Chair: Matt Kanwit
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412-624-5900
Fax: 412-624-6130
E-mail: lingpitt@pitt.edu
www.linguistics.pitt.edu

Graduate Administrator: Jennifer Berkebile

412-624-5227

E-mail: jes379@pitt.edu

The Department of Linguistics offers two courses in the Teaching of English to Speakers of Other Languages (TESOL).

- Higher Education Course
- ESL Program Specialist Course

Certificate

TESOL Certificate

TESOL is an acronym for Teachers of English to Speakers of Other Languages. Professionals in TESOL may be involved in teaching, administration, curriculum development, materials development, assessment, research, and advocacy. They work in a variety of contexts including various age levels, countries, and specialist areas such as English for specific purposes. This TESOL certificate program includes the study of: linguistics at an introductory level, structures of English, theories and practices of teaching second language, second language acquisition, materials and curriculum development, and assessment.

The Department of Linguistics offers two courses in the Teaching of English to Speakers of Other Languages (TESOL).

- ESL Program Specialist Course
- Higher Education Course

ESL Program Specialist Course

Requirements

Any student who wished to earn the certificate must fulfill the following requirements:

Prerequisite
(or taken concurrently with the first certificate course)

LING 1000 - INTRODUCTION TO LINGUISTICS

Course Requirements

LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH

LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING

LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT

TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS

TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT

TEACHING PRACTICUM - TLL 2791 - SUPERVISED RESEARCH - FOREIGN LANGUAGE (Term varies)

Please note:

1. iTEACHING PRACTICUM - TLL 2791 - SUPERVISED RESEARCH - FOREIGN LANGUAG involves supervised language teaching concurrent with or following LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING. Candidates fulfill the requirement by signing up for TLL 2791 and completing their practicum in a K-12 context with the support of the School of Education, Department of Teaching, Learning, and Leading , or, with permission of the TESOL Certificate advisor, another ESL teaching context.
2. The certificate candidate must earn a grade of B or higher in each certificate course.

Degree Prerequisite for Admission

Applicants must hold a baccalaureate degree or its foreign equivalent with a minimum grade point average of B (3.0 on a 4-point scale). Preference is given to applicants who have studied abroad, worked with international students, and/or have any EFL/ESL teaching experience (including volunteer).

Instructional I Prerequisite

Applicants must hold a Pennsylvania Instructional I certificate (or equivalent from another state) and be able to provide a copy as part of the application packet.

Additional Language Learning Prerequisite for Admission

Native Speakers of English:

Native speakers of English must have classroom foreign language learning experience equivalent to at least one year of college level study of a language other than English and/or have learned a foreign language during an overseas living/work experience.

Native Speakers of Other Languages:

- **Recommended TOEFL Score:** 5.0 or higher on the new TOEFL scale (1-6), effective for tests taken on or after January 21, 2026. Skill Requirements: Reading, Listening, Writing - 4.5 or above; Speaking - 5.0 or above. For tests taken before January 21, 2026, a score of 95 or higher on the iBT (0-120) scale is recommended (Skill Requirements: Reading and Listening - 22 or above; Speaking and Writing - one skill must be at the level of Advanced). TOEFL scores must not be more than two years old.
- **Recommended IELTS Score:** 7 or higher on the IELTS with at least 6.5 in each of its four sections. (Skill Requirements: Speaking and Writing - combined minimum of 13). IELTS scores must not be more than two years old.
- **Recommended Duolingo English Test (DET) Score:** 130 or higher (Skill Requirements: Speaking and Writing or Production and Conversation - one skill must be 130). DET scores must not be more than two years old.
- Admitted students in TESOL-related programs who use English as an additional language must demonstrate proficient spoken English skills as determined by a score of at least 4 on the interview test administered by the University of Pittsburgh. These students must successfully complete the interview before graduating.

Transcripts and CV and Teaching Certificate

Undergraduate transcripts (and graduate if applicable) and a CV (including a list of references) must be submitted as part of the application. In addition, a copy of the applicant's state teaching certificate must be included in the application materials.

Plan of Study

Students must complete a TESOL certificate plan of study form after consultation with the TESOL Certificate advisor during the first term of study.

Completion of Requirements

When nearing completion of all TESOL certificate requirements, students must apply for graduation from the TESOL Certificate program through the Arts and Sciences Dean's Office. This graduation application is separate from any other degree graduation applications. Additional paperwork for the state endorsement must be filed with the Pennsylvania Department of Education with the help of the School of Education.

Suggested Sequence of Courses

Two-term Option

(entering in the fall term)

Fall:

- LING 1000 - INTRODUCTION TO LINGUISTICS (if needed)
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT

Spring:

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- [PRACTICUM]

Four-term Option

(entering in the fall term)

Fall:

- LING 1000 - INTRODUCTION TO LINGUISTICS (if needed)

- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING

Spring:

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH

Fall:

- TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- [PRACTICUM]

Spring:

- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- [PRACTICUM]

***Note:**

Students must enter the program in the fall term. Students may complete LING 1000 - INTRODUCTION TO LINGUISTICS prior to the fall term, however.

Higher Education Course

Requirements

Higher Education Course Requirements

Any student who wishes to earn the certificate at the MA or PhD level:

Prerequisite
(or taken concurrently with the first certificate course)

- LING 1000 - INTRODUCTION TO LINGUISTICS

Course Requirements

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- LING 2146 - SECOND LANGUAGE ACQUISITION
- TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- LING 2195 - PRACTICUM ESL TEACHING (Term varies)
- *PhD students must take an additional 3 credit course approved by the TESOL Certificate Advisor*

Please Note:

1. LING 2195 - PRACTICUM ESL TEACHING involves supervised language teaching concurrent with or following LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING.
2. The certificate candidate must earn a grade of B or higher in each certificate course.
3. Those applying for graduate degrees will completed the TESOL Certificate program application process after gaining acceptance to the degree program.

Degree Prerequisites for Admission

Applicants must hold a baccalaureate degree or its foreign equivalent with a minimum grade point average of B (3.0 on a 4-point scale). Preference is given to applicants who have studied abroad, worked with international students, and/or have any EFL/ESL teaching experience (including volunteer).

Additional Language Learning Prerequisite for Admission

Native Speakers of English:

Native speakers of English must have classroom foreign language learning experience equivalent to at least one year of college level study of a language other than English and/or have learned a foreign language during an overseas living/work experience.

Native Speakers of Other Languages:

- Recommendations for applicants who are non-native speakers of English are as follows:
- Recommended TOEFL Score: 95 or higher on the iBT TOEFL (Skill Requirements: Reading and Listening - 22 or above; Speaking and Writing - one skill must be at the level of Advanced)
- Recommended IELTS Score: 7 or higher on the IELTS (Skill Requirements: Speaking and Writing - combined minimum of 13)
- Admitted students in TESOL-related programs who are non-native speakers of English must have good spoken English skills as determined by a score of at least 4 on the interview test administered by the University of Pittsburgh. These students must successfully complete the interview before graduating.

Transcripts and CV

Undergraduate transcripts (and graduate if applicable) and a CV (including a list of references) must be submitted as part of the application.

Plan of Study

Students must complete a TESOL certificate plan of study form after consultation with the TESOL Certificate advisor during the first term of study. The student then will work with academic advisor if earning a graduate degree, or the TESOL Certificate advisor if not in a degree program.

Completion of Requirements

When nearing completion of all TESOL certificate requirements, students must apply for graduation from the TESOL Certificate program through the Arts and Sciences Dean's Office. This graduation application is separate from any other degree graduation applications.

Suggested Sequence of Courses

Two-term Option

(entering in the fall term)

Fall:

- LING 1000 - INTRODUCTION TO LINGUISTICS (if needed)
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- [PRACTICUM]
- Elective for PhD-level students

Spring:

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- LING 2146 - SECOND LANGUAGE ACQUISITION
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- [PRACTICUM]
- Elective for PhD-level students

Four-term Option
(entering in the fall term)

Fall:

- LING 1000 - INTRODUCTION TO LINGUISTICS (if needed)
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- Elective for PhD-level students

Spring:

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- LING 2146 - SECOND LANGUAGE ACQUISITION
- Elective for PhD-level students

Fall:

- TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- Elective for PhD-level students
- [PRACTICUM]

Spring:

- LING 2146 - SECOND LANGUAGE ACQUISITION
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- [PRACTICUM]

Note:

*Students must enter the program in the Fall term. Students may complete LING 1000 - INTRODUCTION TO LINGUISTICS prior to the fall term, however.

Department of Theatre Arts

The Department of Theatre Arts fosters a collaborative, inclusive learning community and excellence in theoretical and practical research and pedagogy through its MFA Performance Pedagogy and PhD Theatre and Performance Studies programs. The structure of the programs and their intersections encourage ways of thinking and communicating within and beyond students' fields and the academy in support of students' diverse personal and career goals.

The MFA program is designed to equip working, professional actors with the tools to expand their employment opportunities in teaching acting and other performance styles at the college and university level. It offers a dynamic synthesis of teaching, practice, and scholarship. This program is based on the premise that the professional actor has already gained a level of craft and broad experience that can become the foundation for solid teaching skills. Therefore, emphasis is placed on exploration and strengthening of pedagogical techniques as related to areas of acting and performance training.

The PhD program prioritizes the integration of scholarship with teaching and artistic practice in order to prepare students to be competitive candidates for academic positions at a variety of institutions, post-doctoral research opportunities, and employment sectors beyond academia. In line with the department's intellectual vision, the program integrates theory and practice and focuses on underrepresented groups and areas of research, including migration, disability studies, race, gender, sexuality, religion, and transnationalism, across historical, historiographical, literary, performance studies, and practice-based research methodologies.

For additional information on these aspects of study in the theatre arts at Pitt, visit the department website: www.play.pitt.edu.

Contact Information

Website: www.play.pitt.edu
Theatre Box Office: 412-383-2093

Department Chair: Annmarie Duggan
E-mail: duggan@pitt.edu
Office: 1601C Cathedral of Learning

Phone: 412-624-7285
Fax: 412-624-6338

Director of Graduate Studies: Marjan Moosavi
E-mail: marjanm12@pitt.edu
Office: 1601B Cathedral of Learning
Phone: 412-624-6568
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Graduate Student Services Administrator: LJ Woolcock-Srolovic
E-mail: liw151@pitt.edu
Fax: 412-648-3303

Admissions

Applicants to the PhD program in Theatre and Performance Studies should demonstrate a desire for rigorous research at the PhD level; potential for teaching excellence; interest in the exploration of artistic practice; and capacity for creative and critical risk-taking (in terms of research, artistic practice, and teaching). An MA in theatre arts is not a prerequisite for admission to the program. The department admits some highly qualified students with BAs directly into the PhD program.

Applicants to the MFA Program in Performance Pedagogy must demonstrate a desire to develop a pedagogical approach to teaching performance; exhibit potential for teaching excellence; show interest in practice-based research; demonstrate ability to collaborate across degree programs; and display a willingness to continue professional experience outside of the classroom. Successful applicants will be seasoned professional actors willing to make a full commitment of time and energy to the program.

An undergraduate major in theatre arts is normally a prerequisite for admission to the program, though exceptions can be made if circumstances warrant. Because candidates will be teaching extensively during their residency, some teaching experience is preferred.

Rubrics with admissions criteria are available for both programs on our department website.

Theatre Arts Faculty (https://www.play.pitt.edu/people/theatre-arts-faculty)

Doctoral

Theatre and Performance Studies in Theatre Arts, PhD

The PhD program in Theatre and Performance studies prioritizes the integration of scholarship with teaching and artistic practice in order to prepare students to be competitive candidates for academic positions at a variety of institutions, post-doctoral research opportunities, and employment sectors beyond academia. In line with the department's intellectual vision, the program integrates theory and practice and focuses on underrepresented groups and areas of research, including migration, disability studies, race, gender, sexuality, religion, and transnationalism, across historical, historiographical, literary, performance, and practice-based research methodologies.

The program integrates scholarship with experiential learning opportunities through a curricular requirement called the Immersive Practice Credential. Each student develops a 12-15 credit program of individualized study focused an area of artistic practice, such as directing, dramaturgy, or playwriting, or a professional career outside of the academy, such as Public Humanities or Education and Community Engagement. In their Immersive Practice Credential coursework, students work with Theatre Arts faculty and MFA students as well as pursue professional training and internship opportunities outside of the university.

Mentored by faculty, each student develops their pedagogy through scaffolded teaching opportunities. These experiences allow students to acquire and practice pedagogical skills in smaller practice-based classes as well as larger lecture and discussion courses in theatre history, performance studies, and script analysis for majors and non-majors.

Degree Requirements

A minimum of three years or six terms of full-time residency is required. It is not possible to complete the degree on a part-time basis.

72 credit hours, of which 30 can be granted for an approved Master's degree or its equivalent, are required past the BA, made up of courses stipulated in the curriculum and electives (including independent study, directed study, in-training programs, and dissertation credits).

Students are required to demonstrate advanced knowledge in one foreign language sufficient to read criticism and drama in the language and sufficient to allow them to attend a play in the language and understand it reasonably well. The language requirement may be fulfilled in four ways.

Up to three sections of World Theatre (as designated by the Diagnostic Exam)

Nine seminar-level courses in history, literature, and critical theory of theatre and performance studies. During the first two semesters of a full-time PhD student's program, they must take at least three of these seminars in the Department of Theatre Arts.

At least seven of the nine required courses will be advanced graduate seminars in the Department of Theatre Arts (2000 series). The others may be graduate-level (2000 series) listed in any appropriate University department. Courses labeled "research," "directed study," or "independent study" cannot be used to fulfill this requirement, except by approval of the Graduate Faculty. The student's advisor will regularly monitor selection of courses, and approve the overall sequence chosen. No lower-level undergraduate courses numbered 0001-0999 may be applied toward a graduate degree.

PhD Prelim Evaluation

All students who enter the PhD program are required to take the preliminary examination. Students in their first year of doctoral study must take a minimum of three seminars in the department. Their work in those seminars shall constitute the basis for the prelim exam. The exam is designed to assess students' critical thinking, facility with methodology, and writing skills as well as ability to articulately discuss the course material in the selected seminars.

Comprehensive Exam

By the end of their second year, students should begin to consider and discuss with faculty areas for their comprehensive exam that fall into the three categories: Critical Methodologies and Theoretical Discourses; Historical Discourses; Textual Discourses. By the beginning of their third year, three areas of study should be approved. Through the comprehensive examination, students demonstrate both breadth and depth in regards to theatre and performance history, theory, and practice.

Proposal/overview

The prospectus proposes the subject and plan for the completion of the dissertation. The graduate faculty member who will serve as chair for the student's dissertation committee will provide guidance for the completion of the prospectus. Once the committee chair has approved the prospectus, the student will schedule a defense with all of the members of their PhD committee.

Dissertation and Final Examination

The University of Pittsburgh's *Graduate and Professional Bulletin* outlines the requirements for the final stage of the degree, which is the preparation and defense of a dissertation. This written work, which must embody an extended original investigation of a problem of significance to theatre arts or performance studies, is the capstone to the research program of a student's training.

Master's

Performance Pedagogy in Theatre Arts, MFA

Designed to equip working, professional actors with the tools to expand their employment opportunities in teaching at the college and university level, the MFA in Performance Pedagogy at the University of Pittsburgh offers a dynamic synthesis of teaching, practice, and scholarship.

This program is based on the premise that the professional actor has already gained a level of craft and broad experience that can become the foundation for solid teaching skills. Therefore, emphasis is placed on exploration and strengthening of pedagogical techniques as related to areas of acting and performance training.

Each student is given the mentorship of an experienced teacher of performance and works closely with the mentor to create opportunities for independent studies in pedagogy and curriculum development. Students gain experience applying theory to the practice of teaching acting and performance classes every semester, creating a course, conducting master class workshops, working on production assignments, and coaching or advising undergraduate students as needed. Students are encouraged to develop an area of specialty and to develop other areas of training in order to broaden their knowledge and remain competitive in the academic market.

Degree Requirements

The curriculum for the MFA degree in Performance Pedagogy centers around three focus areas:

1. Pedagogical Study

2. History/Literature/Criticism

3. Practice of Acting and/or other performance styles

4. Other Electives

Each semester students are expected to carry a 15-credit load. In addition, one teaching practicum with a focus on performance instruction is required.

of courses required (list core courses, etc.)

60 credits are required for the program: 36-39 credits in pedagogy; 15 credits in History, Literature and Criticism; and 3-6 credits in electives. Core courses include: Techniques in Performance Pedagogy, Course Development, Production Mentorship, and Directed Studies in Pedagogy.

Thesis and Final Examination

The thesis project is the final requirement for the Performance Pedagogy degree. It is comprised of an original, created course, a substantial written document that serves as a teaching guidebook for other instructors interested in using the thesis topic in the classroom, and an oral defense of the written document. The thesis document identifies a pedagogical question, investigates that question through research and classroom work, and identifies conclusions reached and considerations for future revisions of the course. Thesis documents typically range from 40-80 pages in length and are directly connected to the created course devised by the student.

Joseph M. Katz Graduate School of Business

School of Business

The Joseph M. Katz Graduate School of Business creates and disseminates knowledge that enhances the quality of the management of organizations. The School of Business, through faculty research programs and our doctoral program, produces high- quality research in areas of importance and infuses knowledge created by this research into all programs, but especially the MBA and related professional programs. Our school's reputation, primarily resulting from our MBA, Specialized Master's and doctoral programs, allows us to attract international, national, regional, and campus partners, with whom collaboration results in specialty professional programs with the MBA program as a foundation. This includes areas such as, technology management/engineering, law, and health sciences. Our culture of teamwork, adaptability, and flexibility permits the school to readily adapt to future environments and strategic opportunities.

The Joseph M. Katz Graduate School of Business is accredited by AACSB-the International Association for Management Education.

Contact Information

University of Pittsburgh
School of Business
301 Mervis Hall
Pittsburgh, PA 15260
412-648-1508
E-mail: admissions@katz.pitt.edu
www.katz.business.pitt.edu

Application Procedures

Please refer to individual program descriptions in this section for further information regarding application procedures for Master of Business Administration (MBA), Master of Science (MS), Doctor of Business Administration (DBA) and the Doctor of Philosophy (PhD) degrees.

Degree Options

The School of Business awards the Master of Business Administration (MBA), the Master of Science (MS), Doctor of Business (DBA), and the Doctor of Philosophy (PhD) degrees. Full-time, Part-time and Executive MBA degree programs are offered, as well as a number of MS degree programs. The Executive MBA, the DBA, as well as the Signature MBA, Accelerated MBA, Dual MBA/MS programs, Part-time MBA, and MS programs are each offered in a cohort-based model.

The PhD degree program has concentrations in accounting, finance, information systems and technology management, business analytics and operations, organizational behavior and human resources management, strategy, and marketing.

The Signature, Accelerated, Dual-degree MBA/MS, and Part-time MBA programs allow students to concentrate their studies through the declaration of micro-credentials and graduate certificates, many of which are stackable within the elective portion of the programs.

Additionally, the School of Business offers a number of MS, dual-degree and joint-degree options for students who wish to specialize and/or add a second professional degree. Many of the specialized degree options in business analytics, supply chain management, and management of information systems qualify as STEM programs.

Doctor of Business (DBA) and Doctor of Philosophy (PhD) Programs

- Doctor of Business Administration, DBA
- Accounting, PhD

- Business Analytics and Operations, PhD
- Finance, PhD
- Information Systems and Technology Management, PhD
- Marketing, PhD
- Organizational Behavior and Human Resources Management, PhD
- Strategic Management, PhD

Master of Business Administration (MBA) Programs

- Executive Master of Business Administration, MBA
- Master of Business Administration, MBA
- Master of Business Administration with Business Analytics, MBA

Master of Science (MS) Programs

- Accounting, MS
- Accounting and Business Analytics, MS (STEM-designated)
- Analytics and Applications of Artificial Intelligence for Business, MS
- Marketing Science, MS
- Marketing Science and Business Analytics, MS (STEM-designated)
- Finance, MS
- Finance and Business Analytics, MS (STEM-designated)
- Supply Chain Management, MS (STEM-designated)
- Supply Chain Management and Business Analytics, MS (STEM-designated)
- Management, MS
- Management and Business Analytics, MS
- Management Information Systems, MS (STEM-designated)

Dual Degree Programs

- Dual Degree: Accounting, MS / Analytics and Application of Artificial Intelligence for Business, MS
- Dual Degree: Finance, MS / Analytics and Application of Artificial Intelligence for Business, MS
- Dual Degree: Management, MS / Analytics and Application of Artificial Intelligence for Business, MS
- Dual Degree: Marketing Science, MS / Analytics and Application of Artificial Intelligence for Business, MS
- Dual Degree: MBA / Analytics and Application of Artificial Intelligence for Business, MS
- Dual Degree: MBA / Finance, MS
- Dual Degree: MBA / Marketing Science, MS
- Dual Degree: MBA / Supply Chain Management, MS
- Dual Degree: MBA / Management Information Systems, MS
- Dual Degree: Supply Chain Management, MS / Analytics and Application of Artificial Intelligence for Business, MS

Joint Degree Programs

- MBA/Doctor of Medicine
- Business Administration and Public and International Affairs, MBA/MPIA
- Business Administration and International Development, MBA/MID
- Business Administration and Engineering, MBA/MS
- Health Policy and Management, MHA/MBA
- Social Work, MSW/MBA, Joint Degree
- Law and Business Administration, JD/MBA
- Supply Chain Management and Industrial Engineering, MSSCM/MSIE

Graduate Certificates

- Accounting, Graduate Certificate
- Business Analytics, Graduate Certificate
- Finance, Graduate Certificate

- Foundations of AI for Business, Graduate Certificate
- Management Consulting, Graduate Certificate
- Management Science, Graduate Certificate
- Technology Management, Graduate Certificate

Micro-credentials

- Accounting, Micro-Credential
- Data Programming for Business Insights, Micro-credential
- Finance, Micro-Credential
- Foundations of AI for Business, Micro-Credential
- Innovation and Entrepreneurship, Micro-credential
- Leading People in Organizations, Micro-Credential
- Management Consulting, Micro-Credential
- Management Science, Micro-Credential
- Marketing Management, Micro-Credential
- Technology Management, Micro-Credential
- Sustainable Business, Micro-Credential

3+1 BSBA to MS Programs

The Undergraduate and Graduate Programs at the University of Pittsburgh School of Business collaborate to offer accelerated BSBA and MS programs.

- 3+1/BS in Business Administration and MS in Accounting
- 3+1/BS in Business Administration and MS in Management of Information Systems

Special Academic Opportunities

The School of Business offers the following special opportunities/programs:

Professional Development Workshops

Students participate in a variety of workshops throughout the program. Students work closely with their academic and career advisors to identify areas for professional development and develop a plan to engage in workshops related to those areas.

Workshops are offered on topics such as presentation skills, project management, problem solving, time management, data visualization, team dynamics, and diversity/equity/inclusion. Full-time MBA and MS students are required to complete a certain number of professional development hours each semester. Part-time students are not required to complete these hours but are welcome to participate in workshops as their availability allows.

Exchange Programs

Students can spend time studying at a school in another country through a variety of international exchange programs. Applicability of these credit-bearing opportunities is dependent on the program and students should discuss the available opportunities with their academic advisor.

Global Research Practicums

As part of a 3-credit international elective course, MBA and MS students can spend a week in another part of the world studying business culture and practices and visiting different companies in that region. Regions frequently visited include Asia, Europe, and Latin America.

Corporate Connections

Through both professional development programming and career development programming, students can engage with business executives from major firms throughout the year. Opportunities include skills-development workshops, recruiting presentations, one-on-one conversations, and networking mixers.

Graduation

A special School of Business graduation ceremony for all graduating students is held in the spring of each year. Graduate students who completed their degree in the preceding summer and fall semesters, or who are expected to complete their degrees in the upcoming summer semester are invited to participate in the ceremony alongside the spring semester graduates.

MBA and Masters Programs

The following section details the full range of programs for students interested in pursuing an MBA, an MS, or a combination of dual or joint degree programs. Unless otherwise noted, additional information regarding these programs may be obtained by contacting the Admissions Office.

Contact Information

University of Pittsburgh School of Business
Admissions Department
301 Mervis Hall
412-648-1508
Fax: 412-648-1659
E-mail: admissions@katz.pitt.edu
www.katz.business.pitt.edu/form/contact

Application Procedures

Applicants should have earned an undergraduate degree from an accredited U.S. college or university or its international equivalent. Applicants should demonstrate quantitative and qualitative competence via academic coursework and/or GMAT or GRE. Applicants should be able to demonstrate excellent communication and interpersonal skills that are evaluated through written essays, test scores, and/or a personal interview.

The Graduate Management Admission Test (GMAT) or the Graduate Record Exam (GRE) is recommended, and only exams taken at testing centers are accepted. The Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS) or Duolingo test is a requirement for international applicants. International applicants should also see the section on Admissions of International Students in the front section of this catalog.

University of Pittsburgh undergraduate applicants from any campus who meet the following conditions can waive the GMAT/GRE:

Overall undergraduate 3.25 cumulative GPA

Completed at least six credits of undergraduate quantitative coursework with minimum 3.0 GPA

Financial Assistance

The primary sources of financial assistance for incoming full-time MBA students are tuition scholarships and loans. Limited scholarships are available for MS programs.

Merit-based scholarships are awarded in various dollar amounts and are directly applied against tuition charges. School of Business scholarships are available to full-time U.S. citizens, U.S. permanent residents, and international students. Award notifications are mailed along with the official admission decision. While consideration for scholarship is independent of the admissions decision, there is no additional application required.

There are several educational loan programs available for students.

Tuition and Fees

Financial Information

Tuition information can be found at https://www.tuition.pitt.edu/. The School of Business also charges a Professional Development fee that is based on the program in which a student is enrolled, which goes to support the implementation of the wide variety of professional development, career development, and student support programming that the school offers. Certain courses, including the Integrated MBA Capstone course also carry a course fee, which supports the experiential components of the course.

Academic Standing

For the University policies on Academic Standing, Notice & Dismissal, visit Academic Standing for Graduate and Professional Students | Office of the Provost | University of Pittsburgh

Dean's List

The Dean's List for full-time students is compiled at the point of degree completion and is awarded to students who have achieved a cumulative GPA of 3.750 or above.

Transfer of Graduate-Level Courses

For University policies on the Advanced Standing Credits, visit Policies & Guidelines | Office of the Provost | University of Pittsburgh

Students may request that credits earned through other institutions be reviewed for transfer toward their degree or credential. All courses must be completed with a grade of "B" or higher to be eligible for transfer consideration.

If a student wishes to have previously earned graduate credits applied to their degree or credential as transfer credits, they must submit syllabi for each course to be reviewed for rigor and applicability by School of Business faculty. Matriculated students should contact their academic advisor to initiate this process.

If a student must relocate during his or her studies at the School of Business, the student may earn credits at an AACSB accredited program to complete the School of Business program. The same procedures apply for transferring previously earned graduate credits. Each course from an alternative institution must be preapproved for transfer prior to enrollment. Courses taken at other institutions may or may not be approved by the School of Business faculty.

The School of Business follows the Statute of Limitations established by the University. School of Business Students who wish to request an extension to their Statute of Limitations, should contact the Senior Director of Graduate Academic Programs and Student Services in writing . The request for the extension must be detailed and such request must be filed before the end of the statutory period.

Academic Integrity

All students are expected to adhere to the school's *Guidelines on Academic Integrity*, copies of which are available in each student's program Canvas shell, as well as by request from any academic staff member. These standards follow the University's guidelines with several procedure changes. Students may also contact the school's academic integrity officer for advice or clarification of academic integrity guidelines.

Development & Employer Engagement

The Career Development team assists all master's students. The mission is to be a collaborative career development partner with both students and corporate recruiters, as well as an industry leader in professional development. The team is committed to providing advice in a manner that is designed to tailor a career path to fit each student's unique strengths and professional competencies and develop and execute a job search plan to secure employment post-graduation. All full-time students are assigned a career advisor and are expected to regularly engage with them throughout their enrollment and their job search process. Part-time students are welcome and encouraged to utilize the services of the Career Development team as appropriate for their career needs. The Employer Engagement team's mission is to cultivate and foster relationships with corporate partners that lead to internship and full-time employment opportunities for MBA and MS students. The Career Development team and the Employer Engagement team work closely to ensure alignment between students' career preparation, job search, and available employment opportunities.

Academic Advising

The Academic Advising team is responsible for advising students regarding degree requirements and procedures of their program. The academic advisors will verify degree requirements and are responsible for making sure students stay on track for graduation. The academic advisors collaborate closely with the career advisors to ensure that students are well-informed about curricular opportunities that align with and support their career goals. The Academic Advising team also manages the registration of all new students, the maintenance of student records, and the certification of all students' graduation.

Student Engagement

The Student Engagement team manages professional development workshops, student events and activities, student clubs and student government, and large-scale events such as New Student Orientation and Commencement.

Executive Degree Programs

The University of Pittsburgh School of Business offers two graduate programs designed for experienced professionals who seek to advance their leadership capabilities and deepen their expertise without interrupting their careers. Detailed program information, curriculum overviews, and application requirements are available on the program pages linked below.

Executive MBA

The Executive MBA (EMBA) program is designed for mid- to senior-level professionals seeking to broaden their strategic business acumen and accelerate their career growth. For full program details, visit Executive Master of Business Administration, MBA .

Doctor of Business Administration

The Doctor of Business Administration (DBA) program is designed for senior practitioners seeking to generate applied research that addresses real-world business challenges. For full program details, visit Doctor of Business Administration, DBA .

Contact Information

University of Pittsburgh
School of Business
Executive Degree Programs
Alumni Hall, Fifth Floor
Executiveprograms@katz.pitt.edu

http://www.business.pitt.edu/executive-programs/

PhD Programs

The theoretically based, managerially relevant doctoral program in business administration seeks to prepare students for careers in research and teaching in management and related areas at leading business schools and universities. This is accomplished by fostering a learning environment in which students can achieve intellectual growth and fulfillment. Successful completion of the PhD program therefore entails much more than the satisfaction of a set of formal requirements. PhD students are expected to assess their knowledge and skills in regular consultation with the faculty and to develop a set of educational experiences that will fulfill their needs and facilitate the pursuit of personal goals.

Contact Information

University of Pittsburgh
School of Business
Ph.D Program
282 Mervis Hall
katzphd@katz.pitt.edu

www.katz.business.pitt.edu/phd

Application Procedures

All application materials must be submitted by January 15 of the expected entry year into the program. The basic prerequisite for admission to the doctoral program is the equivalent of an American bachelor's degree. Many applicants also have advanced degrees and professional experience. Scores on the GMAT or GRE (as well as on the TOEFL for international students) are required, along with recommendation letters and transcripts.

Sequence of Study

Progress to the PhD consists of the seminar phase, comprehensive examinations, teaching requirement, and the dissertation. Students complete course work in the seminar phase. This is the time during which the student sets scholarly standards and goals. Every student prepares a written statement called the Field Statement upon declaring the student's areas of study. This is also the time to form relationships with faculty members and begin developing research skills.

A minimum of 72 post baccalaureate credits is required for the PhD degree. A maximum of 30 credits from a previously earned master's degree may be applied.

Formal requirements in the seminar phase are:

- Work to ensure a basic level of competence in the disciplines and functions relevant to management. Students choose 6 credits of MBA course work. Some or all of these requirements may be exempted depending on educational background and doctoral course objectives.
- Eight courses in the major area of study and three courses in the minor area of study or a seven-course research methodology minor.
- Two semester teaching practicum
- At least four courses in research methodology or a seven-course research methodology minor.
- A grade point average of 3.3.
- A preliminary evaluation (comprehensive examinations).

Comprehensive examinations are written and oral examinations in both the major and minor area of study. Each student's exams are designed individually, focusing on the area(s) of study. The student is expected to demonstrate comprehensive ability, meaning the ability to synthesize and build on all that the student has learned.

Dissertation

Doctoral students are required to demonstrate their capacity to engage in a sustained research effort by completing a doctoral dissertation. The dissertation entails an independent investigation of a problem of acknowledged significance and size in a management-related area. Only if the dissertation is judged to demonstrate such competence, after a formal defense in a final oral examination, does the department recommend the awarding of a degree.

For more details on requirements of doctoral students, see Regulations Pertaining to Doctoral Degrees.

Teaching

All School of Business PhD students are required to enroll in a teaching practicum as part of their graduation requirements.

Timeline to Graduation

Most students earn the PhD in five years. The seminar phase typically lasts two years, while the comprehensive exams and the dissertation together require an additional three years to complete.

Statute of Limitations

The statute of limitations represents the maximum time permitted for the fulfillment of all requirements for the PhD degree. The statute of limitations is as follows:

1. Comprehensive examinations must be completed no later than the seventh term of study.
2. The dissertation overview examination must be successfully completed before the end of the fourth year.
3. The dissertation defense must be completed successfully before the end of the sixth year.

Exceptions to the School of Business PhD Program statute of limitations, not to exceed the University of Pittsburgh's statute of limitations, must be approved by the School of Business Doctoral and Research Committee.

Placement

The School of Business's goal is to place PhD graduates in universities that consistently produce high quality business research, and a successful record has been established in this regard.

Individual Curriculum Design

Students must choose from the following areas of study leading to the PhD.

- Accounting
- Business Analytics and Operations
- Finance
- Information Systems and Technology Management
- Marketing
- Organizational Behavior and Human Resource Management
- Strategic Management

Within the framework of these standard areas, every PhD student plans a unique, individual area of study. A student may choose any of the areas as a primary (major) area of study or as a secondary (minor) area of study. Each of the areas of study provides additional choices to meet student interests and developmental needs. All have subspecialties; all explore a range of current topics. In addition, to expand the option in the core areas, students are invited to draw on courses and research opportunities at the School of Business, as well as other parts of the University, and other institutions.

Two goals must be balanced in planning an individual program. One is to acquire a sound body of knowledge in recognized disciplines and methods. The other is to choose a mix of courses, mentors, and research topics geared to the student's own interests and talents. Ideally, this will lead to a truly original dissertation, followed by a career of meaningful research.

Certificate

Foundations of AI for Business, Graduate Certificate

The Graduate Certificate in Foundations of AI for Business is a 15-credit program designed to develop advanced technical, strategic, and ethical skills for AI implementation in business settings. This graduate certificate requires successful completion (earning a grade of B or better) of pre-requistie coursework. Students must complete one of the following courses:

1. BMIS 2402 Computational Thinking (1.5)
2. BMIS 2542 Data Programming Essentials with Python (3 cr)
3. BMIS 2526 Advanced Data Programming with R (3 cr)
4. Or demonstrated programming experience.

Course Name	**Course Number**	**Credits**	**Required** or **Elective**
Technical Foundation of Generative AI	BMIS 2630	3.0	R
Deploying AI for Business: Strategy, Design, and Execution	BMIS 2635	3.0	R
Approved electives		*9.0*	*E*
Total Credits		**15.0**	

Required Courses

These 6 credits are required for completion of the certificate

- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION

Elective Courses

9 elective credits are required for the Micro-Credential. Examples of elective courses are provided below and other electives are being developed.

- BACC 2523 - ACCOUNTING DATA ANALYTICS
- BMIS 2525 - CURRENT ISSUES IN COMPUTING
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BMIS 2679 - TECHNOLOGY INNOVATION, ADOPTION, AND DIFFUSION
- BMKT 2573 - AI IN MARKETING
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Doctoral

Doctor of Business Administration, DBA

The Doctor of Business Administration (DBA) is the highest level of academic achievement in the Business School and is designed for working professionals who are seeking applied research skills and want to continue working while participating in a part-time program. Individuals pursuing the DBA program should have 8+ years of professional experience and currently work in a middle-to-top management position. The program provides knowledge and skill in research methodologies across business disciplines and is taught by world-renowned faculty.

The DBA program is delivered in a Hyflex Model and can be completed over three years beginning in the Fall Term. It focuses on engagement and research synthesis with the real-world practice of business and students' executive management experience.

Contact Information

Executive Degree Programs Office

412-648-1600

E-mail: executiveprograms@katz.pitt.edu

Application Procedures

Apply Here

Applications may be submitted year-round, and admissions decisions are typically made within three weeks of receiving a completed application package and successful completion of the interview process. The application will either be accepted, rejected, or wait-listed. If wait-listed, an admissions decision may not be made until a month before classes begin. At that time, those with the strongest credentials are admitted. Applicants must hold a bachelor's and a master's degree from accredited colleges or universities.

Both baccalaureate and master's degrees from accredited colleges or universities are required for admission with the professional work requirements included. Applicants with a master's degree from an approved institution can transfer up to 27 credits into the DBA program.

Quick Check List:

- Online application form
- Resume or CV
- Personal statement
- Two letters of recommendation from professional references, including your current supervisor if applicable
- Official academic transcripts from all institutions attended
- Official TOEFL or IELTS scores for non-English native speakers. The admission committee recommends a total score of 100 or better on the TOEFL, 7.0 or better for the IELTS exam, and 130 or better for the Duolingo English Test. The minimum total scores to be eligible for admission consideration are an 80 on the TOEFL (taken prior to 1/20/26), 4.0 on the TOEFL, with all subscores at 4.0 or higher (taken on or after 1/20/26), 6.5 on the IELTS, and a 125 on the Duolingo English Test. Please note that scores are valid for two years.

Tuition, Fees and Financial Assistance

The cost for this program is $3,000 per credit and includes tuition, student fees, and course materials and is the same for in-state and out-of-state residents. Limited merit aid may be available for qualified students. If you are accepted into the program, you may apply and be

considered for this aid by completing the Executive DBA Financial Support Plan form. The program can also share information regarding financial resources you may explore such as Federal loans and external funding. Visit tuition.pitt.edu for tuition information

Doctor of Business Administration Degree Requirements

Graduates would receive a DBA degree from the University of Pittsburgh upon successful completion of the following degree requirements:

- 72 credits (includes 27 credits that can be satisfied by transfer from an approved master's program, 33 credits of core courses, and 12 credits of supervised Practicum Research Project coursework).
- Practicum Research Project
- 3.0 GPA or higher to graduate
- One-week residency during each of the first two summers. Students facing travel/visa restrictions can request to participate virtually.

The minimum course load is 72 credits, including 27 transfer credits from a master's degree or equivalent, 33 credits of coursework, and 12 credits for the Practicum Research Project. A Pitt Business faculty member would supervise the Practicum Research Project. An additional faculty member (from Pitt Business and/or a partner institution) could serve as a co-advisor if additional specialty expertise is needed.

Total Credits: 72

Dual

Dual Degree: Accounting, MS / Analytics and Application of Artificial Intelligence for Business, MS

The STEM-designated Dual MS in Accounting and MS in Analytics & Applications of AI for Business is a 45-credit program that combines advanced accounting preparation with high-demand analytical and AI capabilities. Students enrolled in this program must complete the appropriate number of prerequisites, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

The Master of Science in Accounting program prepares students for leadership roles in financial, managerial, and tax accounting. Students gain general business knowledge and specialized accounting skills necessary for success. In addition, the program prepares students to pass the CPA Exam, both by covering the content areas of the exam and by satisfying the educational requirements for certification in Pennsylvania and many other U.S. states.

The Dual MS model provides students with a strong competitive edge by combining their discipline expertise with advanced training in analytics, data management, and applied AI for business. Through coursework in data mining, programming, machine learning, database management, and AI deployment, students learn to generate and apply insights to real business challenges across functions.
Emphasizing analytic and AI technical skills, responsible AI use, and core business foundations, the program equips graduates to translate complex analysis into strategic decisions that drive innovation and organizational impact.

Core Required Curriculum (39 Credits)

- BACC 2236 - ACCOUNTING INFORMATION SYSTEMS
- BACC 2238 - AUDITING
- BACC 2252 - TAXATION FOR ENTITIES
- BACC 2254 - ADVANCED FINANCIAL ACCOUNTING
- BACC 2258 - STRATEGIC COST MANAGEMENT
- BACC 2533 - ACCELERATED INTERMEDIATE FINANCIAL REPORTING
- BACC 2559 - TAXES AND DECISION MAKING

- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2578 - DATA MINING

Accounting Electives (3 Credits)

Select 3 credits of accounting electives from the list below:

- BACC 2523 - ACCOUNTING DATA ANALYTICS
- BACC 2525 - FINANCIAL STATEMENT ANALYSIS

Analytics & AI Electives (3 Credits)

Elective curriculum includes a mix of business analytics and AI specific electives or preapproved Business Analytics/AI related non-business graduate courses.

Elective courses within the MS Analytics and Applications of AI for Business degree are required to dedicate a substantial proportion of their content to Business Analytics and/or AI related topics, thereby advancing students' business analytics and AI knowledge while supporting the program's broader academic objectives.

At least 1.5 credits must come from experiential learning courses. The experiential learning component must emphasize the application of business analytics and/or AI methods to real world problems and require students to demonstrate competencies in data-driven decision making (e.g., through project courses or internships).

At least 1.5 credits must come from courses focused on responsible AI/ethical considerations.

Total Credits: 45

Dual Degree: Finance, MS / Analytics and Application of Artificial Intelligence for Business, MS

The STEM-designated Dual MS in Finance and MS in Analytics & Applications of AI for Business is a 45-credit program that combines advanced accounting preparation with high-demand analytical and AI capabilities. Students enrolled in this program must complete the appropriate number of prerequisites, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

The Master of Science in Finance provides students with a broad overview of the quantitative and qualitative aspects of finance, helping them understand what steps should be taken to maximize shareholder wealth. Students learn the technical skills of everything from valuation techniques, to forecasting methods, to the application of the time value of money, to building pro-forma financial statements.

The Dual MS model provides students with a strong competitive edge by combining their discipline expertise with advanced training in analytics, data management, and applied AI for business. Through coursework in data mining, programming, machine learning, database management, and AI deployment, students learn to generate and apply insights to real business challenges across functions. Emphasizing analytic and AI technical skills, responsible AI use, and core business foundations, the program equips graduates to translate complex analysis into strategic decisions that drive innovation and organizational impact.

Core Curriculum (36 Credits)

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BFIN 2410 - FINANCIAL MANAGEMENT 2
- BFIN 2036 - CORPORATE FINANCE
- BFIN 2039 - INVESTMENT MANAGEMENT
- BFIN 2145 - FINANCIAL MODELING
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2578 - DATA MINING

Finance Electives (3 Credits):

Students must complete 3 credits of Finance electives from the list below or other approved BFIN XXXX course

- BFIN 2015 - SHORT-TERM FINANCING
- BFIN 2042 - ACQUISITION OF PRIVATELY HELD COMPANIES
- BFIN 2043 - INTERNATIONAL FINANCIAL MANAGEMENT
- BFIN 2069 - FIXED INCOME SECURITIES
- BFIN 2141 - REAL ESTATE FINANCE
- BFIN 2126 - INVESTMENTS ANALYSIS & STRATEGIES
- BFIN 2420 - FINTECH
- BFIN 2430 - CORPORATE FINANCIAL STRATEGY
- BFIN 2035 - VALUATION

Analytics & AI Electives (6 Credits)

Elective curriculum includes a mix of business analytics and AI specific electives or preapproved Business Analytics/AI related non-business graduate courses.

Elective courses within the MS Analytics and Applications of AI for Business degree are required to dedicate a substantial proportion of their content to Business Analytics and/or AI related topics, thereby advancing students' business analytics and AI knowledge while supporting the program's broader academic objectives.

At least 1.5 credits must come from experiential learning courses. The experiential learning component must emphasize the application of business analytics and/or AI methods to real world problems and require students to demonstrate competencies in data-driven decision making (e.g., through project courses or internships).

At least 1.5 credits must come from courses focused on responsible AI/ethical considerations.

Total Credits: 45

Dual Degree: Management, MS / Analytics and Application of Artificial Intelligence for Business, MS

Dual Degree: Master of Science in Management & Master of Science in Analytics & Applications of AI for Business

The STEM-designated Dual MS in Management and MS in Analytics & Applications of AI for Business is a 45-credit program that combines advanced accounting preparation with high-demand analytical and AI capabilities. Students enrolled in this program must complete the appropriate number of required and elective courses according to program requirements and maintain a minimum GPA of 3.0.

The MS in Management curriculum provides a broad foundation in core business disciplines, giving students an integrated understanding of how organizations operate across functions. Through coursework in areas such as finance, information systems, marketing, organizational behavior, human resources, and strategy, students develop skills in analytical thinking, problem solving, and leadership to prepare for roles in a wide range of organizational settings.

The Dual MS model provides students with a strong competitive edge by combining their discipline expertise with advanced training in analytics, data management, and applied AI for business. Through coursework in data mining, programming, machine learning, database management, and AI deployment, students learn to generate and apply insights to real business challenges across functions. Emphasizing analytic and AI technical skills, responsible AI use, and core business foundations, the program equips graduates to translate complex analysis into strategic decisions that drive innovation and organizational impact.

Core Required Curriculum (33 Credits)

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMKT 2409 - MARKETING MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BSPP 2409 - STRATEGIC MANAGEMENT
- BUSSCM 1760 - DATA MINING

Management Electives (6 Credits)

Students must choose 6 credits of general business electives. A variety of graduate-level courses from various business disciplines are offered each term.

Analytics & AI Electives (6 Credits)

Elective curriculum includes a mix of business analytics and AI specific electives and/or preapproved Business Analytics/AI related non-business graduate courses.

Elective courses within the MS Analytics and Applications of AI for Business degree are required to dedicate a substantial proportion of their content to Business Analytics and/or AI related topics, thereby advancing students' business analytics and AI knowledge while supporting the program's broader academic objectives.

At least 1.5 credits must come from experiential learning courses. The experiential learning component must emphasize the application of business analytics and/or AI methods to real world problems and require students to demonstrate competencies in data-driven decision making (e.g., through project courses or internships).

At least 1.5 credits must come from courses focused on responsible AI/ethical considerations.

Total Credits: 45

Dual Degree: Marketing Science, MS / Analytics and Application of Artificial Intelligence for Business, MS

The STEM-designated Dual MS in Marketing Science and MS in Analytics & Applications of AI for Business is a 45-credit program that combines advanced accounting preparation with high-demand analytical and AI capabilities. Students enrolled in this program must complete the appropriate number of required and elective courses according to program requirements and maintain a minimum GPA of 3.0.

The Master of Science in Marketing Science prepares students for the future of marketing, offering a broad introduction to marketing alongside in-depth study of customer insights, research techniques, data analytics, digital marketing, and social media marketing. Students learn how to build effective marketing strategies based on data and the latest technological tools.

The Dual MS model provides students with a strong competitive edge by combining their discipline expertise with advanced training in analytics, data management, and applied AI for business. Through coursework in data mining, programming, machine learning, database management, and AI deployment, students learn to generate and apply insights to real business challenges across functions. Emphasizing analytic and AI technical skills, responsible AI use, and core business foundations, the program equips graduates to translate complex analysis into strategic decisions that drive innovation and organizational impact.

Core Required Curriculum (31.5 Credits)

- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMKT 2031 - MARKETING RESEARCH
- BMKT 2409 - MARKETING MANAGEMENT
- BMKT 2544 - SHOPPER ANALYTICS
- BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS
- BMKT 2553 - SOCIAL MEDIA STRATEGY
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2578 - DATA MINING

Marketing Electives (7.5 Credits)

- BMKT 2035 - CONSMR BEHAV THEORY & PRACTICE
- BMKT 2530 - SERVICES MKTG:STRATEGIES/TACTICS
- BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT
- BMKT 2527 - BRANDING IN THE AGE OF AI
- BMKT 2528 - ADVERTISING
- BMKT 2533 - BUSINESS TO BUSINESS

- BMKT 2569 - BRAND MANAGEMENT
- BMKT 2573 - AI IN MARKETING
- BIND 2024 - CONSULTING FIELD PROJECT
- BIND 2603 - INTERNSHIP
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON

Analytics & AI Electives (6 Credits)

Elective curriculum includes a mix of business analytics and/or preapproved Business Analytics/AI related non-business graduate courses.

Elective courses within the MS Analytics and Applications of AI for Business degree are required to dedicate a substantial proportion of their content to Business Analytics and/or AI related topics, thereby advancing students' business analytics and AI knowledge while supporting the program's broader academic objectives.

At least 1.5 credits must come from experiential learning courses. The experiential learning component must emphasize the application of business analytics and/or AI methods to real world problems and require students to demonstrate competencies in data-driven decision making (e.g., through project courses or internships).

At least 1.5 credits must come from courses focused on responsible AI/ethical considerations.

Total Credits: 45

Dual Degree: MBA / Analytics and Application of Artificial Intelligence for Business, MS

The STEM-designated Dual MBA and MS in Analytics & Applications of AI for Business is a 60-credit program that combines business preparation with high-demand analytical and AI capabilities.

The MBA program prepares students to become agile and thoughtful leaders through broad exposure to core business domains and the integrated knowledge needed to navigate complex organizational environments. The program equips students with the skills and applied experiences required to make evidence-based decisions and to drive meaningful impact across a wide range of business settings.

The Dual MBA/MS model provides students with a strong competitive edge by combining their discipline expertise with advanced training in analytics, data management, and applied AI for business. Through coursework in data mining, programming, machine learning, database management, and AI deployment, students learn to generate and apply insights to real business challenges across functions. Emphasizing analytic and AI technical skills, responsible AI use, and core business foundations, the program equips graduates to translate complex analysis into strategic decisions that drive innovation and organizational impact.

Required Core Curriculum (34.5 Credits)

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BIND 2454 - INTEGRATED MBA CAPSTONE
- BMIS 2409 - INFORMATION SYSTEMS
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMKT 2409 - MARKETING MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2578 - DATA MINING
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BSPP 2409 - STRATEGIC MANAGEMENT

Required Experience Based Learning (1.5 Credits)

In addition to the courses listed above, students are required to complete 1.5 credits in experiential learning coursework.

EBL requirement: BIND 2024 - CONSULTING FIELD PROJECT, BIND 27** Global Research Practicum; or Internship that has been approved by the faculty.

Required MBA Professional Courses (3 Credits)

To supplement the MBA Core Curriculum, students also complete additional required coursework. The content of these courses is designed to accelerate a student's academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

MBA Elective Courses (18 Credits)

Students must choose 18 credits of general business electives. A variety of graduate-level courses from various business disciplines are offered each term.

Analytics & AI Electives (4.5 Credits)

Elective curriculum includes a mix of business analytics and AI specific electives and/or preapproved Business Analytics/AI related non-business graduate courses.

Elective courses within the MS Analytics and Applications of AI for Business degree are required to dedicate a substantial proportion of their content to Business Analytics and/or AI related topics, thereby advancing students' business analytics and AI knowledge while supporting the program's broader academic objectives.

At least 1.5 credits must come from courses focused on responsible AI/ethical considerations.

Micro-credentials and Graduate Certificates

Students wishing to add additional specialization to their degree program may declare one or more micro-credentials or graduate certificates, many of which are stackable within the elective portion of the programs. Students should refer to the requirements for any micro-credentials or graduate certificates of interest and discuss with their academic advisor how those requirements might be stackable within their degree program.

Total Credits: 60

Dual Degree: MBA / Finance, MS

An option for those who desire both a wide-ranging understanding of business and a deep specialization in Finance, our School of Business Dual Degree MBA / MS Finance program allows you to pair your MBA with a School of Business Master of Science (MS) degree in Finance. The full-time two-year program option is designed to be completed in 21 months with time for a summer internship experience and includes an integrated learning capstone experience. Distinguish yourself with two graduate business degrees. Part-time students may complete the program at their own pace, typically within 3 to 4 years.

MBA Dual Degree

Students enrolled in the dual-degree with an MBA and MS program must fulfill the following requirements to earn the dual degrees:

1. A minimum of 60 credits of approved graduate work
2. The appropriate distribution of core, required, and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

MBA Core Curriculum

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Professional Courses

To supplement the MBA Core Curriculum, students also complete additional required coursework. The content of these courses is designed to accelerate a student's academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

Micro-credentials and Graduate Certificates

Students wishing to add additional specialization to their degree program may declare one or more micro-credentials or graduate certificates, many of which are stackable within the elective portion of the programs. Students should refer to the requirements for any micro-credentials or graduate certificates of interest and discuss with their academic advisor how those requirements might be stackable within their degree program.

MS Finance with Dual MBA

The following courses are required to satisfy the MS Finance portion of the dual-degree program:

- BFIN 2410 - FINANCIAL MANAGEMENT 2
- BFIN 2145 - FINANCIAL MODELING
- BFIN 2036 - CORPORATE FINANCE
- BFIN 2039 - INVESTMENT MANAGEMENT

Total Credits: 60

Dual Degree: MBA / Management Information Systems, MS

The School of Business offers a dual-degree program that awards both an MBA and an MS in the Management of Information Systems to develop tech-savvy business leaders. The curriculum extends the MBA program to include advanced course work and a practicum in information management. Full-time students can complete the dual-degree program (60 credits required) in 21 months, four of which are usually spent working in an internship position. The program can also be completed on a part-time/evening basis.

MBA Dual Degree

Students enrolled in the dual-degree with an MBA and MS program must fulfill the following requirements to earn the dual degrees:

1. A minimum of 60 credits of approved graduate work
2. The appropriate distribution of core, required, and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

MBA Core Curriculum

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Professional Courses

To supplement the MBA Core Curriculum, students also complete additional required coursework. The content of these courses is designed to accelerate a student's academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS

- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

Micro-credentials and Graduate Certificates

Students wishing to add additional specialization to their degree program may declare one or more micro-credentials or graduate certificates, many of which are stackable within the elective portion of the programs. Students should refer to the requirements for any micro-credentials or graduate certificates of interest and discuss with their academic advisor how those requirements might be stackable within their degree program.

MS MIS Core Requirements (For Dual Degree with MBA)

The following 6 credits of required to satisfy the MS Management Information Systems portion of the dual-degree program.

- BMIS 2056 - MGT INFORMATION SYSTEMS PRACM
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
  Note: BMIS 2542 fulfills and replaces the MBA required BMIS 2402 course.

MS MIS Elective Requirements

Students in the dual-degree MBA/MS Management of Information Systems program must complete a minimum of 30 elective credits, of which at least 12 credits must be in the management information systems area. The remaining elective credits may be from any area of study offered at the School of Business.

Dual Degree: MBA / Marketing Science, MS

For those who desire both a broad understanding of business and a deep specialization in consumer behavior and marketing research, our Katz Dual Degree MBA / MS Marketing Science program allows you to pair your MBA with a Katz Master of Science (MS) degree in Marketing Science. Distinguish yourself with two graduate business degrees.

The full-time two-year program option is designed to be completed in 21 months with time for a summer internship experience and includes an integrated learning capstone experience. Part-time students may complete the program at their own pace, typically within 3 to 4 years.

MBA Dual Degree

Students enrolled in the dual-degree with an MBA and MS program must fulfill the following requirements to earn the dual degrees:

1. A minimum of 60 credits of approved graduate work
2. The appropriate distribution of core, required, and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

MBA Core Curriculum

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT

- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Professional Courses

To supplement the MBA Core Curriculum, students also complete additional required coursework. The content of these courses is designed to accelerate a student's academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

Micro-credentials and Graduate Certificates

Students wishing to add additional specialization to their degree program may declare one or more micro-credentials or graduate certificates, many of which are stackable within the elective portion of the programs. Students should refer to the requirements for any micro-credentials or graduate certificates of interest and discuss with their academic advisor how those requirements might be stackable within their degree program.

MS Marketing Science Dual MBA

In addition to the MBA requirements listed below, the following courses are required the satisfy the MS Marketing Science portion of the dual-degree program:

- BMKT 2031 - MARKETING RESEARCH
- BMKT 2544 - SHOPPER ANALYTICS
- BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS
- BMKT 2553 - SOCIAL MEDIA STRATEGY

Total Credits: 60

Dual Degree: MBA / Supply Chain Management, MS

Gain a broad understanding of business and a deep specialization in supply chain management including procurement, operations, and analytics with our School of Business Dual Degree MBA / MS Supply Chain Management program. Pair your MBA with a School of Business STEM-designated Master of Science (MS) degree in Supply Chain Management.

The full-time two-year program option is designed to be completed in 21 months with time for a summer internship experience and includes an integrated learning capstone experience. Distinguish yourself with two graduate business degrees.

Part-time students may complete the program at their own pace, typically within 3 to 4 years.

MBA Dual Degree

Students enrolled in the dual-degree with an MBA and MS program must fulfill the following requirements to earn the dual degrees:

1. A minimum of 60 credits of approved graduate work
2. The appropriate distribution of core, required, and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

MBA Core Curriculum

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Professional Courses

To supplement the MBA Core Curriculum, students also complete additional required coursework. The content of these courses is designed to accelerate a student's academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

Micro-credentials and Graduate Certificates

Students wishing to add additional specialization to their degree program may declare one or more micro-credentials or graduate certificates, many of which are stackable within the elective portion of the programs. Students should refer to the requirements for any micro-credentials or graduate certificates of interest and discuss with their academic advisor how those requirements might be stackable within their degree program.

MS Supply Chain Management Core Curriculum

The following courses are required of all MS Supply Chain Management students.

- BQOM 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS

- BQOM 2523 - PROCESS ENGINEERING
- BQOM 2524 - PROD MGT & PROCESS IMPROVEMENT
- BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT

Dual Degree: Supply Chain Management, MS / Analytics and Application of Artificial Intelligence for Business, MS

The STEM-designated Dual MS in Supply Chain Management and MS in Analytics & Applications of AI for Business is a 45-credit program that combines advanced accounting preparation with high-demand analytical and AI capabilities. Students enrolled in this program must complete the appropriate number of required and elective courses according to program requirements and maintain a minimum GPA of 3.0.

The Master of Science in Supply Chain Management provides students with broad supply chain knowledge and technical skills in sourcing, logistics, planning, inventory, pricing, and consulting. The program has a strong interdisciplinary flavor, letting students select from a wide range of electives that relate to everything from information technology to accounting, to strategy.

The Dual MS model provides students with a strong competitive edge by combining their discipline expertise with advanced training in analytics, data management, and applied AI for business. Through coursework in data mining, programming, machine learning, database management, and AI deployment, students learn to generate and apply insights to real business challenges across functions. Emphasizing analytic and AI technical skills, responsible AI use, and core business foundations, the program equips graduates to translate complex analysis into strategic decisions that drive innovation and organizational impact.

Core Required Curriculum (27 Credits)

- BMIS 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2523 - PROCESS ENGINEERING
- BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT
- BQOM 2534 - STRATEGIC PROCUREMENT AND SOURCING MANAGEMENT
- BQOM 2578 - DATA MINING

Required Experience Based Learning (3 Credits)

In addition to the courses listed above, students are required to complete 3 credits in experiential learning coursework.

EBL requirement: BIND 2024 - CONSULTING FIELD PROJECT, BIND 27** Global Research Practicum; or Internship that has been approved by the faculty director (may substitute BQOM 2139 with faculty director approval) 3 cr.

Supply Chain Electives (6 Credits)

- BQOM 2139 - LEAN SIX SIGMA THEORY & PRACTICE
- BQOM 2524 - PROD MGT & PROCESS IMPROVEMENT
- BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS

Analytics & AI Electives (9 Credits)

Elective curriculum includes a mix of business analytics and AI specific electives and General Business Electives/or preapproved Business Analytics/AI related non-business graduate courses.

Elective courses within the MS Analytics and Applications of AI for Business degree are required to dedicate a substantial proportion of their content to Business Analytics and/or AI related topics, thereby advancing students' business analytics and AI knowledge while supporting the program's broader academic objectives.

At least 1.5 credits must come from courses focused on responsible AI/ethical considerations.

Total Credits: 45

Graduate Certificate

Accounting, Graduate Certificate

This 15-credit certificate is designed to equip students with the foundational skills in accounting.

Prospective students who have completed an undergraduate degree are welcome to apply for the University of Pittsburgh Graduate Certificate in Accounting. Any Pitt graduate student is eligible to pursue the certificate in addition to their declared degree program.

Curriculum

The Graduate Certificate in Accounting would require the successful completion of 15.0 credits including 3.0 credits of required coursework (BACC 2401 - Financial Accounting) and 12.0 elective credits to include BACC2*** coursework or other with Accounting Faculty approval.

A student who has completed the Accounting, Micro-Credential would be able to count, or stack, the credits to the Graduate Certificate in Accounting. The Graduate Certificate in Accounting would be efficiently stackable to the following Katz degree programs:

- Master of Business Administration (MBA)
- Master of Science in Accounting (MAcc)

Total Credits: 15

Business Analytics, Graduate Certificate

This 15-credit certificate is designed to equip students with the quantitative skills to collect and evaluate data, and the qualitative skills to communicate the findings. Students will learn how to conduct data mining, database management, data programming, and other forms of advanced data analysis. Ultimately, students will be able to use data as a strategic asset to make better decisions and drive results

Curriculum

Admissions to the Graduate Certificate in Business Analytics may be conditional pending successful completion of the following pre-requisite coursework with a minimum grade in each course of a B or better:

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT

Required Courses (12 credits)

- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2578 - DATA MINING
- BMIS 2588 - DATA BASE MANAGEMENT
  Completion of either:
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
  OR
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R

Elective Courses Options (3 Credits)

Choose at least 3 credits from the below:

- BACC 2523 - ACCOUNTING DATA ANALYTICS
  Completion of either:
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
  OR
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BMKT 2544 - SHOPPER ANALYTICS
- BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS
- BQOM 2537 - FORECASTING
- BQOM 2559 - APPLIED SIMULATION AND OPTIMIZATION
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Total Credits: 15

Finance, Graduate Certificate

This 15-credit certificate is designed to equip students with financial management skills.

Prospective students who have completed an undergraduate degree are welcome to apply for the University of Pittsburgh Graduate Certificate in Finance. Any Pitt graduate student is eligible to pursue the certificate in addition to their declared degree program.

Required Courses

The Graduate Certificate in Finance would require the successful completion of 15.0 credits including 3.0 credits of required coursework (BFIN2409 Financial Management and BFIN2410- Financial Management 2) and 12.0 elective credits to include BFIN 2*** coursework or other with faculty approval.

A student who has completed the School of Business Micro-Credential in Finance would be able to count, or stack, the credits to the Graduate Certificate in Finance. The School of Business Graduate Certificate in Finance would be efficiently stackable to the following School of Business degree programs:

- Master of Business Administration (MBA)
- Master of Science in Finance (MSF)

- Dual-Degree MBA/MSF

Total Credits: 15

Management Consulting, Graduate Certificate

The Management Consulting certificate enables students to become familiar with the structure and workings of the management consulting industry and the essential toolkit of a consultant, while requiring at least one, and allowing multiple, (elective) project-based courses in which students apply that knowledge to gain experience working on a real-life client consulting project.

Curriculum

The curriculum for the certificate includes those that provide foundational knowledge in management consulting and a customizable set of elective coursework.

- Required credits: 6.0 credits
- Elective credits: 9.0 credits from list of approved School of Business elective courses, or alternate coursework, including from other Pitt schools, with faculty approval.

Required Courses: 6.0 Credits

- BIND 2024 - CONSULTING FIELD PROJECT
- BSEO 2570 - FUNDAMENTALS OF MANAGEMENT CONSULTING
- BSPP 2409 - STRATEGIC MANAGEMENT

Elective Courses: 9.0 Credits

- BSPP 2110 - SCALING INNOVATION STUDIO
- BENV 2115 - MARKET MANIPULATIONS
- BOAH 2532 - NEGOTIATIONS, TEAMWORK AND CHANGE 1
- BSEO 2509 - BUSINESS AND POLITICS
- BSEO 2511 - MGMNT OF STRATEGIC ALLIANCES 1
- BSEO 2538 - STRATEGIC LEADERSHIP
- BSEO 2553 - STRATEGIC MANAGEMENT OF ACQUISITIONS AND DIVESTMENT
- BSPP 2112 - LEADING ORGANIZATIONS TO INNOVATE SMARTER
- BSPP 2328 - THE BUSINESS OF HUMANITY - STRATEGIC MANAGEMENT IN THE ERA OF GLOBALIZATION, INNOVATION AND ESG

Total Credits: 15

Management Science, Graduate Certificate

This 15-credit certificate is designed to equip students with the quantitative skills in management science.

Prospective students who have completed an undergraduate degree are welcome to apply for the University of Pittsburgh Graduate Certificate in Management Science. Any Pitt graduate student is eligible to pursue the certificate in addition to their declared degree program.

Curriculum

In this 15-credit certificate program, students will learn to employ management science techniques such as optimization, simulation, and statistics to deploy minimum resources to achieve maximum outcomes. They will receive interdisciplinary training of problem solving and decision making, with strong emphasis on management, business, consulting, marketing, finance, and other fields. Operations endeavor is omnipresent and cuts across every sector and industry. By completing this certificate program, students can enhance their knowledge and skills to improve organization's performance

The Graduate Certificate in Management Science would require the successful completion of 15.0 credits including 4.5 credits of required coursework (BQOM 2401 Statistical Analysis and BQOM 2421 Decision Technologies) and 10.5 elective credits to include BQOM 2*** coursework or other with faculty approval.

A student who has completed the School of Business Management Science, Micro-Credential would be able to count, or stack, the credits to the Graduate Certificate in Management Science. The School of Business Graduate Certificate in Management Science would be efficiently stackable to the following School of Business degree programs:

- Master of Business Administration (MBA)
- Master of Science in Management of Information Systems (MIS)
- Master of Science in Supply Chain Management (SCM)
- Dual Degree MBA/MIS
- Dual Degree MBA/SCM

Total Credits: 15

Technology Management, Graduate Certificate

This 15-credit Graduate Certificate in Technology Management prepares students for roles managing and leading technology projects, programs, and data analysis.

Prospective students who have completed an undergraduate degree are welcome to apply for the University of Pittsburgh Graduate Certificate in Technology Management. Any Pitt graduate student is eligible to pursue the certificate in addition to their declared degree program.

Curriculum

The Graduate Certificate in Technology Management requires the successful completion of 15.0 credits including 1.5 credits of required coursework (BMIS 2409 - INFORMATION SYSTEMS) and 13.5 elective credits to include BMIS 2*** coursework or other with faculty approval.

A student who has completed the School of Business Micro-Credential in Technology Management would be able to count, or stack, the credits to the Graduate Certificate in Technology Management. The School of Business Graduate Certificate in Technology Management would be efficiently stackable to the following School of Business degree programs:

- Master of Business Administration (MBA)
- Master of Science in Management of Information Systems (MIS)
- Dual Degree MBA/MIS

Required Course (1.5 Credits)

1.5 credits of required coursework

- BMIS 2409 - INFORMATION SYSTEMS

Electives Courses (13.5 Credits)

Students must choose at least 13.5 credits of elective coursework.

- BMIS 2525 - CURRENT ISSUES IN COMPUTING
- BMIS 2537 - BUSINESS SYSTEMS PLATFORMS
- BMIS 2588 - DATA BASE MANAGEMENT
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BMIS 2679 - TECHNOLOGY INNOVATION, ADOPTION, AND DIFFUSION
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT
- BSPP 2110 - SCALING INNOVATION STUDIO

Total Credits: 15

Joint Degree

Social Work, MSW/MBA, Joint Degree

The MBA/Master of Social Work joint degree program is designed to provide students with a unique combination of social work knowledge and skills, with exceptional strength in management decision-making and leadership. The degree is offered jointly through the University of Pittsburgh School of Social Work and the School of Business.

Faced with an increasingly competitive market, nonprofit organizations are beginning to emulate management methods and paradigms being practiced by for-profit companies, such as financial operations, human resource and data management, market and economic analysis, and evidence-based strategic planning. As philanthropic organizations become more concerned about their accountability and utility of financial supports provided to various human service organizations, they are beginning to evaluate nonprofits beyond program outcomes or average cost per client to more advanced assessments, such as cost-efficiency and effectiveness and cost-benefit ratio. Unfortunately, such analytic methodologies are rarely offered to social work students by the traditional social work curriculum.

Initially, the proposed MSW/MBA dual-degree program will be open to the SSW's Community Organization and Social Action (COSA) students.

Students who want to earn a joint-degree must gain acceptance into both graduate degree programs by applying separately to each school. Students who have questions about this joint degree program should contact the admissions offices at both the School of Social Work and the School of Business.

MSW/MBA Joint Degree Admissions Criteria

1. SSW Requirement

1. A Baccalaureate degree that must be completed prior to the program start date. Applications must include transcripts of coursework completed at the time of submission of the application. Admission will be contingent upon submission of an official, final transcript of the completed Bachelors program before the start of the MSW program.
    1. Undergraduate students with social work and human service backgrounds are preferred.
    2. In general, we would expect an undergraduate GPA of 3.0 or better for admission.

3. International students must submit originals or certified copies of transcripts/mark sheets and degree/diploma certificate in the original language plus a certified English translation (if the original is not in English).
4. Paid work experience is preferred but not required.

2. GMAT/GRE scores are not required for regular MSW students applicants but for the joint degree applicants in MSW and MBA must have their official Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) score reports forwarded directly to the University of Pittsburgh, School of Business, by the admission deadline.
3. Applicants will submit a 3-5 page double spaced typed personal statement describing their post-graduate career goals, skills in which they excel, and key accomplishments.
4. Applicants will submit three recommendations from persons who have known the applicant in academic or professional capacities. At least one from a faculty member is preferred. (Recommendations from friends and family will not be accepted.)
5. Applicants will submit their current resume.
6. English Proficiency Exams (for international applicants who are citizens of countries where the official language is not English)- the Test of English as a Foreign Language (TOEFL) with minimum acceptable score: Internet-based test: 100; paper-based test: 600.
7. Non-refundable application fee is $40.
8. Prospective candidates, domestic or international, may be interviewed before admission, in person or by telephone.
9. Submission of online MSW application form by the admissions deadline data of **May 31**.

2. School of Business Requirement

1. A Baccalaureate degree that must be completed prior to the program start date. Applications must include transcripts of coursework completed at the time of submission of the application. Admission will be contingent upon submission of an official, final transcript of the completed Bachelors program before the start of the MBA program.

    1. Undergraduate students with strong analytical backgrounds are preferred.
    2. In general, we would expect an undergraduate GPA of 3.0 or better for admission.
    3. International students must submit originals or certified copies of transcripts/mark sheets and degree/diploma certificate in the original language plus a certified English translation (if the original is not in English).
    4. Work experience is not necessary, though highly desirable.
2. GMAT/GRE scores are optional, but reccommended.
3. Applicants will submit application essays addressing questions related to experience, professional goals, and reasons for pursue the program.
4. Applicants will submit two recommendations from persons who have known the applicant in academic or professional capacities. At least one from a faculty member is preferred. (Recommendations from friends and family will not be accepted.)
5. Applicants will submit their current resume.
6. English Proficiency Exams (for international applicants who are citizens of countries where the official language is not English): Either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing Systems (IELTS) is required.
    1. TOEFL Minimum acceptable score: Internet-based test: 100; paper-based test: 600.
    2. IELTS Minimum acceptable score: 7.0
7. $50 non-refundable application fee.
8. Prospective candidates, domestic or international, will be interviewed before admission, in person or virtually.

Learning outcome goals

The MSW/MBA dual-degree program is designed to provide students with a unique combination of social work knowledge and skills, with exceptional strength in management decision-making and leadership. In addition to the MSW learning outcomes that are already in place, supplementary MSW/MBA objectives include:

1. Proficiency in the management functions of accounting, finance, computer information systems, marketing, operations management, organizational behavior, human resource management, and social enterprise.
2. Special emphasis on development of skills and abilities to lead strategically and to position an organization effectively for continued growth and development in both for-profit and nonprofit sectors.
3. Knowledge and understanding of complex organizations, their development and transformation, administrative principles, the decision-making process, and competence in managerial functions.

4. To provide applied learning experiences, the required field practicum will include professional supervision through appropriate concentration settings that will focus on community and human service organization management.

Program requirements

1. A graduate-level course grade of B or higher must be maintained throughout the joint-degree program.

2. The MBA program requires a minimum 45 credits,, of which at least 33* credits must be from School of Business courses, while the balance of 12 credits are accepted from School of Social Work courses.

Master of Business Administration Core Courses

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Required Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a students' academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

MBA Elective Courses

Students in the joint degree program must complete an additional 7.5 elective credits of School of Business courses.

Program requirements

1. All MSW/MBA joint degree students will be required to take at least 33 credits of KGSB credits, consisting of the above 25.5 credits of core courses plus an additional 7.5 credits of School of Business electives. Thus, up to 12 credits will be accepted from courses successfully completed in the MSW program to achieve the total of 45 credits required for the completion of the School of Business MBA degree.
2. The following School of Business courses will count as credits towards the MSW degree:
    1. BACC 2401 - FINANCIAL ACCOUNTING will qualify as equivalent to SWCOSA 2085 - FINANCIAL MANAGEMENT SOCIAL SERVICE INSTITUTIONS (3 credits), and will count as 3 credits for both the MSW and MBA programs,

2. BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS and Strategic Management (1.5 credits) will qualify as equivalent to SWRES Organizational Research, and will count as 3 credits for both the MSW and MBA programs (SA track only),
3. SW General Elective 1-One 3-credit or two 1.5-credit required MBA courses (e.g., BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS), which will count as 3 credits for both the MSW and MBA programs, and
4. SW General Elective 2- One 3-credit or two 1.5-credit required MBA courses (e.g.,BIND 2444 - MANAGEMENT SIMULATION CAPSTONE), which will count as 3 credits for both the MSW and MBA programs.

Thus, the double-counted credits make it possible for students to earn both degrees without having to take the total sum of credits required for completing the two-degree programs separately.

1. It should be noted that a long-standing educational policy of the SSW is that students who, within the past seven academic calendar years, have received a social work degree from a CSWE-accredited undergraduate program are eligible for advanced standing. Those granted advanced standing during the admission process can receive up to 12 academic credits and six field education credits that will count towards completion of the MSW program.

2. Thus, full-time COSA students with advanced standing must earn a total of 63 credits for CO students, and 60 credits for SA students (adding all MSW and MBA courses). This means a total of 30 social work credits (including total of 12 field credits) to be taken by CO students and 27 credits (including total of 12 field credits) to be taken by SA students. Additionally, they must take minimum of 33 credits of MBA courses, which includes 25.5 and 7.5 credits of required and electives, respectively.

3. Full-time COSA students without advanced standing must earn a total of 84 credits for CO students, and 81 credits for SA students (adding all MSW and MBA courses). This means a total of 51 social work credits to be taken by CO students and 48 credits to be taken by SA students. Additionally, they must take minimum of 33 credits of MBA courses, which includes 25.5 and 7.5 credits of required and electives, respectively.

Business Administration and Engineering, MBA/MS

The Swanson School of Engineering and the Katz Graduate School of Business have established joint MBA/MS programs with each of seven engineering departments. These programs are designed to meet the clear and growing need felt by various industry sectors for managers with sophisticated business and engineering skills. In today's environment, such cross-functional skills are essential in addressing multifaceted problems involving issues related to product development, quality, information systems, modeling and quantitative analysis, finance and accounting, international relations, and marketing.

Both full-time and part-time options are available. The full-time option can be completed in two academic years, whereas the part-time option may require a period of four to five years. The programs generally consist of 64.5 credits for full-time and part-time. It is designed for students with undergraduate degrees in engineering and, in some cases the physical sciences, preferably with industry work experience. Candidates must meet the admissions criteria of both the MBA program and the specific MS engineering program of interest.

Students accepted into the program will be expected to complete both degrees concurrently and pay full tuition. Courses will be scheduled in such a manner as to preclude students from receiving one degree before the other.

This program is only for those students seeking a professional MS engineering degree. Students interested in the research MS engineering degree track will not be admitted. Students who are enrolled in the joint degree program are expected to complete both degrees.

Full-time students will register for the program through the Katz Graduate School of Business for four semesters at the one-year MBA tuition rate.

Business Administration and International Development, MBA/MID

Requirements

Offered with the Graduate School of Public and International Affairs (GSPIA), the joint MBA/MPIA program enables students who are in the process of acquiring professional training in public policy (with a focus on international relations) to simultaneously obtain a substantial

knowledge of private sector management with a focus on international business. Similarly, the MBA/MID allows a student to focus on international development at GSPIA. These programs normally require at least five terms of full-time study and 75 credits.

Business Administration and Public and International Affairs, MBA/MPIA

Requirements

Offered with the Graduate School of Public and International Affairs (GSPIA), the joint MBA/MPIA program enables students who are in the process of acquiring professional training in public policy (with a focus on international relations) to simultaneously obtain a substantial knowledge of private sector management with a focus on international business. Similarly, the MBA/MID allows a student to focus on international development at GSPIA. These programs normally require at least five terms of full-time study and 75 credits.

Joint Degree: Business Administration and Law, MBA/JD

The School of Business and the School of Law provide the opportunity for a student to earn both an MBA and a JD degree in a period of three and a half years of full-time study. A total of 115 credits are required for both degrees.

For additional program information, contact the Admissions Office, School of Law , Phone: 412-648-1413.

MBA/Doctor of Medicine

Joint Degree

Students may pursue a joint degree program that results in an MBA from the School of Business and an MD from the School of Medicine.

Note: Joint-degree students complete the standard MD curriculum and 33 credits from the School of Business. The MBA requirements are completed after either the 2nd or 3rd year at the School of Medicine, at which points students transfer to the School of Business for one year to complete the MBA requirements. The two degrees will be awarded simultaneously after the completion of all requirements for both degrees.

Requirements for the joint degree MD/MBA

MD

Students complete the standard MD requirements from the School of Medicine.

Master of Business Administration requirements: 33

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS

- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Required Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a students' academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

MBA Elective Courses

Students in the joint degree program must complete an additional 7.5 elective credits of School of Business courses.

Master's

Accounting and Business Analytics, MS (STEM-designated)

Differentiate yourself with this STEM-designated program which prepares students for leadership roles in financial accounting, managerial, and tax accounting. Students gain general business knowledge and specialized accounting and analytics skills. In addition, the program prepares students to pass the CPA Exam, both by covering the content areas of the exam and by satisfying the educational requirements for certification in Pennsylvania and many other U.S. states. Students enrolled in this program must complete the appropriate number of prerequisites required, and elective courses and maintain a minimum GPA of 3.0.

This program is closed to new applicants as of Fall 2026. Enrolled students may complete all degree requirements as planned. Students who wish to pursue analytics alongside a master's degree are encouraged to explore our dual degree programs with the MS in Analytics and Applications of AI for Business.

Prerequisite Courses

Prerequisite Courses, may be waived pending previous coursework (minimum grade of B or better)

- BUSACC 0030 - Financial Accounting
- BUSACC 0040 - Managerial Accounting

Required Courses (Required total: 37.5 credits):

- BACC 2533 - ACCELERATED INTERMEDIATE FINANCIAL REPORTING
- BACC 2236 - ACCOUNTING INFORMATION SYSTEMS
- BACC 2238 - AUDITING
- BACC 2252 - TAXATION FOR ENTITIES
- BACC 2254 - ADVANCED FINANCIAL ACCOUNTING

- BACC 2258 - STRATEGIC COST MANAGEMENT
- BACC 2559 - TAXES AND DECISION MAKING
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
  Programming course (choose one):
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2588 - DATA BASE MANAGEMENT
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT (minimum grade of B required)
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT (minimum grade of B required)
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2578 - DATA MINING

Business Analytics Elective Courses (Required minimum 3 credits):

Elective credits allow students to participate in an internship for credit experience, complete other accounting or business analytics elective courses or an Experience-Based Learning course.

- BACC 2523 - ACCOUNTING DATA ANALYTICS
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Accounting, MS

The Master of Science in Accounting is a 30-credit program designed to be completed, in two terms, on a full-time basis. The program prepares students for leadership roles in financial accounting, managerial, and tax accounting. Students gain general business knowledge and specialized accounting skills necessary for success. In addition, the program prepares students to pass the CPA Exam, both by covering the content areas of the exam and by satisfying the educational requirements for certification in Pennsylvania and many other U.S. states. Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses and maintain a minimum GPA of 3.0.

Prerequisite Courses [6 credits]:

Prerequisite Courses; may be waived pending previous coursework (minimum grade requirement of B or better)

- BUSACC 0030 - FINANCIAL ACCOUNTING
- BUSACC 0040 - MANAGERIAL ACCOUNTING

Required Courses [21 credits]:

- BACC 2236 - ACCOUNTING INFORMATION SYSTEMS
- BACC 2238 - AUDITING
- BACC 2533 - ACCELERATED INTERMEDIATE FINANCIAL REPORTING
- BACC 2254 - ADVANCED FINANCIAL ACCOUNTING
- BACC 2258 - STRATEGIC COST MANAGEMENT
- BACC 2559 - TAXES AND DECISION MAKING
- BACC 2252 - TAXATION FOR ENTITIES

Accounting Elective Courses Group A (Required 3 Credits)

- BACC 2525 - FINANCIAL STATEMENT ANALYSIS
- BSEO 2315 - BUSINESS LAW
  or
- BSEO 2316 - BUSINESS LAW

Accounting Elective Courses Group B (Required 6 credits)

- BACC 2100 - MACC INTERNSHIP
- BACC 2525 - FINANCIAL STATEMENT ANALYSIS
- BACC 2523 - ACCOUNTING DATA ANALYTICS
- BACC 2270 - PERSONAL WEALTH AND TAXES
- BACC 2562 - VOLUNTEER INCOME TAX ASSISTANCE
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2578 - DATA MINING
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS
- BSEO 2315 - BUSINESS LAW
  OR
- BSEO 2316 - BUSINESS LAW

Analytics and Applications of Artificial Intelligence for Business, MS

The STEM-designated 30-credit MS in Analytics & Applications of AI for Business equips students with the advanced analytical and AI capabilities required to lead in today's data-driven marketplace, while grounding every skill in practical business application. Students receive rigorous training in data mining, programming, machine learning, database management, and AI deployment, learning not only how to generate data insights but how to apply them to real organizational challenges in marketing, finance, operations, accounting, management, and strategy. The curriculum emphasizes ethical and responsible AI use alongside strong business fundamentals, ensuring graduates can translate complex analysis into informed decisions that drive innovation and competitive advantage. Students enrolled in this program must complete the appropriate number of prerequisites, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Core Required Curriculum (18 credits)

- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2578 - DATA MINING

Elective Courses (12 Credits):

Elective curriculum includes a mix of business analytics and AI specific electives and/or preapproved Business Analytics/AI related non-business graduate courses.

Elective courses within the MS Analytics and Applications of AI for Business degree are required to dedicate a substantial proportion of their content to Business Analytics and/or AI related topics, thereby advancing students' business analytics and AI knowledge while supporting the program's broader academic objectives.

At least 1.5 credits must come from experiential learning courses. The experiential learning component must emphasize the application of business analytics and/or AI methods to real world problems and require students to demonstrate competencies in data-driven decision making (e.g., through project courses or internships).

At least 1.5 credits must come from courses focused on responsible AI/ethical considerations.

Total Credits: 30

Executive Master of Business Administration, MBA

The Executive MBA is designed for working professionals who are emerging and advancing leaders who typically have 10+ years of work experience and 3+ years of management or leadership experience. This program blends rigorous academic learning with practical, real-world application, focusing on leadership, strategy, analysis, and innovation.

The Executive MBA coursework is delivered in a blended format with in-person sessions held one weekend (Friday/Saturday) a month on the University's Oakland campus, and up to half of the coursework delivered online. The program is designed to enhance your expertise and to build business acumen, analytic and strategic skills and prepare you to be a catalyst for change and lead your organization into the future. Professionals across industries discover how the addition of finance, economics, business management, and leadership skills opens doors to advancement. The program can be completed in 19-months over five terms, beginning in the Fall Term.

Required Core Courses

Required core courses taken by all Executive MBA students. The core courses identified are predominantly the same as the current curriculum for both programs. BQOM 2535 course exists but the name will be updated to remove healthcare from the title as it will be taken by all EMBA students.

- BACC 2256 - STRATEGIC COST MANAGEMENT
- BACC 2801 - FINANCIAL ACCOUNTING
- BFAE 2801 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISIONS
- BFIN 2306 - FINANCIAL MANAGEMENT
- BMIS 2811 - INFORMATION TECHNOLOGY AND BUSINESS VALUE
- BMKT 2306 - MARKETING MANAGEMENT
- BOAH 2801 - ORG BEHAV: LDRSHP & GRP EFFECT
- BQOM 2801 - STATSTCL ANAL: UNCERT
- BSEO 2901 - STRATEGY, MISSION AND VALUES
- BQOM 2535 - HEALTHCARE OPERATIONS AND SUPPLY CHAIN MANAGEMENT

Practicum and/or Consulting Project

Required: six credits of practicum and/or consulting project

Healthcare ARCO (Proposed ARCO in Executive Management of Healthcare Organizations)

Nine total credits are required for the healthcare ARCO. Required healthcare ARCO courses plus three credits of electives. The three elective credits may be taken with cross-industry students. Elective offerings may vary.

- BIND 2902 - COMPARATIVE HEALTHCARE POLICY
- BQOM 2821 - HEALTH INSURANCE AND FUNDING U.S. HEALTHCARE

Elective Courses

Nine credits of electives are required for the cross-industry track. Elective offerings may vary.

- BIND 2902 - COMPARATIVE HEALTHCARE POLICY
- BQOM 2821 - HEALTH INSURANCE AND FUNDING U.S. HEALTHCARE
  Three (3) credits of electives. Electives may be taken with cross-industry EMBA students. Elective offerings may vary.

Total Credits Required

45 Credits

Executive Masters of Business Administration Healthcare, MBA

The Executive MBA in Healthcare program is designed for physicians, clinicians, and healthcare professionals in administrative roles with 10+ years of experience in the industry and 3+ years of management or leadership. This program blends rigorous academic learning with practical, real-world application, focusing on leadership, strategy, analysis, and innovation across the healthcare industry.

The Executive MBA in Healthcare coursework is delivered in a blended format with in-person sessions held one weekend (Friday/Saturday) a month on the University's Oakland campus, and a third of the coursework delivered online. The program is designed for working professionals to build business acumen, analytic and strategic skills and prepare you to be a catalyst for change and lead the future of healthcare. Professionals across this industry discover how the addition of finance, economics, business management, and leadership skills can enable them to make a deeper impact in their organizations. The program can be completed in 19-months over five terms, beginning in the Fall Term.

Contact Information

Executive Degree Programs Office

412-648-1600

E-mail: executiveprograms@katz.pitt.edu

Application Procedures

Apply Here

Applications may be submitted year-round, and admissions decisions are typically made within three weeks of receiving a completed application package and conducting an interview. Your application will either be accepted, rejected, or wait-listed. If wait-listed, an admissions decision may not be made until a month before classes begin. At that time, those with the strongest credentials are admitted. Applicants must hold a bachelor's degree from an accredited university.

Quick Check List:

- Online application form
- Resume or CV
- Self-nomination letter
- Two references, including your current supervisor
- Official academic transcripts from all institutions attended
- Official TOEFL or IELTS scores for non-English native speakers

Tuition, Fees and Financial Assistance

The cost for this program is $95,000 and includes tuition, student fees, course materials, and meals when attending on-campus weekends and is the same for in-state and out-of-state residents. Merit aid and travel scholarships are available for qualified students. Applicants can apply and be considered for this aid by completing the Executive MBA Financial Support Plan form. Visit tuition.pitt.edu for tuition information.

Executive MBA in Healthcare Degree Requirements

Graduates would receive an MBA degree from the University of Pittsburgh upon successful completion of the following degree requirements:

- 45 credits (include 37.5 credits in the core MBA curriculum and 7.5 credits of electives and practicum)
- 3.0 GPA or higher to graduate
- Completion of 6-hour research practicum

Executive MBA in Healthcare Core Curriculum

- BACC 2256 - STRATEGIC COST MANAGEMENT
- BACC 2802 - FINANCIAL ACCOUNTING IN HEALTHCARE ORGANIZATIONS
- BFAE 2850 - HEALTHCARE ECONOMICS
- BFIN 2306 - FINANCIAL MANAGEMENT
- BIND 2101 - PRACTICUM FOR EMBA HEALTHCARE STUDENTS
- BIND 2902 - COMPARATIVE HEALTHCARE POLICY
- BMIS 2911 - HEALTHCARE INFORMATION TECHNOLOGY
- BMKT 2554 - MARKETING DESIGN AND ANALYSIS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY
- BORG 2402 - LEADING PEOPLE IN HEALTHCARE ORGANIZATIONS
- BQOM 2535 - HEALTHCARE OPERATIONS AND SUPPLY CHAIN MANAGEMENT
- BQOM 2801 - STATSTCL ANAL: UNCERT
- BQOM 2821 - HEALTH INSURANCE AND FUNDING U.S. HEALTHCARE
- BSEO 2901 - STRATEGY, MISSION AND VALUES

Executive Elective Curriculum

One 1.5 credits elective course is part of the Executive MBA curriculum and is chosen by the students through student input and course availability. The elective allows them to learn more about a specific subject based on their interest and focus on current or future challenges they might face in their professional path. Executive MBA students may also select a different elective from the PMBA offerings based on scheduling and course availability; however, the course delivery method and schedule will be different.

Finance and Business Analytics, MS (STEM-designated)

The STEM-designated Master of Science in Finance and Business Analytics is a 45-credit master's degree program you may complete in three terms of full-time study beginning in the fall (August) term. Students develop foundational quantitative and qualitative finance skills with powerful data analysis tools and technical skills to be prepared to tackle challenges in portfolio analysis, risk management, and capital markets.

A CFA Institute Partner School, the School of Business offers a finance curriculum covering 70 percent of the topics on the Chartered Financial Analyst (CFA) exam and enhances your preparation for related certifications such as the Certified Public Accountant (CPA) and Certified Financial Planner (CFP) certifications.

This program is closed to new applicants as of Fall 2026. Enrolled students may complete all degree requirements as planned. Students who wish to pursue analytics alongside a master's degree are encouraged to explore our dual degree programs with the MS in Analytics and Applications of AI for Business.

Required Courses (34.5 Credits)

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BFIN 2036 - CORPORATE FINANCE
- BFIN 2039 - INVESTMENT MANAGEMENT
- BFIN 2410 - FINANCIAL MANAGEMENT 2
- BFIN 2145 - FINANCIAL MODELING
- BMIS 2588 - DATA BASE MANAGEMENT
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT (minimum grade of B required)
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
  (minimum grade of B required)
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2578 - DATA MINING
  Programming Course:
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
  OR
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R

Business Analytics Electives (Minimum 3 Credits)

- BACC 2523 - ACCOUNTING DATA ANALYTICS
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BMKT 2544 - SHOPPER ANALYTICS (pre-requisite is BMKT 2409)
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Finance Electives (Minimum 7.5 Credits)

- BFIN 2035 - VALUATION
- BFIN 2043 - INTERNATIONAL FINANCIAL MANAGEMENT
- BFIN 2141 - REAL ESTATE FINANCE
- BFIN 2342 - ALTERNATE ASSETS: FROM VC TO PE
- BFIN 2420 - FINTECH

Total Credits: 45

Finance, MS

The Master of Science in Finance is a 30-credit program designed to be completed in two terms, on a full-time basis. The program provides students with a broad overview of the quantitative and qualitative aspects of finance, helping them understand what steps should be taken to maximize shareholder wealth. Students learn the technical skills of everything from valuation techniques, to forecasting methods, to the application of the time value of money, to building pro-forma financial statements. Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

A CFA Institute Partner School, the School of Business offers a finance curriculum covering 70 percent of the topics on the Chartered Financial Analyst (CFA) exam and enhances your preparation for related certifications such as the Certified Public Accountant (CPA) and Certified Financial Planner (CFP) certifications.

Required Courses (21.0 Credits)

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BFIN 2410 - FINANCIAL MANAGEMENT 2
- BFIN 2039 - INVESTMENT MANAGEMENT
- BFIN 2036 - CORPORATE FINANCE
- BFIN 2145 - FINANCIAL MODELING

Elective Courses (Minimum 9.0 Credits)

- BFIN 2035 - VALUATION
- BFIN 2043 - INTERNATIONAL FINANCIAL MANAGEMENT
- BFIN 2141 - REAL ESTATE FINANCE
- BFIN 2342 - ALTERNATE ASSETS: FROM VC TO PE
- BFIN 2420 - FINTECH

Total Credits: 30

Management Information Systems, MS (STEM-designated)

The MS in Management Information Systems is a STEM-designated program that develops tech-savvy business leaders. The program offers flexible options: it can be pursued standalone, with a Graduate Certificate in Business Analytics, as a dual degree with the MBA, or in a part-time format. Students enrolled in this program must complete a minimum of 24 credits of information systems-focused courses on topics including data programming, technology innovation, and project management, along with up to 6 credits of broader elective courses that are business-oriented and provide experience-based learning.

Required Courses (24 credits):

- BMIS 2409 - INFORMATION SYSTEMS
- BMIS 2537 - BUSINESS SYSTEMS PLATFORMS
- BMIS 2056 - MGT INFORMATION SYSTEMS PRACM
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BMIS 2588 - DATA BASE MANAGEMENT
- BMIS 2525 - CURRENT ISSUES IN COMPUTING
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2679 - TECHNOLOGY INNOVATION, ADOPTION, AND DIFFUSION

Elective Courses (6 credits):

Students may choose a minimum of 6 credits of elective coursework.

Total Credits: 30

Management, MS

The curriculum includes 19.5 credits of core business management courses that overlap with the School of Business MBA curriculum. Students also choose 10.5 credits of electives from areas of study in finance, management of information systems, marketing, organizational behavior, human resource management, and entrepreneurship.

Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Required Courses (19.5 credits)

Students are required to complete 19.5 credits of core courses.

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMKT 2409 - MARKETING MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BSPP 2409 - STRATEGIC MANAGEMENT
- BMIS 2409 - INFORMATION SYSTEMS
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT

Electives Courses (10.5 credits)

Students will choose 7.5 credits that reflect their business discipline interest, as well as a 3.0 credit Experienced Based Learning course. Students are encouraged to utilize their elective credits to complete a micro-credential, and should discuss possible options with their academic advisor.

Total Credits: 30

Marketing Science and Business Analytics, MS (STEM-designated)

Differentiate yourself with this STEM-designated program which allows students to gain technical skills in multivariate data analysis, data programming, data mining, and database management. In addition, the program helps students develop an in-depth understanding of consumer behavior through the study of customer insights, research techniques, digital marketing, and social media marketing with advanced data analysis and decision making techniques and skill. Students enrolled in this program must complete the appropriate number of required and elective courses according to program requirements and maintain a minimum GPA of 3.0.

This program is closed to new applicants as of Fall 2026. Enrolled students may complete all degree requirements as planned. Students who wish to pursue analytics alongside a master's degree are encouraged to explore our dual degree programs with the MS in Analytics and Applications of AI for Business.

Required Courses (Required total: 30 credits):

- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BMIS 2588 - DATA BASE MANAGEMENT
- Programming course (choose one): BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON/BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMKT 2409 - MARKETING MANAGEMENT
- BMKT 2031 - MARKETING RESEARCH
- BMKT 2544 - SHOPPER ANALYTICS
- BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS
- BMKT 2553 - SOCIAL MEDIA STRATEGY
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT (minimum grade of B required)
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2578 - DATA MINING

Required Project Course (Required minimum 1.5 credits)

- BIND 2024 - CONSULTING FIELD PROJECT
- BIND 2603 - INTERNSHIP
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BMKT 2035 - CONSMR BEHAV THEORY & PRACTICE
- BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT
- BMKT 2530 - SERVICES MKTG:STRATEGIES/TACTICS
- BMKT 2569 - BRAND MANAGEMENT

Elective Courses (Required minimum: 7.5 credits):

Student may complete the remaining 7.5 credits of electives using any course from the marketing area (BMKT 2***), any of the courses on the required project course list not taken to satisfy the project course requirement, or any of the following:

- BMKT 2528 - ADVERTISING
- BMKT 2533 - BUSINESS TO BUSINESS

- BMKT 2573 - AI IN MARKETING
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Total Credits: 39

Marketing Science, MS

The Master of Science in Marketing Science is a 30-credit program designed to be completed in two terms, on a full-time basis. The program prepares students for the future of marketing, offering a broad introduction to marketing alongside in-depth study of customer insights, research techniques, data analytics, digital marketing, and social media marketing. Students learn how to build effective marketing strategies based on data and the latest technological tools. Students enrolled in this program must complete the appropriate number of required and elective courses according to program requirements and maintain a minimum GPA of 3.0.

Required Courses (16.5 credits):

- BMKT 2409 - MARKETING MANAGEMENT
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BMKT 2031 - MARKETING RESEARCH
- BMKT 2544 - SHOPPER ANALYTICS
- BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS
- BMKT 2553 - SOCIAL MEDIA STRATEGY

Required Project Course (1.5 credits)

Students must complete a minimum of 1.5 project course credits.

- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BIND 2024 - CONSULTING FIELD PROJECT
- BIND 2603 - INTERNSHIP
- BMKT 2035 - CONSMR BEHAV THEORY & PRACTICE
- BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT
- BMKT 2530 - SERVICES MKTG:STRATEGIES/TACTICS
- BMKT 2569 - BRAND MANAGEMENT

Elective Courses (12 credits):

Student may complete the remaining 12 credits of electives using any course from the marketing area (BMKT 2***), any of the courses on the required project course list not taken to satisfy the project course requirement, or any of the following:

- BMKT 2528 - ADVERTISING
- BMKT 2533 - BUSINESS TO BUSINESS

- BMKT 2573 - AI IN MARKETING
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Total Credits: 30

Master of Business Administration, MBA

The MBA program prepares students to become agile and thoughtful leaders through broad exposure to core business domains and the integrated knowledge needed to navigate complex organizational environments. The program equips students with the skills and applied experiences required to make evidence-based decisions and to drive meaningful impact across a wide range of business settings.

Enrollment Options

The MBA is offered in three enrollment options: Signature, Accelerated, and Part-time. Each option delivers the same rigorous curriculum and teaching. The three formats are designed to accommodate a range of professional backgrounds, career goals, and scheduling needs.

Signature MBA

The Signature MBA program offers students a unique opportunity to complete a traditional two-year MBA program in only 18 months, allowing them to return to work sooner and thereby increase the return on investment of completing the degree. This full-time option is well suited for students who value an immersive campus experience and the depth of engagement that comes from a cohort-based, residential program. The culiminating experience for students in this program is a week-long Travel Capstone experience.

Accelerated MBA

The Accelerated MBA program enables students to complete the MBA full-time in an intensive 12-month format, minimizing time away from the workforce. Designed for students with extensive post-bachelor professional experience or sponsored professionals seeking to return to their organization within a condensed timeframe, the program begins in early August and is structured across three consecutive terms, concluding in July. The culiminating experience for students in this program is a weekend Pittsburgh-based Capstone experience.

Part-Time MBA (PMBA)

The Part-Time MBA program offers the same curriculum and teaching philosophies as the Signature and Accelerated MBA programs in a format designed for working professionals who do not want to put their careers on hold to pursue their MBA. The degree can be earned in seven semesters by taking approximately six credits per term. The program runs year-round with fall, spring, and summer semesters, with classes held on weekday evenings and select weekends.

Students select a modality, on-campus (in-person) or hybrid, for their courses and complete that portion of the program as a cohort.

In-Person: Core and required courses are delivered on the Pittsburgh campus.

Hybrid: Core and required courses are delivered via live synchronous online sessions, allowing students to participate from anywhere.

Regardless of modality, the culiminating experience for students in the PMBA is an on-campus immersion weekend for the Pittsburgh-based Capstone course.

MBA Degree Requirements

Students enrolled in an MBA program must fulfill the following requirements in order to earn the MBA degree:

1. A minimum of 45 credits of approved graduate work
2. The appropriate distribution of required core courses and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

MBA Core Curriculum

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Professional Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a student's academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

Elective Courses

Students in the MBA program must complete a minimum of 19.5 elective credits from any area of study offered at the School of Business.

Taking electives at other Professional Schools at Pitt

Students may also choose to take elective courses at other professional schools at the University, including the School of Law, the Swanson School of Engineering, the School of Social Work, the Graduate School of Public and International Affairs, and the School of Computing & Information

Micro-credentials and Graduate Certificates

Students wishing to add additional specialization to the MBA program may be able to declare one or more micro-credentials or graduate certificates, many of which are stackable within the elective portion of the programs. Not all micro-credentials or graduate certificates will be feasible for every MBA program. Students should discuss their interest in micro-credentials and graduate certificates with their academic advisor to see how those requirements might be stackable within their degree program.

Part Time MBA Hybrid Cohort

Part-Time MBA Program

The Part-Time MBA program offers the same curriculum and encompasses the same teaching philosophies as the Accelerated and Signature MBA programs offered in a format that meets the needs of working professionals who don't want to put their careers on hold in order to pursue their MBA. The Part-Time MBA can be earned in 7 semesters by taking approximately 6 credits per term. The program runs year-round with fall, spring, and summer semesters of 12 or 14 weeks each. Classes are conducted on weekday evenings and select weekends, and are offered in both on-campus and online formats. Student select a modality (online or on-campus) for their core and required courses and complete that portion of the program as a cohort. Students can then select elective courses across modalities, to fit their interests, schedule, and preferred learning format.

Regardless of selected modality for core and required courses, all students are required to complete an on-campus orientation weekend and an on-campus immersion weekend for the BIND 2454 Integrated MBA Capstone (1.5 credits)

MBA Degree Requirements

Students enrolled in an MBA program must fulfill the following requirements in order to earn the MBA degree:

1. A minimum of 45 credits of approved graduate work
2. The appropriate distribution of required core courses and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

MBA Core Curriculum

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Professional Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a student's academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS

- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

Elective Courses

Students in the MBA program must complete a minimum of 19.5 elective credits from any area of study offered at the School of Business.

Taking electives at other Professional Schools at Pitt

Students may also choose to take elective courses at other professional schools at the University, including the School of Law, the Swanson School of Engineering, the School of Social Work, the Graduate School of Public and International Affairs, and the School of Computing & Information

Micro-credentials and Graduate Certificates

Students wishing to add additional specialization to the MBA program may be able to declare one or more micro-credentials or graduate certificates, many of which are stackable within the elective portion of the programs. Not all micro-credentials or graduate certificates will be feasible for every MBA program. Students should discuss their interest in micro-credentials and graduate certificates with their academic advisor to see how those requirements might be stackable within their degree program.

Supply Chain Management and Business Analytics, MS (STEM-designated)

This STEM-designated program combines broad supply chain knowledge in sourcing, logistics, planning, process improvement, inventory, and pricing with in-depth business analytics skills in data analysis, data mining, data programming, and database management. Streamline process, manage risk, and deliver results in today's global business environment. Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

This program is closed to new applicants as of Fall 2026. Enrolled students may complete all degree requirements as planned. Students who wish to pursue analytics alongside a master's degree are encouraged to explore our dual degree programs with the MS in Analytics and Applications of AI for Business.

Required Courses (28.5 credits):

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT (minimum grade of B required)
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
  (minimum grade of B required)
- BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2523 - PROCESS ENGINEERING
- BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT
- BQOM 2534 - STRATEGIC PROCUREMENT AND SOURCING MANAGEMENT
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2578 - DATA MINING
- BQOM 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2588 - DATA BASE MANAGEMENT

Elective Courses (13.5 Required)

Students need to complete 10.5 elective credits including 3.0 Experienced Based Learning credits. At least 4.5 credits need to come from the BQOM area, no more than 4.5 credits can come from the BIND area or adjacent area. 3.0 elective credits will be from the Business Analytics area.

Analytics Elective Courses (3.0 credits):

Students must complete a minimum of 3 credits in Analytics elective courses.

- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BMKT 2544 - SHOPPER ANALYTICS
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Total Credits: 45

Supply Chain Management, MS (STEM-designated)

The Master of Science in Supply Chain Management is a 30-credit program designed to be completed in two terms, on a full-time basis. The program provides students with broad supply chain knowledge and technical skills in sourcing, logistics, planning, inventory, pricing, and consulting. The program has a strong interdisciplinary flavor, letting students select from a wide range of electives that relate to everything from information technology to accounting, to strategy.

Required Courses (13.5 credits):

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS
- BQOM 2523 - PROCESS ENGINEERING
- BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT
- BQOM 2534 - STRATEGIC PROCUREMENT AND SOURCING MANAGEMENT
- BQOM 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS

Experienced Based Learning Courses (3.0 credits)

Students are required to complete 3 credits of experienced based learning credits.

- BIND 2024 - CONSULTING FIELD PROJECT
- BIND 27** Global Research Practicum
- BIND 2603 - Supply Chain Internship
- BQOM 2139 - Lean Six Sigma

Supply Chain Elective Courses (9.0 credits):

Students must complete a minimum of 9 credits of Supply Chain elective courses.

- BQOM 2139 - LEAN SIX SIGMA THEORY & PRACTICE
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2524 - PROD MGT & PROCESS IMPROVEMENT
- BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2578 - DATA MINING
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Business Elective Courses (4.5 credits):

Students may complete the remaining 4.5 credits of electives in any area of the School of Business.

Total Credits: 30

Micro-Credential

Accounting, Micro-Credential

The Micro-credential in Accounting requires the successful completion of 9.0 credits including 3.0 credits of required coursework (BACC 2401 - FINANCIAL ACCOUNTING) and 6.0 elective credits to include BACC 2*** coursework or other with faculty approval.

A student who has completed the School of Business Micro-Credential in Accounting is able to count, or stack, the credits to the Graduate Certificate in Accounting.

Data Programming for Business Insights, Micro-credential

Micro-Credential in Data Programming is designed to provide you with knowledge, skills, and abilities in the fundamentals of data programming.

Required Course (3 credits)

- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON

Elective Courses (6 credits)

Students should select 6 -credits from the following:

- BMIS 2588 - DATA BASE MANAGEMENT
- BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R
- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS

Finance, Micro-Credential

The Micro-credential in Finance would require the successful completion of 9.0 credits including 3.0 credits of required coursework (BFIN 2409 - FINANCIAL MANAGEMENT 1 and BFIN 2410 - FINANCIAL MANAGEMENT 2) and 6.0 elective credits to include BFIN 2*** coursework or other with faculty approval.

A student who has completed the School of Business Micro-Credential in Finance would be able to count, or stack, the credits to the Graduate Certificate in Finance.

Total Credits: 9

Foundations of AI for Business, Micro-Credential

The Micro-Credential in Foundations of AI for Business offers a condensed 9-credit pathway focusing on core technical and strategic AI competencies for business applications. The micro-credential in AI requires a pre-requisite of one of the following:

1. BMIS 2402 Computational Thinking (1.5)
2. BMIS 2542 Data Programming Essentials with Python (3 cr)
3. BMIS 2526 Advanced Data Programming with R (3 cr)
4. Or demonstrated programming experience

Students need to earn a B in whichever pre-requisite course they opt to take to be considered for admissions into the micro-credential.

Course Name	Course Number	Credits	Required or Elective
Technical Foundation of Generative AI	BMIS 2630	3.0	R
Deploying AI for Business: Strategy, Design, and Execution	BMIS 2635	3.0	R
Approved Electives		3.0	E
Total Credits		9.0	

Required Courses

These 6 credits are required for completion of the micro-credential

- BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS
- BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION

Elective Courses

3 Elective credits are required for the Micro-Credential. Examples of elective courses are provided below and other electives are being developed.

- BACC 2523 - ACCOUNTING DATA ANALYTICS
- BMIS 2525 - CURRENT ISSUES IN COMPUTING
- BMIS 2537 - BUSINESS SYSTEMS PLATFORMS

- BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BMIS 2679 - TECHNOLOGY INNOVATION, ADOPTION, AND DIFFUSION
- BMKT 2573 - AI IN MARKETING
- BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Innovation and Entrepreneurship, Micro-credential

Micro-Credential in Innovation & Entrepreneurship is designed to provide you with knowledge, skills, and abilities to remain agile in an ever-changing business landscape. Substitutions for elective courses can be made with faculty approval.

Required Courses

- BSEO 2531 - ENTREP & NEW VENTURE INITIATION
- BSPP 2110 - SCALING INNOVATION STUDIO

Elective Courses Options

Choose at least 3 credits from the list below:

- BSEO 2012 - SOCIAL ENTREPRENEURSHIP
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BOAH 2532 - NEGOTIATIONS, TEAMWORK AND CHANGE 1
- BIND 2024 - CONSULTING FIELD PROJECT

Leading People in Organizations, Micro-Credential

Micro-Credential in Leading People in Organizations is designed to provide you with knowledge, skills, and abilities to be an effective business leader. Substitutions for elective courses can be made upon approval of the faculty.

Required Courses

- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSPP 2409 - STRATEGIC MANAGEMENT

Elective Courses Options

Choose at least 3 credits from the list below:

- BOAH 2421 - HUMN RESORC COMPETITIVE ADVNTG
- BOAH 2517 - INTERPERSONAL SKILLS FOR MANAGERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY
- BOAH 2532 - NEGOTIATIONS, TEAMWORK AND CHANGE 1
- BOAH 2537 - CONFLICT RESOLUTION IN THE WORKPLACE 1
- BSPP 2112 - LEADING ORGANIZATIONS TO INNOVATE SMARTER
- BSEO 2538 - STRATEGIC LEADERSHIP

Total Credits: 6

Management Consulting, Micro-Credential

Micro-Credential in Management Consulting offers you the opportunity to become familiar with the structure and workings of this industry, as well as the essential toolkit of a consultant. Substitutions for elective courses can be made with faculty approval.

Required Courses

The following two courses are required:

- BSPP 2409 - STRATEGIC MANAGEMENT
- BSEO 2570 - FUNDAMENTALS OF MANAGEMENT CONSULTING

Elective Courses Options

Choose at least 6 credits from the list below:

- BENV 2115 - MARKET MANIPULATIONS
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BOAH 2532 - NEGOTIATIONS, TEAMWORK AND CHANGE 1
- BSEO 2509 - BUSINESS AND POLITICS
- BSEO 2538 - STRATEGIC LEADERSHIP
- BSEO 2511 - MGMNT OF STRATEGIC ALLIANCES 1
- BSEO 2553 - STRATEGIC MANAGEMENT OF ACQUISITIONS AND DIVESTMENT
- BSPP 2112 - LEADING ORGANIZATIONS TO INNOVATE SMARTER

Total Credits: 9

Management Science, Micro-Credential

The Micro-credential in Management Science would require the successful completion of 9.0 credits including 4.5 credits of required coursework (BQOM 2401 - STATISTICAL ANALYSIS and BQOM 2421 - DECISION TECHNOLOGIES) and 4.5 elective credits to include BQOM 2*** coursework or other with area director approval.

A student who has completed the School of Business Micro-Credential in Management Science would be able to count, or stack, the credits to the Graduate Certificate in Management Science.

Total Credits: 9

Marketing Management, Micro-Credential

The Micro-credential in Marketing Management requires the successful completion of 9.0 credits including 1.5 credits of required coursework (BMKT 2409 - MARKETING MANAGEMENT) and 7.5 elective credits to include BMKT 2*** coursework or other with faculty approval.

Sustainable Business, Micro-Credential

The Micro-Credential in Sustainable Business guides students to act as ethically responsible leaders. Students learn how companies manage their social (people, environmental (planet), and financial (profits) risks, obligations, and opportunities to positively impact both stakeholders and financial wellbeing. Substitutions for elective courses can be made upon approval.

Curriculum

Required Courses (4.5 Credits)

- BSEO 2578 - SUSTAINABLE BUSINESS STRATEGY
- BSPP 2328 - THE BUSINESS OF HUMANITY - STRATEGIC MANAGEMENT IN THE ERA OF GLOBALIZATION, INNOVATION AND ESG

Elective Courses (4.5 Credits)

Electives Course Options (must choose at least 4.5 credits from the below). Alternative elective coursework can also come from other Pitt schools, with faculty program director approval

- BACC 2561 - SUSTAINABILITY REPORTING
  Note: BACC 2401 or equivalent course is a required prerequisite for BACC 2561
- BENV 2115 - MARKET MANIPULATIONS
- BSEO 2012 - SOCIAL ENTREPRENEURSHIP
- BSEO 2033 - MANAGING THE NATURAL ENVIRONMENT
- BSEO 2509 - BUSINESS AND POLITICS

Total Credits: 9

Technology Management, Micro-Credential

The Micro-credential in Technology Management would require the successful completion of 9.0 credits including 1.5 credits of required coursework (BMIS 2409 - INFORMATION SYSTEMS) and 7.5 elective credits to include BMIS 2*** coursework or other with faculty approval.

Required Course (1.5 Credits)

All tracks for the Micro-credential in Technology Management require first taking BMIS 2409 Information Systems

- BMIS 2409 - INFORMATION SYSTEMS

Elective Courses & Tracks (7.5 Credits)

The micro-credential requires 7.5 of elective credits. There are three elective tracks offered: Digital Innovation, Project Management and Information Systems/AI Design. Regardless of the combination of electives taken, students earn one micro-credential in Technology Management.

Total Credits: 9

PhD

Accounting, PhD

The School of Business Accounting Doctoral Program discipline prepares graduates to succeed as accounting scholars and educators at top business schools in the United States and abroad. The program features rigorous coursework, thorough research training and close working relationships between doctoral students and faculty to prepare students to be leading accounting academics. Our graduates have an excellent track record of placements at research-oriented business schools and in succeeding in those environments.

Accounting students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within accounting, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of School of Business seminars and courses, as well as from approved University of Pittsburgh seminars and courses. Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the student's faculty advisor and the Director of the School of Business PhD Program. Any subsequent seminar/course changes must also be approved.

To achieve the fifteen course total, accounting doctoral students typically complete School of Business accounting doctoral seminars (BACC 3000 and above) that may include the courses listed below. Students will take additional coursework in areas such as Finance, Econometrics, Game Theory, Cognitive Psychology, Experimental Design and other areas as appropriate. These remaining courses toward the student's program of study must be approved in advance by the Accounting faculty and the School of Business Doctoral Program Director. Students are also required to register for independent study courses and independent dissertation work/credits to complete the degree requirements.

Curriculum

The following accounting seminars are offered by the School of Business PhD Program (subject to student enrollment):

- BACC 3001 - INTRODUCTION TO ACCOUNTING RESEARCH
- BACC 3010 - INDEPENDENT STUDY IN ACCOUNTING
- BACC 3014 - EXPERIMENTAL RESEARCH IN ACCOUNTING
- BACC 3017 - ACCOUNTING WORKSHOP
- BACC 3021 - ARCHIVAL RESEARCH IN MANAGERIAL ACCOUNTING
- BACC 3025 - CAPITAL MARKETS RESEARCH IN ACCOUNTING
- BACC 3052 - CRITICAL THINKING IN ACCOUNTING II
- BACC 3099 - READINGS IN ACCOUNTING
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Business Analytics and Operations, PhD

The Business Analytics and Operations discipline offers flexible options for a doctoral student in a variety of related research topics including Supply Chain Management, Data Mining and Business Analytics, Decision Sciences, Project Management, Revenue Management, Simulation Methodology, Stochastic Modeling and Applied Statistical Methods, and Business Analytics. These programs require coursework for two years, followed by a period of dissertation-related research. The PhD program prepares students for a career in teaching and research at institutions of higher learning.

Business Analytics and Operations students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within Business Analytics and Operations, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of seminars and courses (BQOM 3000 and above), as well as from approved University of Pittsburgh seminars and courses. Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the

student's faculty advisor and the Director of the School of Business PhD Program. Any subsequent seminar/course changes must also be approved.

To achieve the fifteen course total, Business Analytics and Operations PhD students will complete School of Business doctoral seminars (BQOM 3000 and up) that may include Linear and Nonlinear Programming, Simulation, Statistics, Stochastic Processes, Decision Theory, Current Topics in Operations, Value Chain, Data Mining, Business Analytics, Project Management, and Readings in Operations. Students may also take additional coursework from Pitt Business seminars in other disciplines such as Marketing or Finance. They may request courses from the Industrial Engineering Department and from other University of Pittsburgh approved graduate courses in addition to approved courses from other cross-registration eligible institutions.

The following business analytics and operations doctoral seminars may be offered by the School of Business PhD Program (subject to student enrollment). Students may supplement their programs of study with additional courses as noted. The following list suggests seminars and courses that students may use, with the permission of their advisors and the School of Business PhD Program Director, to satisfy the course work phase of their programs of study.

Curriculum

- BQOM 3020 - SIMULATION
- BQOM 3023 - DATA MINING SEMINAR
- BQOM 3024 - OPERATIONS MANAGEMENT FOUNDATIONS AND EMERGING TOPICS
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 3099 - READINGS IN OPERATIONS RESEARCH
- BFAE 3001 - MICROECONOMICS
- IE 2081 - NONLINEAR OPTIMIZATION
- IE 2100 - SUPPLY CHAIN ANALYSIS
- IE 2007 - STATISTICS AND DATA ANALYSIS
- IE 3094 - MARKOV DECISION PROCESSES
- EFOP 3408 - HIERARCHICAL LINEAR MODELING
- EFOP 3417 - STRUCTURAL EQUATION MODELING
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY
- BQOM 3010 - INDEP STUDY OPERATIONS RESEARCH

Finance, PhD

The finance PhD program seeks to prepare students to make significant contributions to the existing body of academic research in corporate finance, mergers and acquisitions, capital structure, internal firm organization, corporate diversification, corporate restructuring, financial institutions and investments and others. The program produces graduates that can independently identify important research questions and carry out theoretical and empirical investigation at levels suitable for publication in the top academic journals. The finance faculty works closely with students to develop suitable research topics and very often collaborates with students on joint research. In short, we strive for our graduates to obtain academic placements at top research institutions.

Finance students take courses from both the University of Pittsburgh School of Business and the Department of Economics as part of their training. The finance faculty offers seminars that provide the core of the doctoral students' training. These seminars introduce the theoretical underpinnings of finance. Beyond these seminars, students are expected to take additional finance seminars that focus on their chosen areas of interest. Since strong methodological skills are critical to a successful scholarly career, finance doctoral students typically also take courses in econometrics, statistics, and mathematical methods. Students are free to matriculate into courses within the School of Business, other colleges at the University of Pittsburgh (such as Statistics or Mathematics), or at Carnegie Mellon University.

A minimum of eight major and seven methodology-related courses are necessary to fulfill coursework requirements. Students typically pursue four courses per semester for two years prior to taking their comprehensive exams in late summer following their second year.

Students are also required to complete an independent research proposal/paper and submit it to the finance faculty at the end of the spring in their second year of study. It is anticipated that this proposal will eventually develop into a publishable research article; however, the

main goal of the assignment is for students to gain experience in identifying important research questions and carrying out theoretical and empirical investigation of these questions.

The following finance PhD seminars are offered by the School of Business PhD Program (subject to student enrollment):

Curriculum

The following finance doctoral seminars are offered by the School of Business PhD Program (subject to student enrollment)

- BFIN 3000 - FINANCE FUNDAMENTALS
- BFIN 3010 - INDEPENDENT STUDY IN FINANCE
- BFIN 3030 - FINANCE RESEARCH SEMINAR
- BFIN 3031 - CORPORATE FINANCE THEORY AND METHODS
- BFIN 3032 - CORPORATE FINANCE SEMINAR 1
- BFIN 3033 - CORPORATE FINANCE SEMINAR 2
- BFIN 3034 - CORPORATE FINANCE SEMINAR 3
- BFIN 3044 - CORPORATE FINANCE SEMINAR 4
- BFIN 3036 - EMPIRICAL ASSET PRICING
- BFIN 3099 - READINGS IN FINANCE
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Additional

The Economics, Math, and cross-registered courses may include:

- ECON 3001 - INTRO TO MATHEMATICAL METHODS
- ECON 3010 - MATHEMATICAL METHODS OF ECONOMIC ANALYSIS
- MATH 3225 - MATHEMATICS OF FINANCE 1
    - CMU 0723 Seminar in Finance 1-4

Information Systems and Technology Management, PhD

The doctoral program discipline in Information Systems and Technology Management prepares students for successful scholarly careers in research universities. The program provides students with theoretical knowledge and methodological skills to enable them to become productive researchers. Students in Information Systems and Technology Management study problems that practicing IS professionals and managers face as they design, use, and apply information systems and technologies to solve business problems.

Information Systems and Technology Management students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within Information Systems and Technology Management, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of Pitt Business seminars and courses, as well as from approved University of Pittsburgh seminars and courses. Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the student's faculty advisor and the Director of the School of Business Doctoral Program. Any subsequent seminar/course changes must also be approved.

To achieve the fifteen-course total, Information Systems and Technology Management doctoral students typically complete School of Business ISTM doctoral seminars (BMIS 3000 and above) as noted below and combine these with choices from other disciplines, for example from Psychology or Statistics.

Students are strongly encouraged to register for all seminars offered by the ISTM faculty. See list below.

Curriculum

The following ISTM seminars may be offered towardthe major by the School of Business Doctoral Program (subject to student enrollment):

- BMIS 3010 - INDEP STUDY MGT INFOR SYSTEMS
- BMIS 3012 - FDS INFORMATION SYSTEMS RESEARCH
- BMIS 3019 - HUMAN/COMPUTER INTERACTION
- BMIS 3027 - ECONOMICS MODELS OF ARTIFICIAL INTELLIGENCE
- BMIS 3029 - SOCIAL MEDIA AND DIGITAL PLATFORMS
- BMIS 3039 - DIGITAL PLATFORMS, ALGORITHMS AND REMOTE WORK
- BMIS 3042 - DESIGN INFORMATION SYSTEMS RESEARCH
- BMIS 3043 - DESIGN IN INFORMATION SYSTEMS RESEARCH 2
- BMIS 3044 - QUANTIATIVE METHODS IN INFORMATION SYSTEMS RESEARCH
- BMIS 3099 - READINGS IN MIS
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDO 0000 - FULL-TIME DISSERTATION STUDY

Marketing, PhD

The marketing PhD program discipline seeks to prepare students to contribute to the marketing discipline via the discovery, development, and dissemination of knowledge. The program is designed to equip students with the requisite theoretical background and methodological skills for successful scholarly careers at institutions of higher learning. The marketing group feels strongly that the apprenticeship model is the most efficacious approach to doctoral training and students typically engage immediately in research projects with faculty. Recent students have been successful in publishing these projects in leading journals such as the Journal of Consumer Research, the Journal of Marketing Research, and the Journal of Marketing

The marketing interest group offers seminars that provide the theoretical core of marketing doctoral students' training. These seminars introduce the central conceptual and phenomenological aspects of the marketing field, as well as the methodological approaches employed in their examination. Since the field of marketing scholarship segments into consumer behavior, modeling, and marketing management, seminars are offered in each of these areas, plus a methodological and marketing theory seminar.

Curriculum

The following finance doctoral seminars are offered by the School of Business PhD Program (subject to student enrollment)

- BMKT 3001 - CONSUMER BEHAVIOR 1
- BMKT 3002 - CONSUMER BEHAVIOR 2
- BMKT 3010 - INDEPENDENT STUDY IN MARKETING
- BMKT 3014 - MARKETING STRATEGY
- BMKT 3017 - MARKETING MODELS
- BMKT 3025 - MARKET BEHAVIOR RESEARCH
- BMKT 3099 - READINGS IN MARKETING
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Additional Seminar Courses

Beyond these seminars, students are expected to take additional seminars (the minimum major course requirement is eight courses) that focus on their chosen area of interest. Students are free to matriculate into courses within the School of Business, other departments at the University of Pittsburgh (such as Psychology, Economics, or Statistics), or at Carnegie Mellon University.

Since strong methodological skills are critical to a successful scholarly career, marketing doctoral students typically take seven or more courses in analytical methods, statistics, and/or econometrics (the minimum course requirement for a combined research methods/minor is seven). A focus on analytical methods or advanced statistics is the norm. Below is a list of some of the topics offered to satisfy this requirement. These topics are offered University-wide, within the School of Business, or at Carnegie Mellon University. Other choices may be proposed by the student and approved by the faculty advisor.

Analysis of Variance
Probability Theory
Experimental Design
Multivariate Statistics
Mathematical Statistics
Introduction to Econometric Theory
Human Judgment and Decision Making
Behavioral Economics
Katz Microeconomics
Learning and Memory
Advanced Data Analysis
Advanced Topics in Emotion and Decision Making

Students are required to complete an independent research paper and submit it to the marketing faculty in the summer of their first year of study (third term). It is anticipated that this paper will develop into a publishable research article.

Organizational Behavior and Human Resources Management, PhD

The OBHR PhD program discipline focuses on preparing students to impact the study of people, processes and outcomes within the fields of organizational behavior and human resources management. Through research, collaboration, and dissemination of knowledge, students understand how to impact organizational effectiveness in a variety of different environments, industries, and across multiple levels of analyses. Our expectation is that students will craft a program of research that is built upon rigorous theory as well as strong methodological skills that are both necessary for effective scholarship. We encourage collaboration with OBHR faculty that has a proven track record of publishing within a variety of top outlets.

Organizational Behavior and Human Resources Management students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within Organizational Behavior and Human Resources Management, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of Pitt Business seminars and courses, as well as from approved University of Pittsburgh seminars and courses. For example, students often choose psychology, decision sciences, statistics, and research methodology to name a few. Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the student's faculty advisor and the Director of the School of Business PhD Program. Any subsequent seminar/course changes must also be approved.

Curriculum

The following OBHR seminars are offered by the School of Business PhD Program (subject to student enrollment):

- BOAH 3002 - FOUNDATIONS OF ORGANIZATIONAL BEHAVIOR
- BOAH 3019 - RESEARCH IN ORGANIZATIONAL THEORY
- BOAH 3027 - OBHR RESEARCH WORKSHOP 1
- BOAH 3028 - OBHR RESEARCH WORKSHOP II
- BOAH 3099 - RDGS ORGNZTNL BEHAVIOR/HR MGT
- BORG 3005 - SEMINAR ON INNOVATION AND ORGANIZATIONAL CHANGE: A MICRO-LEVEL PERSPECTIVE
- BORG 3010 - INDEP STUDY ORGNZTNL STUDIES
- BORG 3020 - TOPICS ORGANIZATIONAL BEHAVIOR

- BORG 3039 - GROUP DYNAMICS, INTERGROUP RELATIONS & IDENTITY
- BORG 3099 - READINGS ORGANIZATIONAL STUDIES
- BUSADM 3011 - INTERNATIONAL MANAGEMENT
- BUSADM 3013 - WORK AND ORGANIZATIONS
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Strategic Management, PhD

Students in the Strategy discipline study the problems and issues facing general managers who must formulate and implement strategies for organizations in uncertain and ambiguous environments. Seminars cover theory and empirical findings related to strategy formulation and implementation and are intended to familiarize students with the variety of research perspectives relevant to the strategy field. In addition, each faculty member leading a course will ask participants to build upon extant research to develop their own research topics as a first step toward publishing articles.

Strategy students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within Strategy, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of Pitt Business seminars and courses, as well as from approved University of Pittsburgh seminars and courses.

Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the student's faculty advisor and the Director of the School of Business PhD Program. Any subsequent seminar/course changes must also be approved.

Curriculum

The following Strategy seminars are offered by the Scjhool of Business PhD Program (subject to student enrollment):

- BSPP 3010 - INDEP STUDY STRATGC PLNNG POLICY
- BSPP 3011 - STRATEGIC PLANNING SYSTEMS
- BSPP 3012 - RESEARCH IN COMPETITIVE STRATEGY
- BSPP 3014 - RESEARCH IN CORPORATE STRATEGY
- BSPP 3016 - INNOVATION, FIRM STRATEGY AND PERFORMANCE
- BSPP 3019 - SEMINAR IN ENTREPRENEURSHIP
- BSPP 3099 - READINGS STRATEGC PLNNG & POLICY
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Department of Business Administration and Executive Business Administration

Concentration

Executive Management of Healthcare Organizations

The area of concentration in Executive Management of Healthcare Organizations is available to students enrolled in the Executive MBA program in the School of Business. Designed for experienced professionals seeking to deepen their expertise at the intersection of business

and healthcare, the area of concentration provides a structured, focused curriculum that builds the strategic, operational, and leadership competencies essential to navigating today's complex healthcare environment.

Upon completing the nine required credits within the Executive MBA program, students who fulfill the concentration requirements will receive the Area of Concentration in Executive Management of Healthcare Organizations in addition to their MBA degree.

Healthcare Courses

- BIND 2902 - COMPARATIVE HEALTHCARE POLICY
- BQOM 2821 - HEALTH INSURANCE AND FUNDING U.S. HEALTHCARE

Elective Courses

Three credits of electives. Electives may be taken with cross-industry EMBA students. Elective offerings may vary.

Total Credits Required

Nine Credits

The School of Computing and Information

School of Dental Medicine

School of Dental Medicine

Established in 1896, the University of Pittsburgh School of Dental Medicine has been educating students to take their places among the best dental practitioners, researchers and educators in our region, across the country, and beyond. We are one of six Schools of Health Sciences at the University of Pittsburgh and are the only school at the University to manage our own clinic.

We are proud of our long tradition as innovators in dental medicine. Our first female student was admitted in 1898, and today more than half of our vibrant and diverse first-year pre-doctoral class are women. We nurture in our students a strong foundation in the biological, behavioral and clinical sciences and a belief in the importance of professionalism and life-long learning.

The School's general dental clinics and 11 specialty clinics play an integral role in improving the oral health of the patient population of southwestern Pennsylvania and beyond. More than half a century ago, we pioneered the speciality dental care that we now deliver in our fully equipped Center for Patients with Special Needs.

The Pitt Dental Medicine research mission is to expand the boundaries of knowledge and build on discoveries to enhance the quality of human life. Our mission aligns with the University of Pittsburgh's position as a research-intensive university. In addition, our research is an essential part of the School's teaching mission for health science students. Furthermore, the contribution of research can be directly applied to patient care by advancing the knowledge base of the dental field as a whole. This, too, is a key component of education for Pitt Dental Medicine students and serves to integrate research into the future of clinical dentistry and ultimately benefit patients.

Every day, the positive contributions of our faculty, staff, residents and students-the Pitt Dental Medicine community-demonstrate their commitment to our mission of improving oral health through teaching, research and service. Visit the University of Pittsburgh School of Dental Medicine website, www.dental.pitt.edu, for more information.

Graduate and Professional Degree Programs at the School of Dental Medicine

Along with several specialized degree programs, degrees offered at the School of Dental Medicine include the Doctor of Dental Medicine (DMD); Doctor of Philosophy (PhD); Master of Science (MS); and Bachelor of Science (BS).

The four-year Predoctoral (DMD) Program prepares students to provide comprehensive care to a diverse patient population. The competency-based curriculum emphasizes health promotion and disease prevention, and prepares students to provide individualized treatments using the best scientific evidence available. Graduates are equipped to practice as independent, entry-level general practitioners.

The International Advanced Standing (DMD) Program places qualified graduates of foreign dental schools as third-year dental students. These students are integrated into the program and complete the third- and fourth-years of the pre doctoral curriculum with the rest of the class.

The Department of Oral and Craniofacial Sciences encompasses the study of fundamental biological phenomena related to the development, structure, and function of the craniofacial region as well as the development of new therapies, biomaterials, and diagnostic tools for the treatment of diseases and disorders in the craniofacial area with the aim of improving health. Current research focuses involve craniofacial regeneration and genetics.

The School of Dental Medicine offers advanced residency certificate and Master of Dental Medicine degree programs in each of the full array of dental specialties.

The School of Dental Medicine encourages students to engage in the public health and community service nature of dentistry. The *Certificate in Dental Public Health* offers an additional University-acknowledged certification program whereby students who have highly developed social/ public policy interests are able to participate in a variety of dental public health programs to develop essential teaching, learning, and leadership skills. The Certificate requires an additional 15 credits of coursework at the School of Dental Medicine, with 6

credits being shared core courses (SCOPE I and II) and one course of 2-3 credits taken at the Pitt School of Public Health. There is no additional tuition for students in the program.

To learn more about The University of Pittsburgh School of Dental Medicine's Dental Hygiene Program offerings, please visit the University of Pittsburgh Undergraduate Catalog.

Contact Information

University of Pittsburgh School of Dental Medicine
Office of Student Affairs - Admissions and Financial Aid
3501 Terrace Street
Pittsburgh, PA 15261

412-648-2349
Email: dentaladmissions@pitt.edu or dentalresidencyeducation@pitt.edu
Learn more about the DMD Admissions Process on our website.
Learn more about Advanced Dental Education and Dental Residency Programs on our website.

Mission, Vision, and Values

Mission

The mission of the University of Pittsburgh School of Dental Medicine is to improve oral health through Teaching, Research and Service:

- Teaching a new generation of clinicians to deliver oral health care with skill and compassion
- Research that expands the boundaries of our knowledge and builds on discoveries to enhance human life
- Service to the diverse community of patients who entrust themselves to our care

Vision

The University of Pittsburgh School of Dental Medicine will be a diverse, welcoming and supportive community widely recognized for excellence and leadership in the improvement of oral health.

- We will train our students to care for patients skillfully, professionally, and compassionately; to treat each patient with respect and kindness; and to be aware at all times of the privilege and responsibility of being entrusted with the care of another human being. We will model evidence-based treatment and the importance of life-long learning.
- We will actively contribute to the mission of the University of Pittsburgh to be a leading research institution, broadening the scientific foundations of dental and craniofacial medicine and translating new knowledge into life-enhancing treatments for people everywhere.
- We will be known for our clinical expertise and serve as a regional resource to which our neighbors will turn for comprehensive care. We will use the best techniques and current technologies to create optimal outcomes for our patients.
- We will maintain a strong and enduring connection with our alumni to help ensure our School's success for generations to come. Our alumni will carry on our mission through clinical excellence, service to the dental profession, and generous outreach to people in need.

Values

- **Service**: Providing exemplary service to our students, faculty, patients, and society
- **Passion for Excellence**: Continuously striving to achieve the highest level of excellence in education, research, and service

- **Professionalism and Integrity**: Adhering to the highest ethical and professional standards of our profession
- **Leadership**: Serving as role models and mentors to students, faculty, and staff to shape the future of oral health care
- **Collaboration**: Embracing a team approach to accomplish shared goals
- **Humanism**: Respecting the contributions of each person within the School of Dental Medicine family to foster an environment of trust, safety, and fairness

School of Dental Medicine Faculty

A faculty and staff directory is available on the School of Dental Medicine website.

Predoctoral (DMD) Program

Welcome to Pitt Dental Medicine

Students from Pennsylvania, across the country and around the world come to study at the University of Pittsburgh School of Dental Medicine. Among the best dental schools in the country, the School of Dental Medicine seeks only the most qualified students for admission to nationally recognized predoctoral and graduate academic programs. The central program at the school is the Doctor of Dental Medicine (DMD) program. Providing students with a solid evidence-based education in dental medicine, graduates of the program are well prepared to be practicing clinicians or researchers. The four-year predoctoral program begins at the White Coat Ceremony and leads to a Doctoral degree in Dental Medicine (DMD). Advanced dental education and residency programs are available to students, including the Oral Biology Graduate Program.

Competency-Based Educational Program

The four-year predoctoral program prepares students to provide basic health promotion and disease prevention, diagnose and develop treatment plans, analyze complex medical and dental cases, and achieve competency in all areas defined for general practitioners. The competency-based curriculum also reflects the school's commitment to supporting the development of professionalism, life-long learning, and synthesis of clinical and biomedical science concepts.

View our four-year curriculum.

Beyond the Classroom

Student learning continues far beyond the classroom. Community service is encouraged through the Student Community Outreach Program and Education (SCOPE) and the Univeristy of Pittsburgh WISER Center offers dental students hands-on medical experience in a world-class multidisciplinary simulation-based training facility. The Simulation Clinic gives students life-like experience with simulated patients in a classroom, clinical learning environment and the Fassinger Learning Resource Center lets students continue learning past the traditional hours and space of the classroom meetings.

Students are encouraged to participate in any of a number of the school's active student organizations to connect with others sharing and investigating the same interests. Student organizations focus on advancing knowledge and extend the frontiers of a particular segment of oral health. Personal, academic and career counseling are available through the school's Office of Student Affairs for all students. An extensive library system, learning skills center, housing resource center, student health care and recreational and fitness facilities are available through the University.

Research opportunities abound for students in good academic standing to study many different aspects of dental research, including craniofacial genetics, tissue regeneration, informatics, public health and other fields. With an extended history of profound dental research, the University of Pittsburgh School of Dental Medicine also fosters interactions between dental students and researchers in other disciplines. Academic rewards and contributions to the dental profession are just two reasons many students conduct research at the school. Students have opportunities to share their projects and results at national meetings and conferences and provide excellent learning and

networking opportunities with colleagues. Student researchers also may compete for awards, scholarships, and other opportunities at the University.

About the School of Dental Medicine

Established in 1896, the University of Pittsburgh School of Dental Medicine has been educating students to take their places among the best dental practitioners, researchers and educators in our region, across the country, and even around the world. We are one of six Schools of Health Sciences at the University and are the only school to manage our own clinic. Our accomplishments reflect the dedication and success of each member of the School of Dental Medicine family.

We are proud of our long tradition as innovators in dental medicine. Our first female student was admitted 117 years ago, and today more than half of our vibrant and diverse first-year pre-doctoral class are women. We nurture in our students a strong foundation in the biological, behavioral and clinical sciences and a belief in the importance of professionalism and life-long learning.
Half a century ago we pioneered the specialty dental care that we now deliver in our fully equipped Center for Patients with Special Needs. The School's general dental clinics and 11 specialty clinics play an integral role in improving the oral health of the patient population of southwestern Pennsylvania and beyond. Some patients travel hundreds of miles to access the high-quality care our clinics provide every day.

Our researchers expand the horizons of knowledge and are internationally renowned for their groundbreaking developments in the areas of craniofacial genetics and craniofacial regeneration. We are identifying genes that contribute to complex human phenotypes, and are using tissue engineering to heal wounds and restore function and appearance to defects of the face and skull. Every day, the positive contributions of our faculty, staff, residents and students-the Pitt Dental Medicine family-demonstrate their commitment to our mission of advancing the future of dental medicine through teaching, research and service.

Degree Programs

Along with several specialized degree programs, degrees offered at the School of Dental Medicine include the doctor of dental medicine (DMD); doctor of philosophy (PhD); master of science (MS); master of public health (MPH) offered in conjunction with the School of Public Health; and bachelor of science (BS).

The four-year Doctor of Dental Medicine (DMD) Program prepares students to provide comprehensive care to a diverse patient population. The competency-based curriculum emphasizes health promotion and disease prevention, and prepares students to provide individualized treatments using the best scientific evidence available. Graduates are equipped to practice as independent, entry-level general practitioners.

The International Advanced Standing (DMD) Program places qualified graduates of foreign dental schools as third-year dental students. These students are integrated into the program and complete the third- and fourth-years of the pre doctoral curriculum with the rest of the class.

The Department of Oral and Craniofacial Sciences encompasses the study of fundamental biological phenomena related to the development, structure, and function of the craniofacial region as well as the development of new therapies, biomaterials, and diagnostic tools for the treatment of diseases and disorders in the craniofacial area with the aim of improving health. Current research focuses involve craniofacial regeneration and genetics.

In collaboration with Pitt Public Health, the four-year DMD/MPH in dental public health offers customizable course selection with a special emphasis on oral health-specific public health issues.

The University of Pittsburgh School of Dental Medicine's Dental Hygiene Program provides students a unique academic environment where they can earn either an Associate of Science or a Bachelors Degree in Dental Hygiene. The intreprofessional educational experiences within the school's specialty dental clinics and the University-based hospitals, in conjunction with didactic, community outreach, and research activities, affords the delivery of high-quality education.

The School of Dental Medicine offers advanced residency certificate and Master of Dental Medicine degree programs in each of the full array of dental specialties.

General Dentistry and Specialty Clinics

The School of Dental Medicine provides clinical education and patient care through 15 dental clinics encompassing general dentistry, anesthesiology, special needs, emergency, endodontics, implants, oral and maxillofacial pathology, oral and maxillofacial surgery, orthodontics and dentofacial orthopaedics, pediatric dentistry, periodontics and preventive dentistry, dental hygiene, endodontics, prosthodontics, radiology, and restorative dentistry/comprehensive care.

Clinical Centers
The Multidisciplinary Implant Center focuses on patient care, teaching, and research related to the treatment of tooth loss and the functional bone and soft tissue deficits that can follow tooth loss.
The Center for Patients with Special Needs was established by Dean Thomas W. Braun as a school priority to centralize and increase treatment capacity for patients with physical, developmental, neurological, and intellectual disabilities.
University Dental Health Services (UDHS) is a legally separate nonprofit practice plan that is closely affiliated with the School of Dental Medicine. UDHS providers are full- or part-time faculty members, many of whom are board-certified specialists and nationally recognized experts in their respective fields.

Important Information

- Type of degree granted: DMD
- Class size: 80
- Length of program: 4 years
- DAT: required
- Applications accepted through AADSAS
- Interview are granted by invitation in the fall and early spring
- Have questions? Email us at dentaladmissions@dental.pitt.edu

The program in dental education is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is http://www.ada.org/100.aspx.

Doctoral

Doctor of Dental Medicine, DMD

The mission of the University of Pittsburgh School of Dental Medicine is to improve oral health through Teaching, Research, and Service. Teaching a new generation of clinicians to deliver oral health care with skill and compassion. Research that expands the boundaries of our knowledge and builds on discoveries to enhance human life. Service to the diverse community of patients who entrust themselves to our care.

The four-year DMD program prepares students to provide oral health care at the level of a general dentist, including health promotion and disease prevention, assessment and diagnosis, treatment planning, clinical care, and practice management. The competency-based curriculum also reflects the school's commitment to supporting the development of professionalism and ethics, person-centered care, integration of the sciences, and evidence-based care and critical thinking.

Contact Information

University of Pittsburgh
School of Dental Medicine
3501 Terrace Street
Pittsburgh PA 15261

https://www.dental.pitt.edu/

Admission Requirements

Admission requirements are outlined on the School of Dental Medicine website.

Admission Process

The DMD admission process, including application deadlines and contact information, is outlined on the School of Dental Medicine website.

Financial Aid

The School of Dental Medicine website provides information about financing a DMD education, including scholarship opportunities and student loan programs.

Degree Requirements

Degree requirements include successful completion of all required courses in the DMD curriculum. Students are also required to achieve competence in all defined areas as well as complete two selective courses of their choosing.

An overview of the four-year DMD curriculum is provided on the School of Dental Medicine website.

Degree Options

In addition to the traditional DMD program, the School of Dental Medicine offers simultaneous degree options through the Department of Oral and Craniofacial Sciences . Students may earn a Doctor of Philosophy (PhD) or Master of Science (MS) degree in Oral and Craniofacial Science in one of two areas of concentration:

- Craniofacial and Dental Genetics
- Craniofacial Tissue Regeneration

The program in dental education is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The American Dental Association Commission on Dental Accreditation can be contacted at 800-232-6108 or at 401 North Michigan Avenue, Suite 3300, Chicago, IL, 60611-4250. The Commission's web address is https://www.ada.org/en.

DMD Curriculum

Following is a listing of all DMD courses and a typical curriculum for each of the four years of the program:

First Year-Fall Term

- DIASCI 5110 - FUNDAMENTALS OF RADIOLOGY 1
- DMED 5110 - FOUNDATIONS OF PERSON-CENTERED CARE
- DMED 5112 - PRINCIPLES OF PROFESSIONAL PRACTICE
- DMED 5130 - PROFESSIONALISM AND ETHICS 1
- OCS 5115 - MICROBIAL PHYSIOLOGY AND IMMUNOLOGY
- OCS 5118 - EMBRYOLOGY AND ORAL TISSUES
- OCS 5119 - MOLECULAR AND CELL BIOLOGY
- OCS 5120 - BODY TISSUES
- RESTD 5111 - DENTAL ANATOMY AND MORPHOLOGY

- RESTD 5118 - DENTAL ANATOMY AND MORPHOLOGY LAB

First Year-Spring Term

- DIASCI 5140 - FUNDAMENTALS OF RADIOLOGY 2
- DMED 5142 - FOUNDATIONS OF PERSON-CENTERED CARE 2
- DMED 5143 - PRINCIPLES OF PROFESSIONAL PRACTICE 2
- DMED 5144 - CARIOLOGY AND CARIES MANAGEMENT 1
- DMED 5145 - CARIOLOGY AND CARIES MANAGEMENT 1 LAB
- DMED 5146 - CONTEMPORARY CARIOLOGY: FOUNDATIONS OF PREVENTION AND INTERVENTION
- DMED 5160 - PROFESSIONALISM AND ETHICS 2
- OCS 5140 - SYSTEMIC GROSS ANATOMY
- OCS 5141 - SYSTEMIC HUMAN PHYSIOLOGY 1
- OCS 5142 - HEAD AND NECK GROSS ANATOMY
- OCS 5144 - SYSTEMIC HUMAN PHYSIOLOGY 2
- PERIO 5141 - PERIODONTOLOGY 1
- PERIO 5143 - PERIODONTOLOGY 1 LAB
- PROSTH 5142 - DENTAL MATERIALS

First Year-Summer Term

- DIASCI 5173 - GENERAL AND SYSTEMIC PATHOLOGY
- DMED 5170 - CARIOLOGY AND CARIES MANAGEMENT 2
- DMED 5171 - CARIOLOGY AND CARIES MANAGEMENT 2 LAB
- DMED 5173 - APPLICATIONS OF PERSON-CENTERED CARE
- DMED 5190 - PROFESSIONALISM AND ETHICS 3
- OCS 5176 - IMMUNOLOGY
- PERIO 5181 - PERIODONTOLOGY 2
- PERIO 5183 - PERIODONTOLOGY 2 LAB
- PROSTH 5171 - PRINCIPLES OF DENTAL OCCLUSION

Second Year-Fall Term

- DENT 5211 - DIAGNOSIS AND TREATMENT PLANNING 1
- DIASCI 5214 - ORAL AND MAXILLOFACIAL PATHOLOGY AND RADIOLOGY 1
- DMED 5212 - APPLICATIONS OF PROFESSIONAL PRACTICE 1
- DMED 5230 - PROFESSIONALISM AND ETHICS 4
- ENDOD 5210 - ENDODONTICS 1
- ENDOD 5216 - ENDODONTICS 1 LAB
- PEDENT 5211 - PEDIATRIC DENTISTRY 1
- PERIO 5214 - PERIODONTOLOGY 3
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PROSTH 5211 - FIXED PARTIAL DENTURES 1
- PROSTH 5215 - FIXED PARTIAL DENTURES 1 LAB
- PROSTH 5218 - COMPLETE DENTURES
- PROSTH 5219 - COMPLETE DENTURES LAB

Second Year-Spring Term

- DENT 5242 - DIAGNOSIS AND TREATMENT PLANNING 2
- DIASCI 5244 - ORAL AND MAXILLOFACIAL PATHOLOGY AND RADIOLOGY 2
- DIASCI 5245 - INTRODUCTION TO DENTAL RADIOGRAPHIC TECHNIQUES
- DMED 5243 - APPLICATIONS OF PROFESSIONAL PRACTICE 2
- DMED 5260 - PROFESSIONALISM AND ETHICS 5
- DSANE 5241 - ANESTHESIA 1: LOCAL ANESTHESIA
- ENDOD 5247 - ENDODONTICS 2 LAB
- ENDOD 5252 - ENDODONTICS 2
- OCS 5245 - CRANIOFACIAL GENETICS
- ODO 5242 - INTRODUCTION TO ORTHODONTICS
- ORSUR 5241 - ORAL SURGERY 1
- PEDENT 5242 - PEDIATRIC DENTISTRY 2 LAB
- PEDENT 5253 - PEDIATRIC DENTISTRY 2
- PERIO 5241 - PERIODONTAL INSTRUMENTATION
- PERIO 5243 - PERIODONTAL CLINIC
- PROSTH 5241 - REMOVABLE PARTIAL DENTURES
- PROSTH 5245 - REMOVABLE PARTIAL DENTURES LABORATORY
- PROSTH 5251 - FIXED PARTIAL DENTURES 2
- PROSTH 5256 - FIXED PARTIAL DENTURES 2 LAB
- PROSTH 5258 - IMPLANTOLOGY

Second Year-Summer Term

- CDENT 5272 - STUDENT COMMUNITY OUTREACH PROGRAM AND EDUCATION (SCOPE) 1: COMMUNITY OUTREACH
- DENT 5283 - DIAGNOSIS AND TREATMENT PLANNING 3
- DMED 5290 - PROFESSIONALISM AND ETHICS 6
- DSANE 5245 - LOCAL ANESTHESIA TECHNIQUE LAB
- DSANE 5272 - ANESTHESIA 2: MEDICAL EMERGENCIES
- ODO 5275 - INTRODUCTION TO ORTHODONTICS LAB
- ORSUR 5283 - ORAL SURGERY 2
- PROSTH 5271 - DIGITAL DENTISTRY 1
- RESTD 5282 - OPERATIVE TECHNIQUES REVIEW

Third Year-Fall Term

- CDENT 5312 - PRINCIPLES AND PRACTICE OF DENTAL PUBLIC HEALTH
- DENT 5312 - DENTISTRY FOR PATIENTS WITH SPECIAL HEALTHCARE NEEDS
- DIASCI 5320 - MANAGEMENT OF DENTAL EMERGENCIES
- DMED 5310 - OROFACIAL PAIN AND TEMPOROMANDIBULAR JOINT DISORDERS
- DMED 5330 - PROFESSIONALISM AND ETHICS 7
- DSANE 5313 - ANESTHESIA 3: PAIN AND ANXIETY CONTROL
- DSANE 5315 - NITROUS OXIDE LAB
- ENDOD 5313 - ENDODONTICS 3
- ORSUR 5313 - ORAL SURGERY 3

Third Year-Spring Term

- DIASCI 5345 - SEMINARS IN ORAL PATHOLOGY AND ORAL MEDICINE

- DMED 5360 - PROFESSIONALISM AND ETHICS 8
- DSANE 5342 - CLINICAL MEDICINE
- DSANE 5344 - MEDICAL EMERGENCIES - WISER CENTER
- ODO 5319 - CLINICAL ORTHODONTICS
- ORSUR 5344 - ORAL SURGERY 4
- PERIO 5346 - PERIODONTOLOGY 4
- PROSTH 5348 - DIGITAL DENTISTRY 2

Third Year-Summer Term

- CDENT 5372 - ETHICS AND BEHAVIORAL DENTISTRY
- DENT 5377 - SUCCESSFUL PRACTICE MANAGEMENT 3
- DENT 5383 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 1
- DENT 5389 - CLINICAL DENTISTRY FOR PATIENTS WITH SPECIAL HEALTH CARE NEEDS 1
- DMED 5370 - MULTIDISCIPLINARY CASE STUDIES
- DMED 5390 - PROFESSIONALISM AND ETHICS 9
- DIASCI 5389 - CLINICAL EMERGENCY 1
- ENDOD 5388 - CLINICAL ENDODONTICS 1
- ORSUR 5388 - CLINICAL ORAL SURGERY 1
- PEDENT 5379 - CLINICAL PEDIATRIC DENTISTRY 1
- PERIO 5379 - CLINICAL PERIODONTICS 1
- PROSTH 5375 - CLINICAL PROSTHODONTICS 1
- RESTD 5375 - ESTHETIC RESTORATIVE DENTISTRY
- RESTD 5379 - CLINICAL RESTORATIVE DENTISTRY 1

Fourth Year-Fall Term

- DENT 5000 - FULL-TIME DENTAL MEDICINE STUDY
- DMED 5430 - PROFESSIONALISM AND ETHICS 10
- PROSTH 5377 - SIMULATED PATIENT TREATMENT

Fourth Year-Spring Term

- CDENT 5440 - STUDENT COMMUNITY OUTREACH AND EDUCATION PROGRAM (SCOPE) 2
- DENT 5440 - SENIOR CASE PRESENTATION
- DENT 5455 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 2
- DENT 5469 - CLINICAL DENTISTRY FOR PATIENTS WITH SPECIAL HEALTH CARE NEEDS 2
- DIASCI 5459 - CLINICAL RADIOLOGY
- DIASCI 5469 - CLINICAL EMERGENCY 2
- DMED 5440 - PRE-TREATMENT EVALUATION AND MEDICAL RISK ASSESSMENT
- DMED 5460 - PROFESSIONALISM AND ETHICS 11
- ENDOD 5448 - CLINICAL ENDODONTICS 2
- ORSUR 5449 - CLINICAL ORAL SURGERY 2
- PEDENT 5449 - CLINICAL PEDIATRIC DENTISTRY 2
- PERIO 5449 - CLINICAL PERIODONTICS 2
- PROSTH 5448 - CLINICAL PROSTHODONTICS 2
- PROSTH 5469 - CLINICAL IMPLANT DENTISTRY
- RESTD 5449 - CLINICAL RESTORATIVE DENTISTRY 2
- Two Selective Courses (Minimum 1 Credit Total)

Total Credits: 233.50

International Advanced Standing (DMD) Program

The International Advanced Standing Program (IASP) at the University of Pittsburgh School of Dental Medicine is designed to permit qualified, international dentists who graduated from programs not accredited by the Commission on Dental Accreditation (CODA) to earn a Doctor of Dental Medicine (DMD) degree from Pitt Dental Medicine.

The IASP is a minimum of two academic years in length. It is individualized for each admitted student and may require additional time to complete. The program begins in May of each year with intensive, one-term didactic and preclinical courses. Following successful completion of this provisional segment, IASP students enter the predoctoral program.

Requirements to Apply to Program

English Language Proficiency

- Must be proficient in the English language.
- Applicants whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL) (IB and Home based).
- Successful completion of the TOEFL with a score of 100 or above is preferred.
- TOEFL results must be dated after Dec. 31, 2021 and sent directly to ADEA CAAPID®.

National Board Dental Examination (NBDE) (INDBE)Requirements

- Program requires passage of NBDE Parts I and II or INDBE to be considered for admission.
- Official NBDE both parts or INDBE results must be entered on the ADEA CAAPID application under the "Academic History" > "Standardized Tests" section.

Advanced Dental Admission Test (ADAT)

- Completion of the ADAT is preferred, but not required for admission to the program.

Letters of Evaluation

- Three Letters of Evaluation are required*:
- Two letters of evaluation must be from either a dean, associate dean, department chair or faculty member of the dental school from which applicant graduated.
- One letter must be from a shadowing experience, preferably within the United States.
- These letters must be directly uploaded by the letter writers to ADEA CAAPID. When you fill out your CAAPID application you will provide the names of your evaluators and their contact information. CAAPID will then contact them via email with instructions on how to submit a letter. The email will include a link to an online portal where they will upload their letters.
- Up to three additional letters may be uploaded by the applicant to the "Documents Section" of their CAAPID application.

**These three letters are non-negotiable.*

Transcripts and Evaluations

- All foreign dental school transcripts must be evaluated and uploaded by transcript evaluators; either the ECE or WES evaluation will be accepted.
- Licenses/certifications should be uploaded to ADEA CAAPID in the "Supporting Information" > "Licenses" section.

Application Fees

- In addition to the CAAPID application fee, a university application fee of $75 is required upon submission of your application.
- University application fee can be paid online.

Additional Requirements

- Qualified applicants will be invited for a virtual interview and an in-person bench test.
- If invited for interview, applicants will be asked to submit:
- An electronic copy of a passport page of **any** valid visa status or proof of U.S. citizenship or permanent residency (*any status is acceptable*) and
- An electronic 2" x 2" cell phone "headshot" photo. Photo must be in .jpeg or .png format.
- A bench test fee will be required from those applicants invited to interview.
- Additionally, accepted applicants will be required to pay a non-refundable tuition deposit at time of acceptance to be applied to the fall term and a non-refundable fee prior to the provisional summer program that begins in early May.
- Again, all fees described herein are non-refundable.

Learn more about the International Advanced Standing Program at dental.pitt.edu/education/international-advanced-standing-program

Summer Program

Advanced Standing students are required to complete the following courses in the Summer Program before they join other DMD students in their third and fourth years.

- DENT 5000 - FULL-TIME DENTAL MEDICINE STUDY
- DMED 5145 - CARIOLOGY AND CARIES MANAGEMENT 1 LAB
- DMED 5171 - CARIOLOGY AND CARIES MANAGEMENT 2 LAB
- DIASCI 5244 - ORAL AND MAXILLOFACIAL PATHOLOGY AND RADIOLOGY 2
- DSANE 5245 - LOCAL ANESTHESIA TECHNIQUE LAB
- ENDOD 5247 - ENDODONTICS 2 LAB
- PROSTH 5245 - REMOVABLE PARTIAL DENTURES LABORATORY
- DENT 5283 - DIAGNOSIS AND TREATMENT PLANNING 3
- DSANE 5272 - ANESTHESIA 2: MEDICAL EMERGENCIES
- ODO 5275 - INTRODUCTION TO ORTHODONTICS LAB
- PROSTH 5271 - DIGITAL DENTISTRY 1
- RESTD 5282 - OPERATIVE TECHNIQUES REVIEW

Advanced Dental Education and Residency Programs

The School of Dental Medicine offers nine Advanced Dental Education and Residency Programs leading to a Certificate of Completion in the respective program. Programs of three-year duration offer an optional educational tract leading to a Master of Dental Science degree (MDS).

All residents in the various specialties begin their advanced education by studying a core curriculim. This core curriculum includes, but is not limited to, an orientation program; Clinical Operations; BLS Certification; Infection Control Policies and Procedures; Ethics in the Dental Specialties; Chemical Dependency; Hospital Protocols and Procedures; Conferences / Classes; Advanced Oral Pathology; Applied Head and Neck Anatomy; Clinical Pharmacology; Intravenous and Inhalation Sedation; Management of Medical Emergencies; Mineralized Tissue Biology; Multidisciplinary Treatment Planning Grand Rounds; Oral and Maxillofacial Radiology and Imaging; Pathobiology and Immunology; and Research Design and Methodology

Details about the residency programs at Pitt Dental Medicine is available on our website at **https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs.**

About the School

Established in 1896, the University of Pittsburgh School of Dental Medicine has been educating students to take their places among the best dental practitioners, researchers and educators in our region, across the country, and even around the world. We are one of six Schools of Health Sciences at the University and are the only school to provide direct patient care in our own clinics. Our accomplishments reflect the dedication and success of each member of the School of Dental Medicine community. To learn more, visit our website at www.dental.pitt.edu.

General Dentistry and Specialty Clinics

The School of Dental Medicine provides clinical education and patient care through 16 dental clinics encompassing general dentistry, dental anesthesiology, special needs, emergency, endodontics, implants, oral and maxillofacial pathology, oral and maxillofacial surgery, orthodontics and dentofacial orthopaedics, pediatric dentistry, periodontics and preventive dentistry, dental hygiene, prosthodontics, radiology, and restorative dentistry/comprehensive care.

Clinical Centers

The **Multidisciplinary Implant Center** focuses on patient care, teaching, and research related to the treatment of tooth loss and the functional bone and soft tissue deficits that can follow tooth loss.
The **Center for Patients with Special Needs (CPSN)** was formally established in 2008-after more than 50 years of treating patients with special health care needs-to centralize and increase treatment capacity for patients with physical, developmental, neurological, and intellectual disabilities.

University Dental Health Services (UDHS) is a legally separate nonprofit practice plan that is closely affiliated with the School of Dental Medicine. UDHS providers are full- or part-time faculty members, many of whom are board-certified specialists and nationally recognized experts in their respective fields.

Research Strengths

The Pitt Dental Medicine research mission is to expand the boundaries of knowledge and build on discoveries to enhance the quality of human life. Our mission aligns with the University of Pittsburgh's position as a research-intensive university. In addition, our research is an essential part of the School's teaching mission for health science students. Furthermore, the contribution of research can be directly applied to patient care by advancing the knowledge base of the dental field as a whole. This, too, is a key component of education for Pitt Dental Medicine students and serves to integrate research into the future of clinical dentistry and ultimately benefit patients.

Read more about our research at Research Mission and Vision | School of Dental Medicine

Certificate

Dental Anesthesiology Certificate

Program Description

The Pitt Dental Medicine Department of Dental Anesthesiology directs and coordinates the three-year, CODA-accredited, dental anesthesiology residency program. The goal of this program is to prepare dentists to manage pain and anxiety in adult, pediatric and special needs patients by using pharmacologic and non-pharmacologic techniques.

A significant portion of the Residency Program in Dental Anesthesiology is a unit of the medical anesthesiology residency program, administered through the UPMC Medical Education Program (UPMC-MEP).

At the conclusion of the program, the dentist will earn a certificate in dental anesthesiology and be proficient in providing all levels of anesthesia services for ambulatory patients undergoing a variety of medical and dental procedures.

For more information on our program visit our website at: https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/dental-anesthesiology

Rotations

Within this first year and a half, one month is devoted to training in each: Internal Medicine, Critical Care Medicine, Pediatric Emergency Medicine, and Cardiology/Pulmonology.

The second- and third-year residents continue with rotations through UPMC Presbyterian and Montefiore Hospitals, UPMC Mercy, UPMC St. Margaret's, Children's Hospital of Pittsburgh of UPMC, and Magee-Womens Hospital of UPMC. During this rotation cycle, residents will participate in the anesthetic management of patients undergoing general surgery, complex head and neck procedures, orthopedic surgery, and transplantation operations. Three months at UPMC St. Margaret's will provide experience in a high-paced operating room that prepares the resident for private practice. Regional anesthesia and advanced pain management techniques are also developed. Children's Hospital of Pittsburgh of UPMC offers a diversity of experiences in managing the anesthetic requirements of children of all physical sizes and ages who are undergoing a wide variety of surgical procedures. Magee-Womens Hospital of UPMC gives the resident an opportunity to learn about epidural and spinal anesthesia techniques intended for obstetric procedures along with general surgery experience in the hospital operating rooms. Magee-Womens Hospital of UPMC utilizes an after-hours call schedule. The resident serves at the University of Pittsburgh School of Dental Medicine for several months throughout the final 2 years educating the incoming residents and rotating with the part-time faculty in ambulatory settings to prepare them for private practice.

A focus of the training includes developing skills in the management of special needs patients receiving dental care. The University of Pittsburgh School of Dental Medicine has an active Center for Patients with Special Needs that provides the resident with a unique opportunity to provide anesthesia services to this underserved population. Residents will take part in regular journal reviews of current literature and a structured lecture series in anesthesiology. In addition, residents are expected to attend at least one national conference per year and initiate work on a mentored clinical research project.

Goals and Objectives of the Program

Mission Statement of the Department of Dental Anesthesiology

The Department of Dental Anesthesiology is a group of highly committed individuals dedicated to the education and training of dental students, dentists and dentist anesthesiologists in the best principles and practices of dental anesthesiology.

Vision Statement of the Department of Dental Anesthesiology

- We will foster ethics and professionalism and leadership through example

- We will dedicate ourselves to excellence in education, patient care and research
- We will strive to always ensure the well-being and safety of our patients, with special consideration for children, the elderly and infirm, and those with special health care needs
- We will maintain and nurture our inter-professional association

Curriculum

Didactic

- First-year residents take part in a weekly, one-year lecture series at the dental school.
- Second-year residents will take part in a 20 day anesthesia course with the MD anesthesia residents.
- All residents take part in a monthly journal club at the dental school.
- Many of the rotations will have daily didactic lectures during the rotation (Emergency Medicine, Critical Care Medicine, Children's Hospital, etc).

Clinical

Please see above in Description and Rotations

Program Requirements

Applicants must be graduates of a United States or Canadian accredited dental school and be eligible for state licensure. To learn more about the program, visit Advanced Education and Residency Program in Dental Anesthesiology | School of Dental Medicine

Benefits, Stipend, Tuition & Fees

Residents in dental anesthesiology receive standard postgraduate salaries and benefits provided be GME.

Application Process

The applicant must submit the American Dental Education Association Postdoctoral Application Support Service (ADEA PASS) application and register for the Match Program.

For additional information about the Dental Anesthesiology Residency Program application process, please contact

Department of Dental Anesthesiology
412-648- 8401
Email the Department of Dental Anesthesiology

Research

The department stresses that residents participate in some manner of research (case report, review article, survey, novel drug, etc) that can be submitted for publication. Learn more about Dental Anesthesiology Research at the School of Dental Medicine here: Dental Anesthesiology Research | School of Dental Medicine

Learn more about requirements and application to the program by visiting **dental.pitt.edu/dental-anesthesiology**

The advanced general dentistry education program in dental anesthesiology is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is http://www.ada.org/100.aspx.

Endodontics Certificate

About the Program

The University of Pittsburgh School of Dental Medicine Endodontic Department supports its fully accredited 24-month program. The graduate endodontic program provides a robust clinical experience in addition to a solid scientific foundation. The combination of our clinical and scientific experiences allows each resident to be fully prepared for a career in private practice or academia.

Our state-of-the-art clinic provides care to our diverse patient population. Each resident has a fully equipped cubicle, which includes a surgical operating microscope with video capabilities, wall mounted flat screen monitor, digital radiography, an ultrasonic unit, and various obturation materials. The residents also utilize GentleWave® and EdgePro® Laser technologies. Our broad patient base allows residents the opportunity to provide care to children, patients with special needs, patients who require general anesthesia, adults, and the elderly. Our ability to meld state of the art technology with such a diverse patient base allows our endodontic residents to have the breadth of experiences necessary for them to become the best clinician version of themselves.

While our endodontic residents benefit from an exceptional clinical experience, at the University of Pittsburgh, our residents are true clinician scientists. Our didactic curriculum provides a solid foundation for the required research component of the program. Every resident is required to participate in either a basic science or clinical science research project. It is expected that all research projects will be presented at the American Association of Endodontics Annual Meeting and published in a peer-reviewed scientific journal. Our ability to provide the best clinical care for our patients and produce the best clinician scientists makes the University of Pittsburgh School of Dental Medicine Endodontic Program unique.

For more information on our program, visit our website at: https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/endodontics

Endodontic Certificate of Completion Requirements

Requirements for Certificate completion can be found at Advanced Dental Education and Residency Program in Endodontics | School of Dental Medicine.

Admissions

At this time, the Endodontics Advanced Education and Residency Program is only accepting applicants for the program who utilize the ADEA PASS application.

For additional information about how to apply to the Advanced Dental Education Residency Program in Endodontics, please visit our Advanced Dental Education Residency Programs general information page.

- Supplemental Application Fee - A non-refundable supplemental application fee is required at time of application. Visit Advanced Dental Education and Residency Program in Endodontics | School of Dental Medicine for more details.

Stipend/ Benefits/ Fees

For information about resident stipends, benefits. tuition and fees, visit our website at https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/endodontics.

The advanced specialty education program in endodontics is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is https://www.ada.org/en.

General Practice Residency

Program Description

The General Practice Residency (GPR) Program, sponsored by the University of Pittsburgh Medical Center (UPMC), offers a one-year program that provides residents with postdoctoral clinical and didactic experiences. Based in the UPMC Montefiore Dental Center on the UPMC Presbyterian/Shadyside Campus, the program enrolls a combined total of three (3) residents each year. Residents completing the GPR earn a Certificate of Training.

Program Philosophy

Guided by the philosophy that oral health is an integral and interactive aspect of total health, residents engage in approximately nine months of comprehensive dental care. The remaining three months are spent on rotations in anesthesia, emergency medicine, internal medicine, and oral and maxillofacial surgery.

Curriculum and Content

In addition to intensive exposure to hospital-based dentistry, the program provides clinical and didactic training across a range of dental specialties, including endodontics, periodontics, implant dentistry, prosthodontics, oral and maxillofacial surgery, oral pathology/oral medicine, head and neck oncology patients, transplant and cardiothoracic surgery patients and treating patients with complex medical histories. Instruction is also provided in ancillary topics pertinent to dental practice, such as patient evaluation and physical examination, emergency medical care, treatment of traumatic dental injuries, inpatient care and hospital organization, and a multitude of other medical and dental subjects.

In addition to the delivery of clinical care in the UPMC Presbyterian Shadyside Dental Center and Hospital, the residents will rotate through the UPMC Mercy Hospital Emergency Department, Catholic Charities of Pittsburgh Free Care Dental Center and The University of Pittsburgh School of Dental Medicine Interdisciplinary Implant Center.

Journal Club, treatment planning conferences, resident portfolios and off-site local and national dental meetings are also part of the program content.

Residents will be required to provide 24-hour, on-call emergency services as scheduled by the residency director. Short-range and long-range pagers will be provided to each resident. Residents are not often required to remain in-house, but usually take call from home.

Goals and Objectives of the Program

The General Practice Dental Residency Program is designed to provide training beyond the level of pre-doctoral education in oral health care, using applied basic and behavioral sciences. Education in this program is based on the concept that oral health is an integral and interactive part of total health. The program is designed to expand the scope and depth of the residents' knowledge and skills to enable them to provide comprehensive oral health care to a wide range of population groups. The goals of this program are derived from the Commission on Dental Accreditation's (CODA) Standards for Advanced Education Programs in General Practice Residency.

Specific to the UPMC Presbyterian Shadyside Dental Center General Practice Residency Program, the program will prepare each resident to:

- Triage and treat a variety of emergency dental conditions
- Plan and provide multidisciplinary comprehensive oral health care using advanced dental treatment modalities
- Direct and promote disease prevention activities
- Manage the delivery of oral health care to patients with complex histories
- Provide consultative evaluations and treatments of patients admitted within the UPMC Presbyterian Shadyside hospital system who are referred to our service
  • Surgical (Cardiothoracic, Orthopedic, etc) clearance
  • Transplant clearance
  • Medical service and ICU patients
  • Trauma patients
- Apply concepts of patient and practice management and quality improvement that are responsive to a dynamic health care environment
- Function effectively within interdisciplinary health care teams
- Apply scientific principles to learning and oral healthcare
  •Critical thinking
  • Evidence/outcomes-based clinical decision making
  • Use of technology-based information retrieval systems
- Utilize the values of professional ethics, life-long learning, patient centered care, adaptability and acceptance of cultural diversity in professional practice
- Understand the needs of communities at large and engage in community service

Supervision and Progressive Responsibility

The UPMC Presbyterian Shadyside Dental Center is a resident-driven clinic. Residents must be supervised either directly or indirectly, with direct supervision immediately available (i.e. attending dentist is in the hospital or other site of care and is immediately available to provide direct supervision). Much of the learning process and the development of progressive responsibility is based on teaching by example under supervision. Supervision and close observation provide the ability of the program director to ascertain when a resident is ready and able to assume progressive autonomy and responsibility. Each resident must know the limits of their scope of authority and the circumstances under which they are permitted to act with conditional independence as well as their skill set and experience. Attending doctors always maintain professionalism within this relationship and will encourage residents to practice with increasing autonomy while freely seeking guidance from the attending at any time the resident believes it to be helpful to the care of the patient. This relationship is designed to be reciprocal and fundamental to the residents' successful progression.

Application Process

Those interested in making application to the program may do so through the American Dental Education Association's Postdoctoral Application Support Service (PASS). This program participates in the National Dental Match.

For additional information about the application process, please contact

GPR Coordinator, UPMC Presbyterian Shadyside Hospital
OMFS/GPR Dental Residency Programs
412-648-6801

Application Deadline

October 15 of each year

Benefits, Stipend, Tuition & Fees

While in the program, residents receive UPMC Health System's postgraduate trainee stipend.

Benefits include 10 days (80 hours) paid time off, 3 days (24 hours) of paid time off for job-search-related activities, healthcare insurance for the trainee and dependents. The option is also offered for inclusion in 401K, healthcare spending account, dependent care savings accounts and other modest benefits.

Research

Research is encouraged and supported, but not a formal part of the program.

If you would like to make an appointment, or have a question about your treatment here, please contact our patient care coordinators at **412-648-6730**.

If you are a dentist or physician who would like to refer a patient to the UPMC Presbyterian Shadyside Dental Center, please call **412-648-6328** or fax the referral to **412-648-6505**.

stgraduate trainee stipend and benefits package. Those interested in making application to the program may do so through the American Dental Education Association's Postdoctoral Application Support Service (PASS).

For additional information, please visit dental.pitt.edu/general-practice-residency-program

The general practice dental residency program is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is http://www.ada.org/100.aspx.

Oral and Maxillofacial Pathology

Program Description

The Oral and Maxillofacial Pathology (OMFP) Advanced Education and Residency program consists of two tracks: one track for applicants who have graduated from an accredited US or Canadian dental school, which is federally funded, and one track for those who have graduated from an approved international dental school, which is tuition-based. The programs are a collaboration between the University of Pittsburgh School of Dental Medicine Department of Diagnostic Sciences and UMPC-Medical Education (UPMC-ME). These programs are fully accredited by the Commission on Dental Accreditation. As with all accredited OMFP programs, both tracks require a minimum of 36-months of training, with at least six of those months in ACGME-accredited pathology rotations. The UPMC-based program accepts a maximum of one resident a year, and the program at The University of Pittsburgh School of Dental Medicine Oral and Maxillofacial Pathology Residency Program can accept up to two residents per year. Successful completion of the UPMC-based program will lead to a certificate in Oral and Maxillofacial Pathology and will qualify the graduate to sit for the specialty board examination in Oral and Maxillofacial Pathology. Successful completion of the University of Pittsburgh School of Dental Medicine-based program will lead to a certificate in Oral and Maxillofacial Pathology, with the option to obtain a Master's of Science in Dentistry (MSD) degree, and will qualify the graduate to sit for the specialty board examination in Oral and Maxillofacial Pathology.

For more information on our program visit our website at: https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/oral-and-maxillofacial-pathology

Curriculum

Faculty members are certified by their specialty boards of Oral and Maxillofacial Pathology, Oral and Maxillofacial Radiology, Oral Medicine, or Anatomic Pathology, and possess a wide range of clinical, teaching, research, and surgical pathology experience. The residency program offers a mix of didactic courses, electives, microscopic general and oral pathology, clinical oral pathology, oral and maxillofacial radiology, hospital rotations, and research. Clinical patients are seen at the University of Pittsburgh School of Dental

Medicine and though the faculty practice plan at the University Dental Health Services, Inc., as well as during the rotation in dermatopathology.A large part of the program is in managing and diagnosing biopsy cases at the School of Dental Medicine anatomic pathology (biopsy) service.

Rotations

Most pathology rotations take place at UPMC-Presbyterian Hospital, in the Oakland section of Pittsburgh, across the street from the University of Pittsburgh School of Dental Medicine. UPMC is a major regional, tertiary care and transplant center that will expose the resident/student to a large volume and a wide variety of experiences. Rotations include 12 weeks in head and neck anatomic pathology, 4 weeks in dermatopathology, 4 weeks in hematopathology-lymph node, 2 weeks in molecular and genomic pathology, 2 weeks in bone and soft tissue pathology, 4 weeks in pediatric pathology, and 1 week in autopsy, with additional opportunities in gastrointestinal pathology ("GI quicks"), thoracic pathology, surgical breast pathology, pathology informatics, or research. The program allows some flexibility for the resident to concentrate on a particular area of oral and maxillofacial pathology.

More information including requirements and making an application to the program are available by visiting **dental.pitt.edu/omp-residency**

Research

Each resident is required to perform scholarly activity. This can include case reports of classic or unusual cases, clinicopathologic case challenges, and performing original research. The University of Pittsburgh, UPMC, and surrounding universities provide a vast array of opportunities for research. Faculty within the Pitt Dental Medicine Department of Diagnostic Sciences conduct research in areas including 3-D printing and imaging, oral and maxillofacial lesions, immunohistochemical studies of salivary and odontogenic tumors, and data mining of the dental health record.

The program in dental education is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is http://www.ada.org/100.aspx.

Oral and Maxillofacial Surgery

Academic programs in the Department of Oral and Maxillofacial Surgery offer both predoctoral and advanced education residency opportunities.

Predoctoral DMD students may take advantage of the internship and externship programs, while advanced specialty training is offered in the OMS Surgical Residency Program.

Oral and Maxillofacial Surgery Residency Program

The Department of Oral and Maxillofacial Surgery (OMS) at the University of Pittsburgh School of Dental Medicine offers a six-year, dual-degree program, and a four-year program. Three residents are accepted each year (two six year positions and one four year position), and they commence training as interns in the department. In the six-year, dual-degree program, two residents join their corresponding medical school class in the spring of the first year. These residents earn a medical degree and participate in advanced surgical training in oral and maxillofacial surgery, spending a total of 33 months on the oral and maxillofacial surgery service. The four-year program offers a total of 33 months on the oral and maxillofacial surgery service and rotating on medicine, surgery and anesthesia services the other 15 months. The department's graduates have accepted positions in both outstanding surgical practices and university attending positions at major medical centers throughout the United States.

Eight full-time oral and maxillofacial surgery faculty members, as well as part-time faculty and private practice oral and maxillofacial surgeons from the Pittsburgh area, provide surgical training and mentoring. The School of Dental Medicine has, on-site, a modern

ambulatory surgical suite with full anesthesia support and facilities that enhance caseload and outpatient surgical management. The department provides instruction in anesthesia, dentoalveolar surgery, dental implants, head and neck pathology, cleft and craniofacial disorders, craniofacial trauma, and head and neck anatomy.

Residents

The program is designed to be truly "integrated" and allow for the maximal benefit of coordinated medical training, and progression of knowledge and skill in oral and maxillofacial surgery. Residents are exposed to the full scope of oral and maxillofacial surgery throughout their training-including interdisciplinary care. From day one, new residents work with first professional dental students in a training and supervisory role in the undergraduate OMS clinic. They are involved in managing emergency cases at the UPMC Montefiore Dental Center and in assist the attending surgical faculty in the operating rooms of UPMC Presbyterian/Shadyside, Mercy Hospital, and Children's Hospital of Pittsburgh of UPMC. During the entire final year of the program, the chief residents devote a full 12 months to the OMS service, working with an enviable surgical caseload. Residents are also required to attend the Department of Oral and Maxillofacial Surgery Grand Rounds, Journal Club, treatment planning conferences in the Dentofacial Deformities Program (in conjunction with the Orthodontic Program), and the weekly Surgical Treatment Planning and Trauma Conference.

Application

The annual application deadline is **September 1** of the preceding year. Late applications will not be accepted. Applicants must graduate from an ADA-accredited dental school, must apply through the ADEA Postdoctoral Application Support Service (PASS), and must participate in the Postdoctoral Dental Matching Program (MATCH).

Interview and Selection

Applicants are screened for interviews that occur in November and December of each year. In late January, through the MATCH Program, two applicants are selected to matriculate into the first year of residency, which commences in late June. Applicants matched to the University of Pittsburgh are enrolled in both the Department of Oral and Maxillofacial Surgery residency and the University of Pittsburgh School of Medicine.

Benefits/Stipend/Tuition

Residents receive a full UPMC post-graduate trainee stipend during each year of the program. In addition, health and disability insurance benefits are provided. Tuition is incurred while residents are enrolled in the medical school phase of the program.

OMS Externship and Internship Programs

Externship Program

The Department of Oral and Maxillofacial Surgery is accepting applications from interested students from U.S. accredited dental schools for our externship program. Please contact the department for additional information and complete the application materials below.

Please see the links below for application materials and information.

Information for Visiting Students

Prerequisites for Participation

All students from dental schools accredited by the American Dental Association Council on Education, who will have completed their third year requirements at the time of the desired elective participation, are eligible to apply. Students must be in good academic standing at their parent school and must have their school's approval to participate in the desired elective(s).

Visiting students are permitted to enroll for a continuous 4-6 week Oral and Maxillofacial Surgery elective at the School of Dental Medicine during their fourth year.

Application Procedure

An "Application for Non-Pitt Student Elective" form must be submitted. These applications are available from the Department of Oral and Maxillofacial Surgery by writing to the address, below. The application must contain all requested information from both the student and the appropriate dean of the student's school, including original signatures. Incomplete applications will be returned to the student's Student Affairs Office.

The application should be mailed before May 15. Upon receipt the completed application will be reviewed and the student applicant notified about acceptance status.

Insurance

All students must be covered by malpractice or liability insurance verified by their dean of students. Applicants must **provide proof of personal health insurance.** We accept no liability for health costs incurred by visiting students while at this school.

Cancellations

The courtesy of a telephone call is requested at least 4 weeks prior to the start of an elective if you find you're unable to participate. Please call directly to the Department of Oral and Maxillofacial Surgery at **412-648-6801**.

Housing

The School of Dental Medicine has no short term housing at its disposal. The School of Medicine keeps a reference of students who are scheduled to be away and may wish to sublet. You can get in touch with them by calling Margie Sikorski at **412-648-9040**. There is dormitory space available during the months of May, June, July and August, call 412-648-1100. There is also a University Housing Office, available by phone at **412-624-7116**, which may be able to refer you. A final suggestion, check to see if you have graduates from your school in this area who may be willing to share or otherwise assist you.

Internship Program

A one-year internship program is available for those individuals who are interested in applying for a career in oral and maxillofacial surgery, but would like additional training prior to applying for an Oral and Maxillofacial Surgery position through the MATCH program.

The program is unique in that a balanced and extensive experience is offered in the clinical setting. This includes rotations in our outpatient clinics as well as the operating room service. Interns also are expected to attend and participate in conferences and our comprehensive didactic coursework. The position is fully funded.

Application Procedure

Applications may be made at any time, and the position is usually filled once the MATCH process is complete in late January. More information can be obtained by contacting the Oral and Maxillofacial Surgery Fellowship Residency Coordinator.

For more information about both programs, please contact

Fellowship and Residency Coordinator
203 Lothrop Street, Suite 214
Pittsburgh, Pennsylvania 15213
412-648-6801

The Department of Oral and Maxillofacial Surgery adheres to the University of Pittsburgh's non-discrimination policy.

For additional information, please visit **dental.pitt.edu/oms-residency**

The Department of Oral and Maxillofacial Surgery adheres to the University of Pittsburgh's non-discrimination policy.

The advanced specialty education program in oral and maxillofacial surgery is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is http://www.ada.org/100.aspx.

Orthodontics and Dentofacial Orthopedics Certificate

The Orthodontics and Dentofacial Orthopedics Program at the University of Pittsburgh School of Dental Medicine requires a three-year course of study. The goals of the program are to provide excellent education in the specialty of orthodontics and dentofacial orthopedics, to provide high quality clinical care, and to conduct research designed to advance the knowledge of the specialty. The curriculum reflects this mission and provides residents with the necessary knowledge and experience to enter the specialty well prepared for practice. The curriculum is based upon a solid foundation of scientific principles and methods that residents may use as a rational framework for understanding treatment and evaluating future changes. The application of basic and clinical scientific knowledge to the practice of orthodontics is the fundamental tenet of the curriculum.

Successful completion of the program leads to a certificate in orthodontics and dentofacial orthopedics and enables graduates to participate in the American Board of Orthodontics certifying examination. Students may also pursue a course of study leading to a Master of Dental Science degree in orthodontics and dentofacial orthopedics.

For more information on our program, visit our website at: https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/orthodontics

Components of the Program

- Clinical training which prepares the resident for specialty board certification
- Education from a broad curriculum, which provides residents with greater insight on the nature of orthodontics
- Research to enrich the profession and develop critical thinking skills

Curriculum

The curriculum for the Orthodontics and Dentofacial Orthopedics Residency Program is designed to be taught at the postdoctoral level. The path of study followed by the residents comprises a core curriculum of graduate level basic sciences, followed by a broad course of study in craniofacial biology, clinical sciences, and orthodontic techniques. A significant portion of the curriculum is devoted to clinical orthodontics, allowing the resident to develop proficiency through a broad, diverse experience in patient care.

Conferences provide an excellent foundation in the basic and clinical sciences and provide opportunity for growth and development in dental statistics, occlusion and malocclusion, development of the dentition, dentofacial abnormalities, biomechanical orthodontics, genetics, bone biology, cephalometrics, diagnosis and treatment planning, evidence-based care, surgical orthodontics, practice management, and orthodontic technique. Orthodontic conferences and literature review sessions provide opportunities for critical analysis of historical and current literature with application to contemporary orthodontic principles in case diagnosis and treatment planning.

Application Process

Applicants must apply through the Postdoctoral Application Support Service (PASS) and register for the Dental Match. Residency positions are awarded through the Postdoctoral Dental Matching Program in the Phase I (fall) match. The program is fully accredited by the Commission on Dental Accreditation.

A non-refundable supplemental application fee is required at time of application. More information about the program, requirements and deadlines can be found at https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/orthodontics.

Orthodontics and Dentofacial Orthopedics Research

Scholarly activity in the form of basic or clinical research is a fundamental component of the curriculum. Residents design, implement, and complete a research project that provides greater knowledge of the specialty and permit residents to develop the ability to apply the scientific method.

The Orthodontic and Dentofacial Orthopedics Residency Program requires a research project to be completed prior to graduation.

The following are titles of research projects completed or in progress by orthodontics and dentofacial orthopedics residents:

- A Comparison of Inferior Turbinate Hypertrophy in Pediatric Cleft Patients
- Comparison of Bracket Failure Using a Hydrophilic and Hydrophobic Primer
- Comparative Analysis of Two Clear Aligner Systems for Orthodontic Refinement
- The Effect of Bite Turbos on Mandibular Anterior Bracket Failure Rate: A Retrospective Study
- The Comparison of Tensile Strength, Modulus of Elasticity and Bending Modulus of Arch Wires used in Orthodontics
- Impact of Model Base Design and Three-Dimensional (3D) Print Settings on the Quality of Orthodontic Retainers
- Genetic Variation Contributing to Microdontia
- Genetic Variation Involving Human Tooth Agenesis
- The Impact of Computer Aided Design (CAD) on the Accuracy and Fit of Direct Print Aligners (DPA)

Read more about the Orthodontics and Dentofacial Orthopedics Residency Program by visiting Advanced Dental Education Residency Program in Orthodontics and Dentofacial Orthopedics | School of Dental Medicine.

The advanced specialty education program in orthodontics and dentofacial orthopedics is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is http://www.ada.org/100.aspx.

Pediatric Dentistry Certificate

Program Description

The Department of Pediatric Dentistry offers a two-year Advanced Education Program in Pediatric Dentistry resulting in a Certificate in Pediatric Dentistry. Residents are trained in the advanced diagnostic and clinical techniques necessary to provide specialty care to children, adolescents, and individuals with disabilities. Residents are eligible to participate in the American Board of Pediatric Dentistry certification examinations, upon successful completion of the program.

An option to obtain a Master in Dental Science (MDS) is available and will require additional coursework resulting in additional time beyond the two-year period.

All facilities within the School of Dental Medicine are available for resident use, and there is a vast Health Science Center Library system housed in the medical school directly across the street from the School of Dental Medicine.

For more information on our program visit our website at: https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/pediatric-dentistry

Goals and Objectives of the Program

It is the intent of the program to prepare residents for a career in specialty pediatric dentistry practice, teaching, and community health service in the area of comprehensive oral health care for children, with a particular emphasis on providing quality services for children with special health care needs. The Program is designed to follow the principles, policies and educational requirements set forth in the accreditation requirements in the American Dental Association Guidelines for Advanced Specialty Education Programs and the American Academy of Pediatric Dentistry Guidelines for Advanced Education in Pediatric Dentistry. Learn more about the program's goals and objectives at Advanced Dental Education and Residency Program in Pediatric Dentistry | School of Dental Medicine.

Curriculum

The multifaceted advanced pediatric dentistry curricula integrate scientific principles and methods with the clinical application of pediatric dentistry. Ample time is provided for either basic science or clinical research. Emphasis is also given to community and dental public health experiences. In addition to the core curriculum for all specialty residents, the following pediatric dentistry specific conferences are offered: For more information, visit https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/pediatric-dentistry.

Rotations

Rotations are scheduled at the University of Pittsburgh Medical Center (UPMC) - Children's Hospital of Pittsburgh, UPMC Presbyterian Hospital, and the Cleft Palate/Craniofacial Center. For more information, visit https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/pediatric-dentistry.

Application Process

The Advanced Education Program in Pediatric Dentistry applications must be filed through the Postdoctoral Application Support Service (PASS) and the Postdoctoral Dental Matching Program (MATCH).

For additional information about how to apply to the advanced dental education residency program in pediatric dentistry, please visit our Advanced Dental Education Residency Programs general information page.

Pediatric Dentistry Research

A research project is a graduation requirement for the Advanced Pediatric Dentistry Residency Program.

The following are projects completed, or in progress, within the last five years

- Association Between Autism Spectrum Disorder and Caregiver-Reported Dental Caries in Children
- Child Dental Neglect Laws: State Specifications and Repercussions for Dentists
- The Relationship Between Training with a Dental Anesthesiologist and Preference in the Modality of Anesthesia Delivery Among Board-Certified Pediatric Dentists in the United States
- Factors Associated with the Agent of Choice for Moderate Sedation
- Parental Acceptance of the Human Papilloma Virus Vaccine
- Outcomes of Single-Surface Restorations Placed in Young Children Receiving Outpatient General Anesthesia
- Race and Payer Types for Child Visits with Public Health Dental Hygienist Practitioners
- Various Recall Intervals Following Outpatient General Anesthesia Services for Patients with Special Needs and DMFT Scores

For additional information about the residency program in pediatric dentistry, please visit Advanced Dental Education and Residency Program in Pediatric Dentistry | School of Dental Medicine.

The advanced specialty education program in pediatric dentistry is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is http://www.ada.org/100.aspx.

Periodontics Certificate

Program Description

Our program aims to continue developing basic and clinical research in dental implantology, novel bone regenerative technologies and the development of novel approaches to treat periodontal disease by modulating the immune system. We are working on new therapies to improve patient outcomes and bring clinical research into clinical practice with cutting-edge treatment modalities. Some of our ongoing projects include: development of periodontal therapies by regulating the immune response; development of novel magnesium-related materials for bone regeneration; the assessment of novel periodontal grafting material compared to the standard of care, and surgical treatment of peri-implantitis. All residents are encouraged to pursue research projects and have contributed to national and international meetings for organizations in their specialty.

Each resident is exposed to all periodontal diagnostics and therapies and is expected to be competent in all phases of clinical periodontal care. During their program, residents in periodontics are supervised and taught by board-certified periodontists and prosthodontists. A resource for both dentists and patients throughout the Pittsburgh region, our services are characterized by the integration of innovative techniques with conservative treatment approaches resulting in excellent treatment outcomes and a high standard of quality care.

The residency in periodontics is a three-year certificate program with the option of pursuing a Master in Dental Science (MDS) concurrent with the certificate program. Three residents are accepted annually for the three-year program.

For more information on our program visit our website at: https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/periodontics

Program Requirements

The residency in periodontics is a three-year certificate program. Each resident is exposed to all periodontal diagnostics and therapies and is expected to be competent in all phases of clinical periodontal care. All residents are encouraged to participate in the American Academy of Periodontology board certification process, and to graduate as board-certified periodontist. A master's degree option is available to residents in the Department of Periodontics.

Residents in the department are encouraged to pursue research projects and have contributed to national and international meetings for organizations in their specialty. Several are enrolled in the master's degree program in public health, or the master's degree in dental science.

Application Process

Applications to the residency program are accepted through the ADEA Postdoctoral Application Support Service (PASS) and Postdoctoral Dental Matching Program (MATCH).

For information about application requirements and deadlines, please visit https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/periodontics.

Periodontics Research

Research in our Periodontics department focuses on cutting-edge clinical procedures that will ultimately improve patient quality of life. Our researchers represent some of the best dentist-scientists working in the field, and they collaborate with fellow investigators nationally and internationally and across diverse disciplines. Our department exists as a center of excellence providing state-of-the-art periodontal and implant clinical therapies while exploring the possibilities for enhanced treatment technologies, procedures and strategies.

Key Areas of research focus include:

- Peri-implant Diseases: Prevention and Management of Peri-implantitis
- Short and Extra-Short Implants
- Artificial Intelligence in Periodontics
- Bone tissue regeneration
- Polymer magnesium periodontal membranes
- Resorbable metal fixation devices
- Biomineralization
- Immuno-modulation
- Biodegradable materials
- Load-bearing bone fixation devices
- Pre-clinical Testing for Regulatory Approval

Learn more about the Periodontics Residency Program by visiting Advanced Education & Residency Program in Periodontics | School of Dental Medicine.

The advanced specialty education program in periodontics is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is http://www.ada.org/100.aspx.

Fall Term

- PERIO 2121 - PERIODONTAL LITERATURE REVIEW 1
- PERIO 2122 - SPECIAL TOPICS IN PERIODONTICS 1
- PERIO 2142 - PERIODONTICS JOURNAL CLUB - 1

Spring Term

- PERIO 2157 - PERIODONTAL LITERATURE REVIEW 2

Prosthodontics Certificate

The Advanced Education and Residency Program in Prosthodontics is an American Dental Association-accredited three-year certificate program with the option to complete a master's degree. Students who pursue a master's degree will receive their MDS upon completion of the extra required didactic courses within the three-year limit. The Program's didactic and clinical components are designed to train and equip the graduate to transfer new prosthodontic knowledge and approaches, to implement evidence-based prosthodontic decision-making in clinical practice, and to prepare for certification by the American Board of Prosthodontics.

For more information on our program visit our website at: https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/prosthodontics

Program Objectives

Provide clinical training in all aspects of prosthodontics including:

- clinical experiences to ensure proficiency in all aspects of prosthodontics;
- clinical experiences to ensure proficiency in diagnosis, treatment planning, and management of multi-disciplinary cases;
- to recruit and retain faculty with broad and varying backgrounds in clinical prosthodontics, who espouse diverse philosophies in patient care and prosthodontic procedures, and effectively communicate their knowledge and skills to residents.

Provide biologically and scientifically based education in order to:

- develop, monitor, and update all prosthodontic seminars and conferences to present contemporary, technologically, and biologically-oriented information;
- provide opportunities for scholarly activities, applied research, scientific articles, and clinical and/or research presentations.

Prepare and train residents for a career in prosthodontic practice and/or academics to:

- require all residents to complete annual comprehensive examinations (ACP Annual Board Review Examinations);
- provide opportunities for completion of a treatment case suitable for presentation to the American Board of Prosthodontics;
- provide residents with opportunities to pursue academic degree(s) in related disciplines.

Provide quality and professional care to all patients to:

- ensure ethical and professional conduct by all individuals involved in patient care;
- ensure proper care of all patients in the prosthodontic residency program;
- ensure patient satisfaction with the care they receive.

Program Requirements

The program's clinical components focus on diagnosis, treatment planning, and treatment of edentulous, partially edentulous, and completely edentulous patients. Fixed, removable, and implant prosthodontics constitute the major portion of the clinical training, with occlusion, temporomandibular disorder, and geriatrics as integral components of all phases of care. Residents are required to manage and

treat patients requiring complete dentures, removable partial dentures, fixed partial dentures, and implant restorations. Clinical training for residents in implant dentistry emphasizes all aspects of implant treatment including implant placement. Additionally, the program requires the resident's involvement in the treatment of patients with congenital and acquired defects.

Residents enrolled in the Prosthodontic Residency Program must complete the prescribed advanced prosthodontic curriculum and perform required research to submit a research paper.

Prosthodontic Curriculum

The multifaceted prosthodontic curriculum comprises a core curriculum in biomedical sciences for all dental residents and prosthodontic specialty conferences.

The didactic core curriculum and prosthodontic conferences include the following:

- Advanced Fixed Prosthodontics;
- Advanced Removable Prosthodontics;
- Biomaterials;
- Implant Surgery and Prosthodontics;
- Implant Dentistry Literature Review;
- Fixed and Removable Literature Review;
- Maxillofacial Prosthetics;
- Prosthodontic Treatment Planning;
- Multidisciplinary Treatment Planning;
- Occlusion and Management of TMD;
- Prosthodontic Conferences and Board Reviews.

For more information about program requirements or curriculum for The University of Pittsburgh Advanced Education and Residency Program in Prosthodontics, visit https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/prosthodontics.

Application

The ADEA Postdoctoral Application Support Service (PASS) and Postdoctoral Dental Matching Program (MATCH) application or the University's self-managed application are both accepted by the department. For information about application requirements and fees, visit https://www.dental.pitt.edu/education/advanced-dental-education-and-residency-programs/prosthodontics

Tuition

Tuition varies from year to year. Current tuition information is available on the School of Dental Medicine Residency Budget page.

The advanced specialty education program in prosthodontics is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is http://www.ada.org/100.aspx.

Department of Oral and Craniofacial Sciences

The School of Dental Medicine Department of Oral Biology Graduate Program offers basic, translational, and clinical studies in oral biology, biomedical research and health that span spatial scales from the molecular and cellular levels to the whole organism level. Studies

include fundamental biological phenomena related to the development, structure, and function of the craniofacial region and the development of new therapies, biomaterials, and diagnostic tools for the treatment of diseases and disorders in the craniofacial area. The Graduate Program provides a stimulating and collegial environment to prepare motivated and qualified students for careers in academia, industry, and government.

Students may earn Doctor of Philosophy (PhD) and Master of Science (MS) degrees in Oral Biology within one of two research concentrations:

- Craniofacial and Dental Genetics
- Craniofacial Tissue Regeneration

Students will work with faculty in the Department of Oral Biology on research in these concentrations.

The program is open to post-baccalaureate students, pre-doctoral dental students, and dental residents. School of Dental Medicine pre-doctoral students and residents may apply for a dual degree option with the PhD or MS Graduate Programs in Oral Biology. Pre-doctoral dental medicine students may also pursue dual degrees while enrolled in the School of Dental Medicine through collaborative programs with the School of Public Health, the School of Law, and the School of Education.

Admissions will only be considered for the fall term. However, early applications are encouraged, and offers may be extended to suitably qualified candidates before the application deadline.

To read detailed information abou tthe program options as well as how to apply, please visit **dental.pitt.edu/oral-biology-academic-programs.**

About the School

Established in 1896, the University of Pittsburgh School of Dental Medicine has been educating students to take their places among the best dental practitioners, researchers and educators in our region, across the country, and even around the world. We are one of six Schools of Health Sciences at the University and are the only school to manage our own clinic. Our accomplishments reflect the dedication and success of each member of the School of Dental Medicine family.

We are proud of our long tradition as innovators in dental medicine. Our first female student was admitted 117 years ago, and today more than half of our vibrant and diverse first-year pre-doctoral class are women. We nurture in our students a strong foundation in the biological, behavioral and clinical sciences and a belief in the importance of professionalism and life-long learning.
Half a century ago we pioneered the specialty dental care that we now deliver in our fully equipped Center for Patients with Special Needs. The School's general dental clinics and 11 specialty clinics play an integral role in improving the oral health of the patient population of southwestern Pennsylvania and beyond. Some patients travel hundreds of miles to access the high-quality care our clinics provide every day.

Our researchers expand the horizons of knowledge and are internationally renowned for their groundbreaking developments in the areas of craniofacial genetics and craniofacial regeneration. We are identifying genes that contribute to complex human phenotypes, and are using tissue engineering to heal wounds and restore function and appearance to defects of the face and skull.
Every day, the positive contributions of our faculty, staff, residents and students-the Pitt Dental Medicine family-demonstrate their commitment to our mission of advancing the future of dental medicine through teaching, research and service.

Degree Programs

Along with several specialized degree programs, degrees offered at the School of Dental Medicine include the doctor of dental medicine (DMD); doctor of philosophy (PhD); master of science (MS); master of public health (MPH) offered in conjunction with the School of Public Health; and bachelor of science (BS).

The four-year doctor of Predoctoral (DMD) Program prepares students to provide comprehensive care to a diverse patient population. The competency-based curriculum emphasizes health promotion and disease prevention, and prepares students to provide individualized treatments using the best scientific evidence available. Graduates are equipped to practice as independent, entry-level general practitioners.

The Advanced Standing (DMD) Program places qualified graduates of foreign dental schools as third-year dental students. These students are integrated into the program and complete the third- and fourth-years of the pre doctoral curriculum with the rest of the class.

In collaboration with Pitt Public Health, the four-year DMD/MPH in dental public health offers customizable course selection with a special emphasis on oral health-specific public health issues.

The University of Pittsburgh School of Dental Medicine's Dental Hygiene Program provides students a unique academic environment where they can earn either an Associate of Science or a Bachelors Degree in Dental Hygiene. The intreprofessional educational experiences within the school's specialty dental clinics and the University-based hospitals, in conjunction with didactic, community outreach, and research activities, affords the delivery of high-quality education.

Research Strengths

Research efforts include dental and craniofacial genetics, craniofacial anomalies, caries, periodontal disease, pharmacology, pain control, tissue engineering, craniofacial regeneration, educational research, informatics, and implantology.

Identification

The School of Dental Medicine is undertaking investigations to identify genes that contribute to complex human phenotypes, primarily those involved in dental and craniofacial disorders, including behavioral and epidemiological factors. New territory is being charted to develop the first-known collection of DNA samples paired with anonymized dental records to support genetics research.

Treatment

Tissue engineering-based approaches are being developed to treat complex multi-structural wounds and defects of the face and skull in a way that restores both function and appearance. The school is at the forefront of research to develop relevant translational treatment solutions usable by practicing dentists.

Application

The School of Dental Medicine is identifying factors that lead to oral health disparities in children and families in Appalachia. Oral public health research leads to improved interventions, understanding, and advancements for the future of oral health education and treatment.

Master's

Oral and Craniofacial Sciences, MS Program

The Department of Oral and Craniofacial Sciences (DOCS) Master of Science Program requires two years to complete, but no more than four years. Early completion may be considered for students with exceptional progress in their thesis that have completed their coursework. The MS Program is distinct from the PhD Program. MS students may apply to be accepted for the PhD Program once they are accepted into the MS Program. If the student is accepted into the PhD Program at a later date, courses taken toward their master's degree will satisfy doctoral degree credit and residency requirements.

Students may earn Master of Science (MS) degree in Oral and Craniofacial Science within one of two research concentrations:

- Craniofacial and Dental Genetics
- Craniofacial Tissue Regeneration

The program is open to post-baccalaureate students, pre-doctoral (First Professional) DMD students, and dental residents. School of Dental Medicine pre-doctoral students and residents may apply for a dual degree option with the PhD or MS Graduate Programs in Oral and Craniofacial Sciences.

Admissions will only be considered for the fall term each year. However, early applications are encouraged, and offers may be extended to suitably qualified candidates before the application deadline.

Students will experience to both concentrations in the program curriculum, which includes three courses with DMD students, and work with faculty in the Department of Oral and Craniofacial Sciences on research in one of these concentrations.

Requirements for the MS Degree

- A total of 31 credits: 25 didactic in the MS core curriculum and 6 in research
- Successful completion of MS core curriculum with a **grade of B (3.0 GPA) or better** in each course
- A one-year research project leading to an master's thesis

- A master's thesis
- Defense of the master's thesis before a thesis committee research

Learn more about the Oral and Craniofacial Sciences Degree Programs at dental.pitt.edu/ocs-program

Fall Term First Semester

- OCS 3504 - JOURNAL CLUB
- OCS 3516 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 1
- OCS 3505 - DIRECTED RESEARCH

Spring Term Second Semester

- OCS 3504 - JOURNAL CLUB
- OCS 3546 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 2
- OCS 3553 - FOUNDATIONS IN GENETIC EPIDEMIOLOGY
- OCS 3554 - FOUNDATIONS OF CRANIOFACIAL ANATOMY
- OCS 3505 - DIRECTED RESEARCH

Summer Term Third Semester

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH
- OCS 3504 - JOURNAL CLUB
- OCS 3505 - DIRECTED RESEARCH

Fall Term Fourth Semester

- OCS 3505 - DIRECTED RESEARCH

Spring Term Fifth Semester

- OCS 3508 - CURRENT TOPICS IN ORAL HEALTH RESEARCH
- OCS 3505 - DIRECTED RESEARCH

Summer Term Sixth Semeter

- OCS 3511 - THESIS RESEARCH

PhD

Oral and Craniofacial Sciences, PhD Program

The Department of Oral and Craniofacial Sciences (DOCS) PhD Program requires approximately four to five years to complete and employs a core curriculum which is separate from the MS Program. Students may enter the PhD program directly following their undergraduate degree and do not necessarily have to earn a master's degree first. Earning a master's degree can be incorporated into the PhD program without increasing the total length of time in studies.

Students may earn Doctor of Philosophy (PhD) degree in Oral and Craniofacial Science within one of two research concentrations:

- Craniofacial and Dental Genetics
- Craniofacial Tissue Regeneration

The program is open to post-baccalaureate students, pre-doctoral (First Professional) DMD students, and dental residents. School of Dental Medicine pre-doctoral students and residents may apply for a dual degree option with the PhD or MS Graduate Programs in Oral and Craniofacial Sciences.

Admissions will only be considered for the fall term each year. However, early applications are encouraged, and offers may be extended to suitably qualified candidates before the application deadline.

Students will experience to both concentrations in the program curriculum, which includes three courses with DMD students, and work with faculty in the Department of Oral and Craniofacial Sciences on research in one of these concentrations.

Requirements for the PhD degree

- A total of 72 credits of coursework: 37 didactic (25 in the PhD core curriculum) and 35 research
- Successful completion of PhD core curriculum with a grade of B (3.0 GPA) or better in each course
- Written comprehensive examination after the sixth semester (for advancement to PhD candidacy)
- Dissertation proposal defense
- Approval of a dissertation committee and dissertation research
- Dissertation defense
- A PhD thesis

A student who earned a master of science degree from another institution may petition the Graduate Studies Committee to waive the comprehensive examination.

Learn more about the Oral and Craniofacial Degree Programs at dental.pitt.edu/OCS-Program

Fall Term First Semester

- OCS 3504 - JOURNAL CLUB
- OCS 3516 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 1
- OCS 3505 - DIRECTED RESEARCH

Spring Term Second Semester

- OCS 3504 - JOURNAL CLUB
- OCS 3546 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 2
- OCS 3553 - FOUNDATIONS IN GENETIC EPIDEMIOLOGY
- OCS 3554 - FOUNDATIONS OF CRANIOFACIAL ANATOMY
- OCS 3505 - DIRECTED RESEARCH

Summer Term Third Semester

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH
- OCS 3504 - JOURNAL CLUB
- OCS 3505 - DIRECTED RESEARCH

Fall Term Fourth Semester

- OCS 3603 - HUMAN GROWTH AND DEVELOPMENT

- OCS 3505 - DIRECTED RESEARCH

Spring Term Fifth Semester

- OCS 3508 - CURRENT TOPICS IN ORAL HEALTH RESEARCH
- OCS 3505 - DIRECTED RESEARCH
- OCS 3509 - COMPOSITION, STRUCTURE, AND FUNCTION OF MINERALIZED TISSUES

Summer Term Sixth Semeter

- OCS 3505 - DIRECTED RESEARCH

Fall Term Seventh Semester

- OCS 2110 - TEACHING PRACTICUM
- OCS 3505 - DIRECTED RESEARCH

Spring Term Eighth Semester

- OCS 3505 - DIRECTED RESEARCH

Summer Term Ninth Semeter

- OCS 3505 - DIRECTED RESEARCH

Following Terms Tenth through Twelfth

- OCS 3510 - DISSERTATION RESEARCH

Department of Periodontics and Preventive Dentistry

Certificate

Clinical Research in Periodontics and Implant Dentistry

This certificate program in Periodontics and Implant Dentistry combines didactic education, clinical experiences, and research opportunities to provide students with a baseline education in the field of periodontics and implant dentistry. Students attend the same courses, seminars, case conferences, and literature reviews offered in the first year of the three-year Department of Periodontics residency program. The curriculum is designed to provide comprehensive and advanced training with time allocated for the development of clinical and translational research.

The curriculum for the certificate is carefully planned by the department's program coordinator. The availability of diverse courses, combined with dedicated faculty mentorship, ensures that students have the flexibility to customize their educational journey while meeting the high standards set by the program.

Didactic Training:

- The program integrates extensive didactic training, including seminars, lectures, and literature reviews covering fundamental and advanced topics in Periodontics and Implant Dentistry. Courses are taken alongside residents in the Periodontics department.

Clinical Training:

- Students actively participate in hands-on demonstrations to acquire practical skills. Training involves treating patients alongside faculty in the Department of Periodontics clinic, providing a diverse and immersive learning experience.

Research Engagement:

- Students are integrated into ongoing scientific research projects led by principal investigator(s) (PI). This active engagement in research enhances their understanding of contemporary issues and contributes to the advancement of the field.

Educational Environment:

- The program cultivates a challenging and enriching educational environment, promoting critical thinking, problem-solving, and evidence-based practice in the field of periodontics and implant dentistry.

For more information about the program, including admissions requirements and deadlines, please visit: https://www.dental.pitt.edu/education/clinical-research-program-periodontics-and-implant-dentistry.

Required Courses

Core courses for the enrollees. Same courses first year periodontic residents take. Totals 26.5 credits

- CDENT 2113 - DENTAL RESEARCH METHODOLOGY 1
- CDENT 2114 - DENTAL RESEARCH METHODOLOGY 2
- CDENT 2183 - SCIENTIFIC WRITING
- DENT 2049 - GRADUATE PATIENT CARE
- DENT 2130 - APPLIED HEAD AND NECK ANATOMY
- DENT 2150 - ETHICS IN THE DENTAL SPECIALTIES
- DIASCI 2110 - ADVANCED ORAL PATHOLOGY 1
- DIASCI 2191 - PATHOBIOLOGY 1
- DSPHL 2243 - SCIENTIFIC BASIS FOR CLINICAL THERAPEUTICS
- PERIO 2114 - MINERALIZED TISSUE BIOLOGY
- PERIO 2121 - PERIODONTAL LITERATURE REVIEW 1
- PERIO 2122 - SPECIAL TOPICS IN PERIODONTICS 1
- PERIO 2140 - PERIODONTAL TREATMENT PLANNING 1
- PERIO 2142 - PERIODONTICS JOURNAL CLUB - 1
- PERIO 2144 - PERIODONTICS ASPECTS OF DENTAL IMPLANTS
- PERIO 2157 - PERIODONTAL LITERATURE REVIEW 2
- PERIO 2190 - ADVANCED PERIODONTAL CONCEPTS
- PERIO 2212 - SPECIAL TOPICS IN PERIODONTICS 2
- PERIO 2199 - INTRODUCTION TO PERIODONTICS SPECIALTY CLINIC
- PERIO 2240 - PERIODONTAL TREATMENT PLANNING 2
- PERIO 2242 - PERIODONTICS JOURNAL CLUB 2
- PROSTH 2117 - IMPLANT PROSTHODONTICS SEM 1
- PROSTH 2147 - IMPLANT PROSTHODONTICS SEMINAR 2

Electives

Two electives totaling 2 credits

- PERIO 2114 - MINERALIZED TISSUE BIOLOGY
- PERIO 2252 - INTRAOPERATIVE MANAGEMENT OF COMORBIDITIES

Total Credits: 28.5

School of Education

School of Education

Mission/Vision

The following statement is the Mission/Vision of the School Education, which was adopted in January 2019. It encapsulates what we do, what we believe, and who we continually seek to become as members of the School community.

We ignite learning. We strive for well-being for all. We teach. We commit to student, family, and community success. We commit to educational equity. We advocate. We work for justice. We cultivate relationships. We forge engaged partnerships. We collaborate. We learn with and from communities. We innovate and agitate. We pursue and produce knowledge. We research. We disrupt and transform inequitable educational structures. We approach learning as intertwined with health, wellness, and human development. We address how national, global, social, and technological change impacts learning. We shape practice and policy. We teach with and for dignity. We think. We dream. We lead with integrity. We are the School of Education at the University of Pittsburgh.

Contact Information

Office of Admissions and Enrollment Services
School of Education
5900 Wesley W. Posvar Hall
412-648-2230
Fax: 412-648-1899
E-mail: soeinfo@pitt.edu
www.education.pitt.edu

Admission

Admission Procedure

Faculty members in the program to which the student applies evaluate the applicant's credentials and recommend admission for those applicants meeting the criteria set by the program. Individual programs require supplemental application materials; some require prerequisite coursework and skills knowledge. More details regarding expectations for the statement of intent or writing portfolio, pre-requisite courses, and other supplemental application materials can be found on the individual program pages (through the appropriate program).

Approved applicants will be notified of their admission for a specific term and asked to indicate whether or not they accept the offer of admission. Approved applicants may defer admission for up to one year from the term specified in their admission letter. Approved applicants unable to register for courses within one year of the term specified in their admission letter must reapply for admission.

Changing Programs for Graduate Study

A student wishing to change programs for graduate study must file a new application for admission. All work taken both in undergraduate and graduate study will be reviewed by the program to which the student is applying before a decision will be made about admission to the new program. Any change from one program to another in the School of Education while the student is on active status will not alter that status. Thus, the student must register within the dates set for continuing active students.

Advising

Each student is assigned an academic advisor at the time of admission to a program. All course work scheduled must be approved by the academic advisor, who assists in the preparation of a student's plan of studies and who regularly meets with the student to review the student's academic progress.

Each graduate student who is completing a master's thesis or doctoral dissertation works with a research advisor who provides guidance during the conduct of the thesis or dissertation research. The research advisor may be the same faculty member as the academic advisor or another faculty member. The faculty member's consent to serve as the research advisor must be formally obtained. A student continuing from a master's program involving a thesis to a doctoral program may select a different research advisor to provide guidance for the doctoral dissertation.

The student, the advisor, the program, or the department may initiate a change of the academic advisor or the research advisor.

Graduate students have the following responsibilities in relation to academic advising:

- Students are expected to be proactive in learning the components of the curriculum, including all course requirements and milestones, and to seek out resources beyond their academic advisor to understand and make decisions about the curriculum.
- Students are expected to take responsibility for their personal, academic, and career decisions.
- Students are expected to utilize the student support services of the University to enhance their educational experience.
- Students are expected to perform the following in order to select courses and make informed decisions regarding degree progress:
- Refer to the academic calendar to meet necessary deadlines, including add/drop and withdrawal deadlines, and final exam schedules;
- Navigate all aspects of PeopleSoft, the student registration system.
- Students are expected to read their University e-mail on a regular basis, which is the official means of communication for the University.
- Students are expected to come to each advising appointment prepared to discuss academic progress, personal and career goals, interests, concerns, and, at times, the specifics of course work for upcoming semesters.
- Students are expected to meet all deadlines for applying for graduation and external certifications.

School of Education General Graduate Academic Regulations

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Academic Standing

Students in graduate programs need to maintain a cumulative grade point average of 3.000 to remain in good academic standing. The School of Education follows the regulations and processes for determining academic review, academic notice, and academic dismissal as described in the Academic Standing Policy. While on academic notice, students are limited to registering only for courses in which a letter grade is given.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations . School-specific detail follows.

By University regulations, no more than 50 percent of credits may be transferred toward a Pitt graduate degree. A maximum of 30 transfer credits may be counted toward an EdD or PhD degree. Any transferred credits must meet specific degree requirements and are subject to approval by the program faculty and associate/assistant dean. Graduate transfer credits will not be accepted for courses in which a grade lower than B (GPA=3.00) or its equivalent has been received. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exceptions are courses taken while an undergraduate student at the University of Pittsburgh during undergraduate study that meet the requirements in the Academic Regulations.

Leave of Absence

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of one year may be granted to master's students or two years for doctoral students. The rationale for the leave of absence must be stated in advance, recommended to the dean by the department, and approved by the Dean's Office. If approved, the time of the leave shall not count against the total time allowed for the degree being sought by the student. Readmission following an approved leave of absence is a formality.

Non-degree enrollment

Students who have completed a baccalaureate degree may enroll in graduate courses in the School of Education as non-degree seeking students. No more than 15 credits taken as a non-degree student may be applied toward a graduate degree in the School of Education.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a plan of studies that conforms to program requirements. The plan of studies is approved by the academic advisor and the program coordinator.

Any changes in the plan of studies must be approved by the academic advisor and the program coordinator and conform to program requirements. At the time of graduation, completed courses must comply with the approved plan of studies.

Readmission

A student who has not registered for at least one credit during a 12-month period will be transferred automatically to inactive status and must file an application for readmission to graduate study (and pay the application fee) before being permitted to register again. While on inactive status, a student is not eligible to use University facilities and should not expect to receive counseling by the faculty or active supervision by his/her advisor and committee. Readmission is not automatic nor does it necessarily reinstate the student in the academic status enjoyed prior to becoming inactive. When readmitted, the student must be prepared to demonstrate proper preparation to meet all current admission and degree requirements.

Statute of Limitations

The purpose of the statute of limitations is to ensure that a graduate degree from the University of Pittsburgh represents mastery of current knowledge in the field of study. Individual schools within the University may adopt policies that are more, but not less, stringent than those stated here.

All requirements for MA and MS degrees must be completed within a period of four consecutive calendar years from the student's initial program enrollment and all requirements for the MAT or MEd degrees in five years.

From the student's initial registration for doctoral study at the University of Pittsburgh, all requirements for the EdD must be completed within a period of 12 years (or 10 years if the student has received credit for a master's degree appropriate to the field of study).

From the student's initial registration for doctoral study at the University of Pittsburgh, all requirements for the PhD must be completed within a period of 10 years (or 8 years if the student has received credit for a master's degree appropriate to the field of study).

Under exceptional circumstances, a candidate for an advanced degree may apply for an extension of the statute of limitations. The request must be approved by the department or departmental committee (master's or doctoral) and submitted to the dean (or designated assistant or associate dean) for final action. Requests for an extension of the statute of limitations must be accompanied by a departmental assessment of the work required of the student to complete the degree as well as documented evidence of the extenuating circumstances leading to the requested extension. Students who request an extension of the statute of limitations must demonstrate proper preparation for the completion

of all current degree requirements. Under certain conditions, the dean/assistant dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean's Office of the school. Ordinarily, the statute of limitations can only be extended once.

Commonwealth Teacher Education Certification Programs

Teacher education certification programs are offered in both general and special education.

Option 1. *Initial Certification*-Available for PreK-4, Teacher of Students with Visual Impairments (TVI) PreK-12 and Special Education PreK-12. These programs result in eligibility for a teaching certification without a graduate degree.

Option 2. *Certification Plus a Graduate Degree*-for students seeking initial general or special education teacher certification along with a master's degree (e.g., Master of Arts in Teaching [MAT] or Master of Education [MEd]).

Option 3. *Dual certification* (CASE) PreK-4 and preK-12 special education.

Option 4. *Additional Field Certification*-for students already certified in one or more teaching fields who are seeking teacher certification in an additional specialty area but who are not pursuing a graduate degree.

Advanced certification programs include:

- Teacher of Visually Impaired Certification
- Orientation and Mobility Certification
- Special Education Supervisory Certification
- K-12 Principal Certification
- Superintendent Letter of Eligibility
- Reading Specialist Certification

University certificates are awarded to students who complete commonwealth teacher education certification programs offered in Teaching, Learning, and Leading. Students in these programs must apply for graduation at the beginning of the term prior to the term they expect to complete their programs. Eligibility for the University certificate is verified at the same time that a student's application for commonwealth certification is endorsed by the School of Education and sent to the Pennsylvania Department of Education in Harrisburg.

Commonwealth Teacher Education Certification Regulations

The following section details regulations pertaining to the school's teacher education certification programs.

Instructional I and II Certification

The **Instructional I**, or provisional, certificate is issued by the Pennsylvania Department of Education (PDE) to applicants who:

- possess a baccalaureate degree with a 3.0 grade point average;
- have successfully completed a PDE-approved teacher certification program;
- pass all required PRAXIS, PECT, basic skills, and/or PAPA Examinations;
- successfully complete PDE Form 430 for initial certification; and
- are recommedned for certification by the college or university offering the PDE-approved teacher certification program.

An Instructional I certificate is valid for six years.

The **Instructional II**, or permanent, certificate is issued by PDE to applicants who have completed all of the following:

- A PDE-approved induction program for beginning teachers.
- Three years of satisfactory teaching in the field specified on an Instructional I certificate, attested to by the chief school administrator of the approved public or non-public school in Pennsylvania in which the most recent service of the applicant was performed.

- Twenty-four credit hours of post-baccalaureate study or in-service courses approved by PDE. (Some credits earned beyond the baccalaureate degree in teacher education study at the University of Pittsburgh may be used to satisfy this requirement.)

Grade Point Average/Academic Standing

All students enrolled for teacher education study are required to maintain a grade point average (GPA) of at least 3.00. For graduate teacher education, the cumulative GPA is based on all coursework taken after enrollment for teacher education study. No student on academic notice or academic probation is permitted to participate in student teaching, a teaching internship, or an advanced teaching practicum.

Although the credits allowed for acceptable work completed elsewhere by transfer students count toward the total number of credits required for teacher education study, the grades earned in such courses are not included in GPA computations, except in determining the GPA required for admission to the School of Education.

Credit Requirements

Teacher education study in the Instructional I certification program requires the satisfactory completion of a minimum of 30 credits of course work approved by the department and the school. The Master of Arts in Teaching option requires 36 credits. Credit requirements for other certification options vary. Certification by the Pennsylvania Department of Education is recommended only for those students who have satisfactorily completed all courses required for certification with at least a 3.00 GPA.

Teacher Certification Testing Program

The PAPA/CORE battery of tests, required for some students seeking their first Instructional I certificate, consists of a series of examinations to assess basic communication skills, general knowledge, professional knowledge, and specialized area knowledge. Persons with an undergraduate degree already holding a Pennsylvania Instructional I or II certificate are exempt from the PAPA/CORE series. Individuals seeking Instructional I certification in more than one area must take and pass specialization area tests in all areas in which certification is sought. Individuals seeking additional field certification must pass the PRAXIS Examination in the specialization area.

Students completing an Instructional I certificate in preK-4 education, a certificate in preK-4/preK-12 special education or a secondary/preK-12-12 special education certificate must pass the appropriate PECT and Praxis tests.

Students may take the PRAXIS Examinations at any point during or after attendance at a post-secondary institution. Go to the PRAXIS website for information on registering to take the exams.

Student Teaching

In most programs, field experience in local public schools is required throughout the academic year (August to June). When a student accepts their offer of admission, they are required to complete information about student teaching. Applicants must also submit results from a tuberculin test, child abuse clearance, and criminal history check, as required by Pennsylvania Acts 33 and 34. Students must also submit results from a Federal Criminal History Record check by obtaining fingerprint results through the FBI. Lastly, students must successfully pass an online training, Protecting Children from Abuse and also read the PA Mandated Reporter law and sign to indicate understanding.

Student teaching usually begins in late August and sometimes sooner than the opening day of University classes. Specific procedures and regulations governing student teaching practicum can be found in the student teaching handbook.

Teaching Internship

Students in the Master of Arts in Teaching option must complete an academic year (August to April) teaching internship in lieu of student teaching. The internship requires a minimum of 20 hours per week in the Fall term and 30 hours per week in the Spring and a term after Spring. To qualify for the internship and the Pennsylvania Teacher Intern certificate, applicants must:

- As required by Pennsylvania Acts 33 and 34 submit the following clearances: Federal Criminal History Record by obtaining fingerprint results through the FBI; Pennsylvania State Criminal Record Check; Pennsylvania Child Abuse History Clearance. The University cannot guarantee that a person with entries in their criminal record will be permitted to do assignments in a

school. While State law bars certain offenders from schools, districts often impose more extreme requirements. Students who have entries in their records should consult the Coordinator of Clinical Practice on whether a placement will be likely

- Pass the Content Knowledge test (Praxis II) during the first semester of their program in order to obtain their Intern Certificate
- Satisfy the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the national PRAXIS II Exam, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and in the internship)

Students must also successfully pass an online training, Protecting Children from Abuse, submit a signed Arrest/Conviction Report and Certification Form, and also read the PA Mandated Reporter law and sign to indicate understanding

Advanced Teaching Practicum

Students in the additional field certification option must complete an advanced teaching practicum (modified student teaching experience), which vary based on the program requirements.

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the Academic Regulations section in addition to the specific school information detailed below.

Common Requirements

Most master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 30 credits and the passing of a comprehensive examination.

Statute of Limitations

The purpose of the statute of limitations is to ensure that a graduate degree from the University of Pittsburgh represents mastery of current knowledge in the field of study. Individual schools within the University may adopt policies that are more, but not less, stringent than those stated here.

All requirements for MA and MS degrees must be completed within a period of four consecutive calendar years from the student's initial program enrollment and all requirements for the MAT or MEd degrees in five years.

Under exceptional circumstances, a candidate for an advanced degree may apply for an extension of the statute of limitations. The request for extension must include a recommendation made by the academic advisor. The request must be approved by the department or departmental committee (master's or doctoral) and submitted to the dean (or designated assistant or associate dean) for final action. Requests for an extension of the statute of limitations must be accompanied by a departmental assessment of the work required of the student to complete the degree as well as documented evidence of the extenuating circumstances leading to the requested extension. Students who request an extension of the statute of limitations must demonstrate proper preparation for the completion of all current degree requirements. Ordinarily, the statute of limitations can only be extended once.

Leave of Absence

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of one year may be granted to master's students. The rationale for the leave of absence must be stated in advance, recommended to the dean by the department, and approved by the Dean's Office. If approved, the time of the leave shall not count against the total time allowed for the degree being sought by the student. Readmission following an approved leave of absence is a formality.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a plan of studies that conforms to program requirements. The plan of studies is approved by the academic advisor and the program coordinator.

Any changes in the plan of studies must be approved by the academic advisor and the program coordinator and conform to program requirements. At the time of graduation, completed courses must comply with the approved plan of studies.

School of Education Master's Degree Comprehensive Milestone Assessment Policy

Students invest in graduate school to advance their knowledge and skills. With many different training experiences and course assignments, this newly-acquired knowledge and skill base can feel disjointed or segmented.

World-class training programs create synthesizing experiences for students to organize and apply their knowledge and skills. The University of Pittsburgh requires completion of a comprehensive exam or its equivalent for all M.A., M.Ed. and M.S. degree completion. Comprehensive exams are separate from a thesis for programs with a thesis option and are required regardless of thesis completion. This requirement takes different forms across the School of Education and is referred to as comprehensive milestone experiences or assessments throughout this policy.

Programs with Culminating or Comprehensive Milestone Experiences:

Master-level students may be required to complete other kinds of scholarly and/or professional milestone experiences that serve as a student's comprehensive milestone assessment as determined by their majors, programs, or departments. Culminating milestones that are capstone courses, theses, projects, portfolios, practicums, demonstrations, simulations, or presentations will follow the requirements on the timelines established by their respective majors, programs, or departments.

Programs with Comprehensive Milestone Assessments:

Completion of comprehensive, end of program milestones (ex. take home or timed exams, oral exams, etc.) are one key mechanism promoting integration of that knowledge. Against the backdrop of this worthy learning goal, however, is the reality that milestone assessment completion, especially one that influences successful completion of a training program, can produce high levels of anxiety.

Mindful of this unintended consequence, faculty in the School of Education have handcrafted the following student-centered milestone policy.

Assessment window:

Fall and spring terms: Comprehensive milestone assessment administration will take place between weeks 6-8 of the term. All milestone assessments must be submitted by week 8. Scoring occurs between weeks 8-10. Following, students will receive an official email from the program coordinator noting successful completion of this milestone assessment and completion is noted on the student transcript through Career Services.

With the joint aims of fairness and transparency, milestone assessments will be scored by a faculty committee and rated as "pass," "needs revision," or "unsatisfactory." It is not unusual given the scope of the task and for the fact that many students have never attempted a task of this kind before, that a student may need more support to be successful. We've planned for this reality in our scoring process. In the case that a student needs more support, milestone assessments scored "needs revision" will be returned to students for improvements through a revision process and resubmitted by week 11. Revised milestone assessments will be re-scored and students will be notified of their revised score by week 12. Many students report the opportunity to revise work was among the single greatest learning experience of their program. For this reason, revising a milestone assessment is not viewed as a failure, but rather an opportunity for further learning. To provide students the most optimal conditions for success, students may only revise and resubmit once per term.

To ensure that a student has obtained the skills and knowledge commensurate with the degree, we offer students an additional term of study. So that if a student scores "unsatisfactory" on the first attempt or if the revisions are scored as "unsatisfactory," the student returns the next term the milestone assessment is offered to retake a new comprehensive milestone assessment for graduation. In the rare case that a student is not successful on their second attempt, faculty will counsel the student on options for next steps. Additional attempts are not guaranteed and can only be provided to students who are considered active by the university and within their statute of limitations.

Summer terms: Comprehensive milestone assessment administration will take place between weeks 1-2 of a six-week term. Students enrolled in a 12-week summer term will have the comprehensive milestone assessment administered during weeks 3-5. Scoring and notification of results will occur 2 weeks after the submission window closes.

Milestone assessments will be scored by a faculty committee and rated "pass," "needs revision" or "unsatisfactory." Milestone assessments that are scored "needs revision" will require revision and resubmission one week after notification. Revised milestone

assessments will be scored and students will be notified of their revised score one month prior to graduation. Students will only be given one chance to revise and resubmit once per term.

If a student scores unsatisfactory on the first attempt or if the revisions are scored as unsatisfactory, the student must return the next term the milestone assessment is offered to retake a new comprehensive milestone assessment for graduation. Successful completion of the milestone assessment is required for graduation.

Signing up for the comprehensive milestone assessment:

Two weeks prior to the milestone assessment window, students are required to sign-up for the comprehensive milestone assessment via the School of Education portal.

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research project or paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form to the Office of Student and Career Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available on the IRB website.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. The form showing a passed final oral examination must be submitted to the Office of Student and Career Services prior to the term's graduation deadlines. The dean/assistant dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Doctoral Degree General Requirements (EdD and PhD)

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Doctoral Programs

Doctor of Education (EdD) and Doctor of Philosophy (PhD) degree programs are offered by the School of Education to provide advanced graduate study and professional specialization in education. Each recipient must show evidence of superior scholarship, mastery of a special field of knowledge, and ability to conduct significant and relevant research. In doctoral study in the School of Education, a distinction is made between the preparation of education professionals resulting in the EdD degree and the preparation of education professionals resulting in the PhD degree. While both the EdD and PhD degrees produce experts in critical inquiry, the School of Education distinguishes the degrees according to, among other factors, the focus of the area of inquiry, the type of knowledge advanced, and the career path chosen by the individual student.

PhD research focuses on the study of basic problems arising primarily from behavioral and social science theory with the goal of advancing such theory and knowledge. Individuals pursuing this degree often seek academic positions in universities or research institutes. EdD research focuses on the study of applied, practical problems with the goal of contributing to solutions. Careers for these individuals often center on professional positions as administrators, curriculum developers, or specialists in schools and clinical settings.

Credit Requirements

PhD degrees require a minimum of 72 course credits in a degree program beyond the baccalaureate. EdD degrees require a minimum of 76 credits in a degree program beyond the baccalaureate, distributed as follows: a minimum of 66 course credits (including transfer credits) and a minimum of 10 dissertation credits. Doctoral-level courses are numbered in the 3000 series, but courses numbered in the 2000 series may also be appropriate for doctoral study. Generally, courses numbered below 2000 do not meet the minimum requirements for doctoral study. Exceptions require the approval of the program or department. No lower-level undergraduate course (numbered 0001-0999) may be applied toward a doctoral degree.

Leave of Absence

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of two years may be granted to doctoral students. The length and rationale for the leave of absence must be stated in advance, supported by the advisor and department chair, and approved by the Assistant Dean for Student Engagement. If approved, the time of the leave shall not count against the total time allowed for the degree being sought by the student.

Doctor of Education Specific Requirements

The three-year structured EdD program is built on a cohort model. The cohort of students admitted complete a three-year, 76-credit program, which includes 24 credits transferred from relevant graduate coursework. The majority of EdD experiences are shared across areas; however, students pick one of the following academic majors:

1. Education Leadership

2. Health and Physical Activity
3. Higher Education
4. Out of School Learning
5. Science, Technology, Engineering & Math
6. Education Policy and Social Change
7. Special Education
8. Urban Education

Coursework will be offered by varied delivery models, including in-person class sessions, online activities, a week-long intensive on-ramp experience, and applied experiences. Integrating diverse learning environments offers a range of structures and opportunities for doctoral students and faculty to form and access "communities of practice" face-to-face in a classroom or via Canvas (discussion boards, wikis, blogs, Zoom, etc.). Communities of practice are intentionally created collaborative learning environments that extend and enrich intellectual discourse within a socially constructed space. This flexible structure is especially important for part time doctoral students to thrive as scholarly practitioners.

A school-wide EdD admissions committee reviews all applications for the EdD degree program. The prospective advisor also reviews the application to affirm the match between student and faculty interests. A 3.5 master's GPA is recommended and GRE scores are not required. International student admission requires a TOEFL score of 100 on the internet-based test with a minimum of 21 on each subtest, 240 on the computer-based test, or 600 on the paper-based test.

Acceptance of Transfer Credits

EdD students apply 24 post-baccalaureate credits for transfer from other institutions in keeping with University-wide requirements (*see Acceptance of Transfer Credits*). Students may apply six additional credits of directly equivalent courses with advisor approval. The first 24 post-baccalaureate credits will be automatically applied by the School of Education records office. Any additional credits must be submitted using the "Course Credits Accepted" form found on the School of Education Policies and Forms page. These credits must be equivalent to applicable University of Pittsburgh courses and approved by the student's advisor. Grades (and quality points) are not recorded for credits accepted by transfer.

Each course transferred must meet the following conditions:

- The course grade must be at least B (GPA=3.0) or its equivalent.
- The course must be approved for equivalent graduate degrees at the institution, extension, or off-campus center of other institutions at which the course was taken.

Course Requirements

The EdD includes the following degree requirements:

- EdD Foundations Courses (12 credits)
- EdD Practitioner Inquiry Courses (12 credits)
- Academic Major Courses (12 credits)
- Additional Relevant Courses (24 transfer credits)
- Supervised Practitioner Inquiry (3 credits)
- Dissertation-in-Practice Overview Seminar (3 credits)
- Dissertation in Practice (10 credits)

Students seeking certification in the Superintendent Letter of Eligibility or Supervisor of Special Education additionally enroll in internship credits (3 credits) to meet Pennsylvania Department of Education requirements.

To satisfy adequate progress toward their degree program, the Doctor of Education student should resolve Incomplete grades in a timely manner. To maintain adequate progress, an EdD student cannot have more than two Incomplete grades at any one time and may be prevented from registering for future coursework if they receive a third Incomplete grade.

Practical Requirement for Professional Doctoral Degree

The EdD degree requires students to complete inquiry activities in their place of professional practice in the four courses in the Practitioner Inquiry sequence. These activities provide the opportunity for EdD students to meet the university requirement that students in professional doctoral degrees engage in internship, practicum, or clinical experiences. EdD students pursuing Pennsylvania state certification

(Superintendent Letter of Eligibility or the Supervisor of Special Education) are required to complete an additional three-credit internship course (in addition to the 76 credits required for the EdD degree) to meet PA Department of Education requirements.

Statute of Limitations

From the student's initial registration for doctoral study at the University of Pittsburgh, all requirements for the EdD must be completed within a period of 12 years (or 10 years if the student has received credit for a master's degree appropriate to the field of study).

Under certain conditions, the dean or designated associate or assistant dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean or the designated associate dean or assistant dean. The statute of limitations can only be extended once.

Advancement to Doctoral Study

To advance to doctoral study, a student must:

- be admitted to full graduate status;
- have completed at least 15 post-master's graduate credits at the University of Pittsburgh;
- have earned a GPA of at least 3.000 (transfer credits not considered) in post-master's graduate study at the University of Pittsburgh; and
- have successfully completed the comprehensive examination as described below.

Comprehensive Examination

Completion of EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY constitutes successful completion of the comprehensive exam. Successful completion of this course signals that the student has completed the EdD program of courses and is ready to embark upon their Dissertation in Practice.

Dissertation in Practice

The Dissertation in Practice denotes a culminating, doctoral- level project that focuses on addressing a problem of practice. Unlike a PhD Dissertation, which focuses on original research, the Dissertation in Practice is an applied improvement project, rooted in a student's context (most often their place of employment). Students prepare for this improvement project in their first and second years and carry out the project in their third year. We require students to provide Institutional Review Board (IRB) approval-or evidence that IRB review is not required-before carrying out the proposed project. The culmination of the Dissertation in Practice is the defense meeting, held in students' final semester, in which the committee comes together with the student to discuss the project. The Dissertation in Practice is ultimately put into Electronic Thesis and Dissertation (ETD) format and uploaded to ProQuest at Pitt, making the document publicly available.

Doctoral Committee

EdD doctoral committees are constructed in consultation between the student and their advisor. Committees must consist of at least three members. Some students choose to invite a 4th member in order to round out the committee's expertise. The following requirements apply:

- All members must have earned a terminal degree (EdD, PhD, JD, MD, MFA, etc.)
- 1 member must be the student's designated School of Education advisor.
- 1 additional member must be full-time faculty of the School of Education: tenured, tenure stream, or appointment stream; one may be recent emeritus (i.e., retired within 2 years).
- 1 member must be a practitioner (currently or previously active) who holds expertise or a faculty member who has appropriate practitioner knowledge related to the student's problem of practice*.

*A practitioner (currently or previously active) is defined as a person engaged in (or previously engaged in) the activities related to the problem of practice addressed in the Dissertation in Practice. A practitioner may also be someone who has appropriate practitioner knowledge related to the problem of practice addressed in the Dissertation in Practice. The goal for having this member serve on the Committee is to benefit and advance the student's work by providing specialized expertise and perspectives relevant to practice. This person will facilitate the project by serving on the committee and advising the student in their study. No particular affiliation is required for the practitioner committee member.

The proposed committee goes through the following approval process: it is first approved by the student's advisor, then the coordinator of the student's major, and finally, the Director of the EdD. Any subsequent changes in the doctoral committee must go through this same process.

The doctoral committee will decide on the acceptability of the final Dissertation in Practice submission, with each committee member indicating whether they deem the project to be a pass or fail.

Additional Program Requirements

The following requirements are designed to help the students successfully move toward their Dissertation in Practice: the Problem of Practice Statement, guidelines and supports around assembling a doctoral committee, and the Dissertation Overview meeting in which a student's project plan is presented.

Submission Requirements and Fees

For general information concerning preparation of the dissertation, refer to the ETD website.

Generally, final version, ETD-formatted dissertations must be submitted to the Office of Student and Career Services at least six weeks prior to the end of the term of graduation, in accordance with the date specified in the Doctoral Graduation Checklist, which can be found on the School of Education's Graduation web page. All requirements of the Doctoral Graduation Checklist must be completed by their due dates in order for a student to graduate.

Doctor of Philosophy Specific Requirements

The Doctor of Philosophy degree in the School of Education is a research-intensive training model that prepares students to be nationally competitive for research careers in both academic and non-academic institutions. International students require a minimum of 100 or higher TOEFL composite score with sub-scores of 21 or higher or 7.0 IELTS with sub-scores of 6.0 or higher. After screening, certain applicants may be interviewed by faculty prior to a final decision on admission.

The students are admitted into one of the following majors:

- Education Policy
- Exercise Physiology
- Higher Education
- Human Development and Learning Sciences
- Language, Literacy & Culture
- Special Education
- Urban Education

Plan of Studies

Prior to advancement to the formal stage called Doctoral Study, the student, in consultation with the academic advisor, must complete a plan of studies that conforms to program requirements. The plan of studies is approved by the academic advisor and the department chair. PhD students are required to file a Plan of Studies during the first year in the program. In formulating the doctoral Plan of Studies, both the student and the academic advisor must pay close attention to these School of Education requirements as well as requirements specific to the particular program or department in which the degree specialization is taken. It is the responsibility of the student to learn particular requirements from the academic advisor. The completion of requirements for the doctorate must be satisfied through registration at the University of Pittsburgh.

Courses approved for transfer credit must be listed individually on the plan of studies. Also, when a student plan of studies lists directed study credits, a directed study agreement form must be completed in the online system at the time of registration. A brief explanation of the directed study will be required, and then electronic signatures will be obtained. If an elective in-person course is available during the student's plan of studies that aligns with the student's interests, then students are encouraged to enroll in the course rather than ask a faculty member to supervise a directed study in the same topic. In general, enrollment in directed study credits should be used sparingly to increase classroom enrollments and reduce faculty burden.

Any changes in the plan of studies must be approved by the academic advisor and the department chair and must conform to program requirements. At the time of graduation, completed courses must comply with the approved plan of studies.

Credit Requirements

The PhD degree requires a minimum of 72 credits in a degree program beyond the baccalaureate. Doctoral-level courses are numbered in the 3000 series, but courses numbered in the 2000 series may also be appropriate for doctoral study if approved on a plan of studies. Generally, courses numbered below 2000 do not meet the minimum requirements for doctoral study. Exceptions require the approval of the program or department. No lower-level undergraduate course (numbered 0001-0999) may be applied toward a doctoral degree. The University Catalog lists specific degree requirements.

Acceptance of Transfer Credits

PhD students may apply a maximum of 30 post-baccalaureate credits for transfer from other institutions in keeping with University-wide requirements (*see "Acceptance of Transfer Credits" and "Credit Requirements"*). Both applicants for admission and continuing University of Pittsburgh doctoral students seeking acceptance of transfer credits toward a doctoral degree must submit their transcripts with a completed "Course Credits Accepted" form, available on the School of Education website. When approved, transfer credits must appear on the student's Plan of Studies. The registrar, after notification of acceptance of transfer credits, will enter the individual transfer credits on the student's transcript. Grades (and quality points) are not recorded for credits accepted by transfer.

Each course transferred must meet the following conditions:

- The course grade must be at least B (GPA = 3.00) or its equivalent.
- The course must be judged relevant to a student's doctoral Plan of Studies by the program or department.
- Course must have been completed in a degree granting graduate program at another nstitution and should be evaluated for acceptability as transfer credit early in the student's graduate career subject to University policy, course equivalencies, and individual school requirements.

The completion of requirements for the doctorate must be satisfied through registration at the University of Pittsburgh. However, under certain circumstances, a student may earn in an accredited graduate institution other than the University of Pittsburgh a limited number of credits toward a doctoral degree.

Doctoral students desiring to take courses at another institution following admission to the University of Pittsburgh should review the course descriptions and receive approval from their academic advisors and program or department prior to registering for those courses if they wish to ensure that these credits will be acceptable for transfer. See University Regulations about Acceptance of Transfer Credit.

Residency

According to University policy, students seeking the PhD degree are required to engage in a minimum of one term of full-time doctoral study. This excludes any other employment, except as approved by their departments or programs. Full-time doctoral study involves enrolling in at least 9 credits of coursework during one term from students' plans of study and can include fulfillment of supervised research activities. Enrollment in FTDG 0000 or SMSG 3666 does not fulfill the residency requirement.

Supervised Research

PhD students are required to complete a supervised research experience that results in a written report of the experience. Enrollment for six credits of supervised research, internship, practicum, or directed study is required. To satisfy the supervised research requirement, PhD students complete Milestones 1 and 2, as described below.

Statute of Limitations

From the student's initial registration for doctoral study at the University of Pittsburgh, all requirements for the PhD must be completed within a period of 10 years (or 8 years if the student has received credit for a master's degree appropriate to the field of study).

Under certain conditions, the dean or designated associate or assistant dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean or the designated associate dean or assistant dean. The statute of limitations can only be extended once.

Doctoral Preliminary Evaluation

Each doctoral student is required to complete a preliminary evaluation designed to assess the breadth of the student's knowledge of the discipline, the student's achievement during the initial phase of graduate study, and the student's potential to apply research methods independently. The preliminary evaluation is administered by the program or department to which the student has been admitted. The preliminary examination (Milestone 1) is a proposal for a pre-dissertation research project. At the beginning of the second full year, the student submits a proposal for their pre-dissertation research project. The student's pre-dissertation project committee is composed of three

faculty (the advisor and two additional faculty). The student defends the proposal in a meeting of the committee, and the proposal needs to be approved by the unanimous vote of the committee.

Pre-Dissertation Research Project

At the beginning of the third full year, the student submits the completed pre-dissertation research project (Milestone 2) for review by the student's pre-dissertation project committee. The student defends the completed project in a meeting of the committee, and the project needs to be approved by the unanimous vote of the committee.

Advancement to Doctoral Study

To advance to doctoral study, a student must:

- be admitted to full graduate status;
- have completed at least 15 post-master's graduate credits at the University of Pittsburgh;
- have earned a GPA of at least 3.000 (transfer credits not considered) in post-master's graduate study at the University of Pittsburgh;
- have a Plan of Studies approved by the academic advisor and the department chair on file in the School of Education Records Office; and
- have passed the doctoral preliminary evaluation.

Comprehensive Examination

After advancement to doctoral study, each doctoral student is required to take a comprehensive examination. The comprehensive examination is constructed, administered, and scored by the department or program to which the student has been admitted. Procedures and schedules of administration are available from the department or program.

In accordance with University graduate program regulations, the comprehensive examination should be administered at approximately the time of the completion of the formal course requirements and should be passed at least eight months before the scheduling of the final oral examination and dissertation defense. In no case may the student graduate in the same term in which the comprehensive examination is taken. After the comprehensive examination is passed, the student has the remaining time specified by the statute of limitations to complete all remaining doctoral degree requirements. Satisfactory completion of the doctoral comprehensive examination requirement is part of the demonstration of doctoral competency.

When students have eight credits or fewer of coursework to complete, they can begin to register for dissertation guidance, even if they have not yet passed the comprehensive examination.

Doctoral Competency

Each doctoral student is required to demonstrate doctoral competency by satisfactorily completing the pre-dissertation project requirement and doctoral comprehensive examination.

Doctoral Committee

For the PhD student, the doctoral committee consists of the research advisor and at least three other members, including at least one member from another department inside or outside the School of Education at the University of Pittsburgh or from an appropriate graduate program at another academic institution. The research advisor and a majority of the total committee must be full or adjunct members of the graduate faculty of the University of Pittsburgh. Current graduate faculty membership may be found on the University's Graduate Faculty Dashboard website.

The program faculty, the department chairperson, and the dean/assistant dean must approve membership on and subsequent changes in the doctoral committee. The student initiates the "Proposed Doctoral Committee" form, using the online milestone system, to obtain the signatures of the program coordinator, the department chairperson, and the dean or designated associate dean or assistant dean. The dean or designated associate dean or assistant dean must give final approval of the doctoral committee before the overview examination may be scheduled.

Dissertation Overview

The dissertation overview is a written proposal and must be presented to the doctoral committee for approval after doctoral competency has been demonstrated.

Overview Examination

The overview examination is conducted by the doctoral committee, is chaired by the research advisor, and is open to any faculty member of the graduate faculty of the University wishing to attend. Although any faculty member may participate in the examination, only members of the doctoral committee may be present during the final deliberation and vote on approving the overview. The student initiates the "Dissertation Overview Examination and Advancement to Doctoral Candidacy" form, using the online milestone system, to obtain committee signatures. The committee must unanimously approve the overview in order for the student to be advanced to doctoral candidacy.

Dissertation

Students should review the information detailed under Dissertation and Abstract and Final Oral Examination for University-wide regulations regarding dissertations and dissertation defenses. School of Education-specific rules follow:

Dissertation Defense

The same rules apply here as detailed under the Overview Examination above.

Vote on the Dissertation Defense

Each member of the doctoral committee must approve the dissertation defense using the online milestone system and vote to pass or fail the student on the dissertation defense. If the decision of the committee is not unanimous, the case is referred to the Assistant Dean for Student Engagement for resolution.

Submission Requirements and Fees

For general information concerning preparation of the dissertation, refer to the ETD website.

Generally, final version, ETD-formatted dissertations must be submitted to the Office of Student and Career Services at least six weeks prior to the end of the term of graduation, in accordance with the date specified in the Doctoral Graduation Checklist, which can be found on the School of Education's Graduation web page. All requirements of the Doctoral Graduation Checklist must be completed by their due dates in order for a student to graduate.

Faculty

School of Education Faculty

Acevedo, Rosa - PhD, University of Minnesota Twin Cities

Akiva, Thomas Matthew Schweinh - PhD, University of Michigan
Alang, Sirry - PhD, University of Minnesota

Alazar, Ghirmay - PhD, University of Denver
Anderson, Eleanor - PhD, Northwestern University
Bachman, Heather - PhD, Loyola University of Chicago
Bagnato, Stephen - EdD, Pennsylvania State University
Benson, Richard - PhD, University of Illinois
Bleiberg, Josh - PhD, Vanderbilt University
Boulder, Tinukwa - PhD, Mississippi State University

Briones, César - PhD, Western Michigan University
Campbell, Shanyce L - PhD, University of North Carolina at Chapel Hill
Cavey, Mariko Yoshisato - University of California, San Diego
Chambers, April - PhD, University of Pittsburgh
Conway, Sheila J - PhD, Temple University
Correnti, Rip - PhD, University of Michigan
Crawford, Patricia A - PhD, Pennsylvania State University
Dancy, Elon - PhD, Louisiana State University

D'Andrea, Frances Mary - PhD, University of Pittsburgh
Davis, Kelliann K. - PhD, University of Pittsburgh
DeAngelo, Linda Theresa - PhD, University of California, Los Angeles
Delale O'Connor, Lori A - PhD, Northwestern University
Dias, Beatrice - PhD, Carnegie Mellon University
Dostillo, Lina - EdD, Duquesne University
Eddy, Colleen - PhD, University of Missouri
Fernandez, Loretta - PhD, University of Pittsburgh
Files, Martez Devonte - PhD, University of Alabama at Birmingham
Fonzi, Laura A - Master's, University of Pittsburgh
Gabel, Gary - EdD, University of Missouri
Galla, Brian Matthew - PhD, University of California, Los Angeles
Gallen, Robert Timothy - PhD, University of Kentucky
Godley, Amanda Joan - PhD, University of California, Berkeley

Gonzalez, Sergio - PhD, Claremont Graduate University
Gordon, Benjamin DH - PhD, University of North Carolina at Charlotte
Gunzenhauser, Michael G - PhD, University of North Carolina at Chapel Hill
Hays, Anne Elizabeth - PhD, University of Pittsburgh
Hendry, Heather Jean - PhD, University of Pittsburgh

Higgins, Johanna - PhD, University of PIttsburgh

Ibrahim, Deanna - PhD, New York University
Jacobs, Katrina Bartow - PhD, University of Pennsylvania
Kelly, Sean Patrick - PhD, University of Wisconsin-Madison
Kline, Christopher E - PhD, University of South Carolina
Kopparla, Mahati - PhD, Texas A&M University
Kostewicz, Douglas E - PhD, Pennsylvania State University
Lee, Bridget K. - PhD, University of Texas, Austin
Lee, Duck-chul - PhD, Seoul National University
Matsumura, Lindsay Clare - PhD, University of California, Los Angeles
McCambly, Heather Nicole - PhD, Northwestern University
McCarthy, Tessa Shannon - PhD, Vanderbilt University
McLaughlin, Kevin - Master's, University of Pittsburgh

Mehls, Kelton - PhD, Middle Tennessee State University

Nachman, Brett - PhD, University of Wisconsin-Madison
Nagle, Elizabeth - PhD, University of Pittsburgh

Nelson, Melissa - EdD, University of Pittsburgh

Neupauer, Nicholas - EdD, West Virginia University
Ortiz, Lisa - PhD, University of Illinois
Osai, Esohe R. - PhD, University of Michigan
Patel, Leigh - PhD, University of Nevada, Las Vegas
Perry, Jill Alexa - PhD, University of Maryland, College Park
Petrosky, Anthony R - EdD, State University of New York at Buffalo
Porter, Maureen K - PhD, Stanford University
Qin, Xu - PhD, University of Chicago
Quigley, Cassie Fay - PhD, Indiana University
Rainey, Emily C. - PhD, University of Michigan
Ralston, Tom W. - EdD, Youngstown State University

Recch, Filipe - PhD, Stanford University
Robertson, Rachel E - PhD, Vanderbilt University
Rocco, Bart - EdD, University of Pittsburgh

Ross, Sharon Elizabeth - PhD, Pennsylvania State University
Schuster, Maximilian Thomas - PhD, University of Pittsburgh

Scott, Khirsten - PhD, University of Louisville
Shafiq, Mohammad Najeeb - PhD, Columbia University
Sherman, Sally Anne - PhD, University of Pittsburgh
Smith, Philandra Samantha - PhD, Syracuse University
Sobolak, Michelle J - PhD, University of Pittsburgh
Sprowls-Repcheck, Carma R - PhD, University of Pittsburgh

Trahan, Keith Wayne - PhD, University of Pittsburgh
Vasudevan, Veena - PhD, University of Pennsylvania
Vaught, Sabina - PhD, University of Wisconsin-Madison
Wanless, Shannon - PhD, Oregon State University
Weddle, Hayley - PhD, University of California, San Diego
Wilson, Zachary Joseph - PhD, University of Pittsburgh

Wynkoop, Kaylee - PhD, University of Pittsburgh
Zamani-Gallaher, Eboni - PhD, University of Illinois Urbana-Champaign

Program and Course Offerings

The School of Education is organized into three academic departments:

Doctoral

Human Development and Learning Sciences, PhD

The mission of the Human Development and Learning Sciences (HDLS) doctoral program is to produce a yearly cohort of nationally competitive research scholars who have the training, track record, and vision to become leaders in child, youth, family, and adult development and learning across diverse settings. The HDLS program is based on the belief that understanding teaching, facilitating, learning, and development in formal and informal learning environments is best undertaken as an interactive system, and that an integrated and coordinated interdisciplinary approach is best suited to understand, design and implement change. The program draws from scholarship in education, developmental psychology, and cognitive psychology and emphasizes the importance of community and school partnerships to generate knowledge that contributes toward a more just and humane society. HDLS centers four pillars to guide students and utilize faculty expertise: (1) Teaching, Leading, and Facilitation, (2) Cultural and Social Contexts, (3) Developmental Trajectories and Transitions, and (4) Research Designed for Change. These pillars ground the overall work as multidisciplinary as well as inclusive of formal and informal learning spaces at varying developmental thresholds and intersections. The pillars also emphasize combining traditional psychological measures with the sociocultural realities students and faculty embody on an everyday basis. Lastly, HDLS focuses on change and transformation and the research methods to understand and support that change. The goal is to cultivate the next generation of researchers who embrace complexity and collaboration, and who pursue innovative solutions to the world's most challenging problems.

Innovative features of the HDLS PhD Program:

- Immersion in rigorous interdisciplinary research and training experiences from the first day in the program.
- Access to Pittsburgh's rich talent pool of analysts, researchers and practitioners including research scientists at the Learning Research and Development Center (LRDC) and community-embedded staff and researchers at the Office of Child Development.
- Active involvement in ongoing research projects.
- Rigorous training in quantitative, qualitative, and mixed research methods.

For additional degree requirement information, refer to the School of Education section on Doctoral Degree Requirements.

HDLS Core (12 credits)

- HHD 3001 - MAJOR TRANSITIONS IN CONTEXT
- HHD 3002 - COMMUNITY ENGAGED SCHOLARSHIP
- TLL 3025 - CONCEPTUALIZING AND ASSESSING CHANGE
- TLL 3026 - THEORETICAL PERSPECTIVES ON LEARNING

Seminar Courses (9 credits)

3 credits of First-Year Seminar and 6 credits of Writing Seminar (1 credit each semester). Students begin taking Writing Seminar during their second year of study and continue for six semesters.

First-Year Seminar:

EDUC 3101 - FIRST YEAR PHD SEMINAR (3 cr)

Writing Seminar:

TLL 3009 - HUMAN DEVELOPMENT LEARNING SCIENCES WRITING SEMINAR

Research Methods (18 credits)

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS
  9 credits Research Methods Electives - must be approved by advisor

Supervised Research (6 credits)

- HHD 3591 - SUPERVISED RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY
- TLL 3097 - SUPERVISED RESEARCH

Electives in Area of Specialization (27 credits)

Students will work with their advisor to plan a coherent set of electives for their scholarly development.

Doctoral Dissertation Research (0 credits)

Students enroll in FTDG 0000 to complete their dissertation studies.

Total Credits: 72

Department of Educational Foundations, Organization, and Policy

Programs within the Department of Educational Foundations, Organization, and Policy (EFOP) prepare graduates for careers in educational institutions and organizations. Our graduates work in formal and non-formal educational settings, including schools, higher education institutions, community agencies, policy organizations, and non-profit organizations. In our most advanced programs, students

are prepared for research and teaching careers in colleges and universities and for research and policy study careers in local, state, national, and international agencies.

General Contact Information

Chair: Lori Delale-O'Connor
Email: loridoc@pitt.edu
Phone: 412-624-1332

Department Address: 5900 Posvar Hall, 230 S. Bouquet St., Pittsburgh, PA 15260

Doctoral

Education Policy and Social Change, EdD

The EdD program in Education Policy and Social Change (EDPSC) is for the education professional interested in leading efforts to improve educational access, outcomes, and opportunities for all students. EDPSC students dig deeply into foundational issues in education, such as the meaning and value of education, education's role in society, the historical roots and significance of educational practices, the role of policy in educational change, and the significance of global trends in education access and equity. Faculty and students affiliated with the EDPSC Program ground their professional and scholarly work in multiple forms of evidence and use social science tools that lead to creative solutions, more equitable opportunities, and more socially just educational structures. Our EdD students work in varied formal and informal educational settings - K-12, higher education, community agencies, and non-profit organizations - and unite around the fundamental role that education plays in a diverse and globally-connected society.

The Education Policy and Social Change Doctor of Education (EDPSC EdD) program aligns with the mission/vision of the school of education in preparing students to be scholars, leaders, and change-makers in education and health, with a particular focus on equity and justice

EdD Curriculum

The EdD program is a three-year 76-credit program. Students are required to transfer 24 credits of relevant graduate work into the EdD program. The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation**: The EdD cohort participates in a virtual orientation in the spring (typically April) before the summer start of the program. Incoming students meet program faculty, current students/alumni, receive an overview of EdD program, participate in cohort-building activities and get an introduction to the summer "on-ramp" courses.
- **Intensive on-ramp**: The EdD cohort will participate in the first-year summer "on-ramp" courses which consist of three in-person Saturdays and a full-week, on-campus experience. The on-ramp consists of two courses-- Foundations 1 and Practitioner Inquiry 1 -- to give new students an immersive introduction to doctoral study, cohort collaborations, and program content. The one-week in-person experience typically takes place in June.
- **Hybrid seminars**: After the first summer on-ramp, students experience a hybrid learning model of education. Each semester courses are largely conducted asynchronously online which is supported through a once a month flipped classroom experience that takes place in-person (typically on Saturdays) on the Pittsburgh campus. Attendance at in-person, on campus sessions is required.

SCHEDULE (all courses are 3 credits unless otherwise noted)

Year 1: Summer	Year 1: Fall	Year 1: Spring

EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER	EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION Major Course 1	EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS Major Course 2
Year 2: Summer	**Year 2: Fall**	**Year 2: Spring**
EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY	EDUC 3006 - PRACTITIONER INQUIRY 2 Major Course 3	EDUC 3007 - PRACTITIONER INQUIRY 3 Major Course 4
Year 3: Summer	**Year 3: Fall**	**Year 3: Spring**
EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)

Foundation Courses: 12 Credits

- Foundations 1: EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER
- Foundations 2: EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- Foundations 3: EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION
- Foundations 4: EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses: 12 credits

- EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Supervised Practitioner Inquiry: 3 credits

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Dissertation-in-Practice Overview: 3 credits

- EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR

Guidance In Scholarly Practice: 10 credits

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Education Policy and Social Change Academic Major Courses (12 credits)

- EFOP 3006 - SOCIAL CHANGE IN LOCAL AND GLOBAL CONTEXTS
- EFOP 3017 - ORGANIZATIONS, NETWORKS, AND EDUCATION POLICY
- EFOP 3018 - ECONOMICS-INFORMED POLICY ANALYSIS
- EFOP 3019 - EDUCATIONAL IMPLEMENTATION AND EVALUATION FOR SOCIAL CHANGE

Transfer credits (24 credits)

Total Credits: 76

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of written dissertation in practice and defense

Education Policy, PhD

The Education Policy, PhD program provides students with foundational grounding in education policy analysis. Students learn frameworks and methods for evaluating how policies and systems produce educational opportunities and systemic inequities. Students gain a nuanced understanding of the education policy process including policy formulation, implementation, and evaluation, and the methodological approaches used to examine these processes and their effects. And students explore how the (re)design of policies and systems create substantive improvements in learning opportunities for students of all ages. The program includes core content in: education policy systems and implementation, disciplinary grounding, the social contexts of education, policy analysis methods, and electives exploring specific policy topics and issues. The flexible curricular design enables students to choose courses that match their interests. Through apprenticed research experiences, students gain expertise in policy analysis necessary to prepare them to do independent research and pursue careers in policy research.

For additional degree requirement information, refer to the School of Education section on Doctoral Degree Requirements.

Policy Core (6 credits)

- EFOP 3010 - EDUCATIONAL SYSTEMS, MACRO POLICY, AND POLITICS, PHD
- EFOP 3011 - EDUCATION POLICY IMPLEMENTATION: STUDENTS, FAMILIES, EDUCATORS, AND POLICYMAKERS, PHD SEMINAR

Program Electives (18 Credits)

Students select from a list of suggested courses in the overlapping thematic areas of Social Context, Education Policy, Comparative & International Education, and Higher Education. Students can mix and match thematic area to develop a plan of studies that works for their goals and interests. Students wishing to complete the optional area of concentration in Comparative & International Education need to meet the specific requirements indicated within that thematic area.

Social Context Thematic Area

- EFOP 2133 - GENDER AND EDUCATION
- EFOP 2305 - SOCIOLOGY OF EDUCATION
- EFOP 2306 - HISTORY OF EDUCATION
- EFOP 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- EFOP 2343 - EDUCATION AND CULTURE
- EFOP 2352 - ANTHROPOLOGY OF EDUCATION
- EFOP 2398 - ECONOMICS OF EDUCATION
- EFOP 3003 - THEORIES OF EDUCATIONAL INEQUALITY
- EFOP 3310 - PHILOSOPHY OF EDUCATION, EQUITY, AND JUSTICE

Education Policy Thematic Area

- EDUC 3501 - CRITICAL POLICY ANALYSIS

- EDUC 3505 - RESEARCH-PRACTICE PARTNERSHIPS: APPROACHES TO COLLABORATIVE DESIGN, INQUIRY & CHANGE
- EFOP 3095 - ORGANIZATINAL PERSPECTIVES ON EDUCATIONAL IMPROVEMENT
- EFOP 3141 - POLICY STUDIES IN HIGHER EDUCATION
- EFOP 3314 - EDUCATIONAL REFORM
- EFOP 3315 - EDUCATION POLITICS: POWER AND INEQUALITY IN K12 EDUCATION SYSTEMS
- TLL 3008 - EDUCATIONAL POLICY
- TLL 3021 - LEARNING SCIENCES AND EDUCATIONAL CHANGE
- TLL 3540 - DESIGN OF EDUCATIONAL SYSTEMS

Higher Education Thematic Area

- EFOP 2129 - SOCIAL JUSTICE IN HIGHER EDUCATION SETTINGS
- EFOP 3015 - ETHICAL ISSUES IN HIGHER EDUCATION
- EFOP 3131 - STUDENT, CAMPUS, AND SOCIETY
- EFOP 3141 - POLICY STUDIES IN HIGHER EDUCATION
- EFOP 3150 - FOUNDATIONS FOR THE STUDY OF HIGHER EDUCATION

Special Courses (these courses can be applied toward the Program Elective category with advisor permission)

- EFOP 2089 - SPECIAL TOPICS
- EFOP 2096 - INTERNSHIP IN EDUCATIONAL FOUNDATIONS, ORGANIZATIONS & POLICY
- EFOP 3089 - SPECIAL TOPICS
- EFOP 3098 - DIRECTED STUDY

Or Optional Area of Concentration: Comparative and International Education (18 credits)

Students can opt to add an area of concentration in Comparative and International Education. Students interested in pursuing a more generally-focused policy degree enroll in the Education Policy major with no ARCO. The Comparative and International area requires the following courses:

- EFOP 3085 - COMPARATIVE & INTERNATIONAL EDUCATION PHD SEMINAR (3 Credits Required)
- EFOP 2106 - INTERNATIONAL AND GLOBAL EDUCATION
- EFOP 2359 - GENDER, EDUCATION, & INTERNATIONAL DEVELOPMENT
- EFOP 2398 - ECONOMICS OF EDUCATION
- EFOP 3136 - COMPARATIVE HIGHER EDUCATION
- EFOP 3301 - SOCIAL THEORIES AND EDUCATION GLOBAL CONTEXT
- EFOP 3343 - COMPARATIVE EDUCATION

Supporting field (9 credits):

As an interdisciplinary program of study, PhD students in the Education Policy program are required to take 9 credits outside of the School of Education representing a coherent disciplinary or thematic focus. We encourage students to consult with their advisors about selecting courses that best align with their goals. Courses taken at a previous institution may be transferred to meet the Supporting Field requirement, if approved by the advisor. No modifications to this requirement are permitted, unless approved by a majority of the program faculty.

Research Methods (21 credits)

Students take a total of 7 courses (21 credits) including the schoolwide, required PhD research methods core and 12 credits of additional courses based on interests.

Required Research Methods Courses (9 credits):

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

Elective Research Methods courses taught in the School of Education:

- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2205 - FIELD METHODS
- EDUC 3000 - ADVANCED APPLIED STATISTICAL ANALYSIS
- EDUC 3106 - ADVANCED APPLIED QUALITATIVE ANALYSIS
- EDUC 3107 - WAYS OF KNOWING
- EDUC 3501 - CRITICAL POLICY ANALYSIS
- EDUC 3503 - HISTORICAL RESEARCH ANALYSIS AND ARCHIVAL METHODS
- EDUC 3505 - RESEARCH-PRACTICE PARTNERSHIPS: APPROACHES TO COLLABORATIVE DESIGN, INQUIRY & CHANGE
- EDUC 3506 - MIXED METHODS RESEARCH
- EDUC 3418 - CAUSAL MODERATION AND MEDIATION ANALYSIS
- EFOP 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EFOP 2019 - STATISTICS 2: ANALYSIS OF VARIANCE
- EFOP 2030 - EXPERIMENTAL DESIGN
- EFOP 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
- EFOP 2353 - APPLIED ANTHROPOLOGY OF EDUCATION
- EFOP 2410 - APPLIED REGRESSION ANALYSIS
- EFOP 3012 - QUALITATIVE DATA MANAGEMENT, ANALYSIS, AND PRESENTATION
- EFOP 3201 - INTRODUCTION TO EDUCATIONAL EVALUATION
- EFOP 3208 - CASE STUDY METHODS IN EDUCATION
- EFOP 3408 - HIERARCHICAL LINEAR MODELING
- EFOP 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS
- EFOP 3472 - CAUSAL INFERENCE IN EDUCATIONAL RESEARCH
- TLL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
- TLL 3003 - RESEARCH INTERVIEWING

  Students may take additional Research Methods courses outside of the School of Education with advisor approval.

Additional Graduate-level Electives (9 credits):

Students take 9 additional graduate-level electives. They can be from the program, the School of Education, or any outside area.

Supervised Research and First-Year Seminar (9 Credits)

First-Year Seminar (3cr):

EDUC 3101 - FIRST YEAR PHD SEMINAR (3cr)

or

EDUC 3102 - FIRST YEAR SEMINAR 1 (1cr) **and** EDUC 3105 - FIRST YEAR SEMINAR 2 (2cr)

Supervised Research (6 cr):

EFOP 3097 - SUPERVISED RESEARCH

Dissertation (0 Credits)

Students enroll in FTDG 0000 to complete their dissertation studies.

- FTDG 0000 - FULL-TIME DISSERTATION STUDY

Total Credits: 72

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of written dissertation and defense

Higher Education, EdD

The Doctor of Education (EdD) in Higher Education program offers a rigorous blend of theory, knowledge, and applied research to cultivate leaders who can affect positive, equity-informed, data-driven change within their institutions.

Through collaboration with a supportive interdisciplinary cohort, students will develop critical leadership attributes by engaging in thoughtful discussion of critical readings, analyzing case studies, conducting self-assessment profiles, and applying leadership and research skills in real-world field settings.

The major is part of the school's Doctor of Education (EdD) program, which has a variety of majors to serve professionals from various fields. Grounded in the principles of improvement science, this program will equip you to address complex problems of practice by engaging in systems-thinking to identify problems, develop solutions, and conduct iterative processes of testing and learning. Your leadership strategies and skills will ultimately be refined to promote institutional improvement, accountability, and transparency.

Students will learn how to:

- Examine and implement the measures foundational to institutional effectiveness
- Learn to apply evidence-based planning
- Lead within higher education environments that demand accountability grounded in equity
- Engage in improving eadership practice through a commitment to research and real-world problem-solving

This program will empower students to become the best leader they can be, driving positive, sustainable change within their organizations.

EdD Curriculum

The EdD program is a three-year 76-credit program. Students are required to transfer 24 credits of relevant graduate work into the EdD program. The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation**: The EdD cohort participates in a virtual orientation in the spring (typically April) before the summer start of the program. Incoming students meet program faculty, current students/alumni, receive an overview of EdD program, participate in cohort-building activities and get an introduction to the summer "on-ramp" courses.
- **Intensive on-ramp**: The EdD cohort will participate in the first-year summer "on-ramp" courses which consist of three in-person Saturdays and a full-week, on-campus experience. The on-ramp consists of two courses-- Foundations 1 and Practitioner Inquiry 1 -- to give new students an immersive introduction to doctoral study, cohort collaborations, and program content. The one-week in-person experience typically takes place in June.
- **Hybrid seminars**: After the first summer on-ramp, students experience a hybrid learning model of education. Each semester courses are largely conducted asynchronously online which is supported through a once a month flipped classroom experience that takes place in-person (typically on Saturdays) on the Pittsburgh campus. Attendance at in-person, on campus sessions is required.

SCHEDULE (all courses are 3 credits unless otherwise noted)

Year 1: Summer	**Year 1: Fall**	**Year 1: Spring**
EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER	EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION Major Course 1	EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS Major Course 2
Year 2: Summer	**Year 2: Fall**	**Year 2: Spring**
EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY	EDUC 3006 - PRACTITIONER INQUIRY 2 Major Course 3	EDUC 3007 - PRACTITIONER INQUIRY 3 Major Course 4
Year 3: Summer	**Year 3: Fall**	**Year 3: Spring**
EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)

Foundation Courses: 12 Credits

- Foundations 1: EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER
- Foundations 2: EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- Foundations 3: EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION
- Foundations 4: EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses: 12 credits

- EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Supervised Practitioner Inquiry: 3 credits

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Dissertation-in-Practice Overview: 3 credits

- EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR

Guidance In Scholarly Practice: 10 credits

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Higher Education Academic Major Courses (12 credits)

- EFOP 3104 - INCLUSIVE LEADERSHIP AND STRATEGY IN HIGHER EDUCATION
- EFOP 3129 - HIGHER EDUCATION RESOURCE MANAGEMENT
- EFOP 3209 - EQUITY-BASED ASSESSMENT IN HIGHER EDUCATION
- EFOP 3210 - COMPLEX CASES FOR HIGHER EDUCATION LEADERS

Transfer credits (24 credits)

Total Credits: 76

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of written dissertation in practice and defense

Higher Education, PhD

The PhD in Higher Education is committed to advancing scholarship, research, and practice in the field of higher education. The program is focused on critical scholarship and centers equity, inclusion, and justice. Students have research interests ranging from student access to student outcomes, student development and affairs, faculty, organizations, and administration, community colleges and community college leadership, and policy.

The PhD degree program in higher education includes a core set of courses designed for students to gain an understanding of historical, political, philosophical, and social elements that shape and continue to reshape higher education. The curriculum is designed to ground students in the study of higher education as a discipline and critical scholarship within the field. Students develop an area of research specialization. The curriculum in higher education is complemented by courses within other programs in the Educational Foundations, Organizations, and Policy Department and School of Education. In addition, through a strong focus within the program on rigorous methodological training, students gain competency in both quantitative and qualitative research methods and take advanced courses in the methodological approaches they plan to utilize in their research.

First-Year Seminars (3 Credits)

EDUC 3101 - FIRST YEAR PHD SEMINAR (3 cr)

- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Required Courses (21 credits)

- EFOP 2055 - STUDENT DEVELOPMENT THEORY
- EFOP 2131 - HIGHER EDUCATION ADMINISTRATION
- EFOP 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- EFOP 3141 - POLICY STUDIES IN HIGHER EDUCATION
- EFOP 3150 - FOUNDATIONS FOR THE STUDY OF HIGHER EDUCATION
- EFOP 3151 - THEORETICAL FRAMEWORKS FOR THE STUDY OF HIGHER EDUCATION
- EFOP 3153 - RESEARCH PERSPECTIVES ON DIVERSITY, EQUITY, AND INCLUSION IN HIGHER EDUCATION

Electives (24 Credits)

Students enroll for 24 credits of electives, including 12 credits of higher education courses taught in the program. Program courses include but are not limited to the following:

- EFOP 3130 - FACULTY, ADMINISTRATION, AND GOVERNANCE IN HIGHER EDUCATION
- EFOP 3131 - STUDENT, CAMPUS, AND SOCIETY
- EFOP 3132 - THE IMPACTS OF COLLEGE ON STUDENTS
- EFOP 3133 - CONTEMPORARY ISSUES IN RACIALIZATION, CULTURE, AND IDENTITY IN US HIGHER EDUCATION
- EFOP 3134 - CONTEMPORARY LATINX ISSUES IN US HIGHER EDUCATION
- EFOP 3136 - COMPARATIVE HIGHER EDUCATION
- EFOP 3137 - CULTURE, INNOVATION & ORGANIZATION PERFORMANCE
- EFOP 3138 - GENDER AND SEXUALITY STUDIES IN HIGHER EDUCATION
- EFOP 3139 - LEGAL ASPECTS OF HIGHER EDUCATION
- EFOP 3141 - POLICY STUDIES IN HIGHER EDUCATION
- EFOP 3142 - CRITICAL ORGANIZATIONAL THEORY IN HIGHER EDUCATION
- EFOP 3143 - STUDYING COMMUNITY COLLEGES IN SOCIETY
- EFOP 3144 - FINANCE, FUNDING, AND EQUITY IN HIGHER EDUCATION
- EFOP 3150 - FOUNDATIONS FOR THE STUDY OF HIGHER EDUCATION
- EFOP 3151 - THEORETICAL FRAMEWORKS FOR THE STUDY OF HIGHER EDUCATION
- EFOP 3153 - RESEARCH PERSPECTIVES ON DIVERSITY, EQUITY, AND INCLUSION IN HIGHER EDUCATION

Research Methodology (18 credits)

Students enroll for 18 credits of research methdology, including:

Required courses (9 credits):

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

Electives in Research Methodology (9 credits):

- EDUC 3000 - ADVANCED APPLIED STATISTICAL ANALYSIS
- EDUC 3106 - ADVANCED APPLIED QUALITATIVE ANALYSIS
- EDUC 3107 - WAYS OF KNOWING
- EDUC 3501 - CRITICAL POLICY ANALYSIS
- EDUC 3505 - RESEARCH-PRACTICE PARTNERSHIPS: APPROACHES TO COLLABORATIVE DESIGN, INQUIRY & CHANGE
- EDUC 3506 - MIXED METHODS RESEARCH
- EFOP 3012 - QUALITATIVE DATA MANAGEMENT, ANALYSIS, AND PRESENTATION
- EFOP 3201 - INTRODUCTION TO EDUCATIONAL EVALUATION
- EFOP 3209 - EQUITY-BASED ASSESSMENT IN HIGHER EDUCATION
- EFOP 3408 - HIERARCHICAL LINEAR MODELING
- EFOP 3417 - STRUCTURAL EQUATION MODELING
- EFOP 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS
- EFOP 3472 - CAUSAL INFERENCE IN EDUCATIONAL RESEARCH
- TLL 3003 - RESEARCH INTERVIEWING

Supervised Research (6 credits)

- EFOP 3097 - SUPERVISED RESEARCH

Dissertation Research (0 credits)

- FTDG 0000 - FULL-TIME DISSERTATION STUDY

Total Credits: 72

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of written dissertation and defense

Urban Education, EdD

The EdD in Urban Education is designed for experienced education professionals ready to advance into transformative leadership roles within urban communities. This major prepares practitioners to address the complex, interconnected challenges of teaching, learning, and organizational leadership in urban contexts, from PreK-12 school systems to community-based organizations and beyond. Graduates are equipped to lead across a broad range of settings, including: Curricular and instructional leadership within schools and districts; Out-of-school and informal learning organizations, such as museums, nonprofits, and youth development programs; University outreach and extension programs serving urban communities; and Policy, research, and advocacy roles that shape education at the systems level.

The major is offered through the school's Doctor of Education (EdD) program, which serves professionals across a wide range of fields and areas of expertise. Rooted in practice, the EdD develops leaders who can design, implement, and critically evaluate educational initiatives with a deep commitment to equity, access, and community impact in urban environments.

EdD Curriculum

The EdD program is a three-year 76-credit program. Students are required to transfer 24 credits of relevant graduate work into the EdD program. The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation**: The EdD cohort participates in a virtual orientation in the spring (typically April) before the summer start of the program. Incoming students meet program faculty, current students/alumni, receive an overview of EdD program, participate in cohort-building activities and get an introduction to the summer "on-ramp" courses.
- **Intensive on-ramp**: The EdD cohort will participate in the first-year summer "on-ramp" courses which consist of three in-person Saturdays and a full-week, on-campus experience. The on-ramp consists of two courses-- Foundations 1 and Practitioner Inquiry 1 -- to give new students an immersive introduction to doctoral study, cohort collaborations, and program content. The one-week in-person experience typically takes place in June.
- **Hybrid seminars**: After the first summer on-ramp, students experience a hybrid learning model of education. Each semester courses are largely conducted asynchronously online which is supported through a once a month flipped classroom experience that takes place in-person (typically on Saturdays) on the Pittsburgh campus. Attendance at in-person, on campus sessions is required.

SCHEDULE (all courses are 3 credits unless otherwise noted)

Year 1: Summer	Year 1: Fall	Year 1: Spring

EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER	EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION Major Course 1	EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS Major Course 2
Year 2: Summer	**Year 2: Fall**	**Year 2: Spring**
EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY	EDUC 3006 - PRACTITIONER INQUIRY 2 Major Course 3	EDUC 3007 - PRACTITIONER INQUIRY 3 Major Course 4
Year 3: Summer	**Year 3: Fall**	**Year 3: Spring**
EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)

Foundation Courses: 12 Credits

- Foundations 1: EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER
- Foundations 2: EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- Foundations 3: EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION
- Foundations 4: EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses: 12 credits

- EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Supervised Practitioner Inquiry: 3 credits

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Dissertation-in-Practice Overview: 3 credits

- EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR

Guidance In Scholarly Practice: 10 credits

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Urban Education Academic Major Courses (12 credits)

- EDUC 3010 - INTRODUCTION TO THE HISTORY & SOCIAL CONTEXTS OF URBAN EDUCATION
- EDUC 3015 - CRITICAL PERSPECTIVES IN URBAN EDUCATION
- EDUC 3011 - PEDAGOGIES AND PRACTICES IN URBAN EDUCATION
- EDUC 3014 - URBAN SCHOOLS, LAW, & SOCIAL POLICY

Transfer credits (24 credits)

Total Credits: 76

Urban Education, PhD

The PhD in Urban Education prepares scholars to conduct rigorous, justice-oriented research at the intersection of education, law, policy, and the social and cultural forces that shape learning in urban communities. The program takes seriously the intellectual traditions, lived experiences, and self-determined educational practices of the communities it serves, centering Black and Indigenous knowledge systems as foundational to the scholarly enterprise.

Doctoral students develop deep expertise in critical research methodologies, with opportunities to specialize across a spectrum of approaches. This methodological rigor is embedded within a transdisciplinary, inquiry-driven curriculum that challenges scholars to examine how broader sociopolitical, economic, and historical forces structure schooling and learning across K-16 contexts. The program cultivates scholars through multiple interconnected intellectual spaces, including: Credit-bearing coursework, Research collaborations, and Writing groups and peer communities Graduates are prepared for research careers in both academic institutions and non-academic settings, including think tanks, policy organizations, advocacy groups, and community-based research centers.

The program draws on connections to the Center for Urban Education and longstanding relationships with local community residents, while extending its reach to social actors, movements, and institutions across the country and around the world. Pittsburgh serves not just as a backdrop, but as a living laboratory for the kinds of questions, partnerships, and possibilities that define urban education scholarship at its best.

Program Core (13 credits)

Foundations of Education and Society

- EDUC 3010 - INTRODUCTION TO THE HISTORY & SOCIAL CONTEXTS OF URBAN EDUCATION
- EDUC 3013 - EDUCATION LAW, POLICY & SCHOOL REFORM
- EDUC 3015 - CRITICAL PERSPECTIVES IN URBAN EDUCATION **or** EDUC 3114 - BLACK EDUCATIONAL THOUGHT
- EDUC 3067 - FREEDOM SEMINAR (1 credit per seminar)
- EDUC 3107 - WAYS OF KNOWING

Research Methodology (18 credits)

9 credits of required courses, 6 credits of advanced quantitative methods, and 3 credits of advanced qualitative methods.

Required Courses (9 credits)

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

Advanced Quantitative Methods (6 credits)

- EDUC 3506 - MIXED METHODS RESEARCH
- EFOP 2030 - EXPERIMENTAL DESIGN
- EFOP 3408 - HIERARCHICAL LINEAR MODELING
- EFOP 3417 - STRUCTURAL EQUATION MODELING
- EFOP 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS
- EFOP 3472 - CAUSAL INFERENCE IN EDUCATIONAL RESEARCH

- TLL 3536 - SINGLE SUBJECT RESEARCH

Advanced Qualitative Methods (3 credits)

- EDUC 3012 - LABORATORY OF PRACTICE
- EDUC 3106 - ADVANCED APPLIED QUALITATIVE ANALYSIS
- EDUC 3501 - CRITICAL POLICY ANALYSIS
- EFOP 2355 - ADVANCED QUALITATIVE RESEARCH
- EFOP 3208 - CASE STUDY METHODS IN EDUCATION
- TLL 3002 - CLASSROOM DISCOURSE
- TLL 3003 - RESEARCH INTERVIEWING

Supervised Research (6 credits)

- EFOP 3097 - SUPERVISED RESEARCH

First Year Seminar (3 credits)

EDUC 3101 - FIRST YEAR PHD SEMINAR

Writing Workshops (1 credit per semester for 6-8 semesters)

The Writing Workshops provide doctoral students with a structured, supportive space to receive substantive feedback on manuscripts, milestone documents, and works-in-progress. Participants commit to reading drafts in advance of bi-weekly meetings and engaging in constructive, collegial critique that strengthens both individual scholarship and the intellectual community of the program.

Beginning in the second year, students enroll in Writing Workshop for either 1 credit or 3 credits each semester until completion of the credit requirement.

- EFOP 3087 - WRITING SEMINAR

Field Placement/Teaching Practicum (2 courses, 6 credits)

Doctoral students complete two semesters of supervised field placement in settings relevant to the Urban Education PhD program. Potential placement sites include:

- Local nonprofit organizations engaged in urban education and community development
- RAND Corporation, through a competitive application to their summer internship program
- The Center for Urban Education at the University of Pittsburgh

Students may also structure one semester as a traditional field placement and dedicate the second semester to one of the following professional development experiences:

- University teaching, serving as instructor or co-instructor alongside a faculty member
- Course development, designing a new course - such as an online course in an area relevant to Urban Education - under faculty supervision

Students enroll in the course corresponding to their chosen experience:

- EFOP 3135 - SEMINAR IN COLLEGE TEACHING (with course instructor or advisor)
- EFOP 2096 - INTERNSHIP IN EDUCATIONAL FOUNDATIONS, ORGANIZATIONS & POLICY (with course instructor or advisor)
- EFOP 3135 - SEMINAR IN COLLEGE TEACHING

Electives (variable credits)

Elective credits include approved transfer credits and approved additional credits to achieve 72 total credits for the PhD degree.

Dissertation (0 credits)

Students enroll in FTDG 0000 to complete their dissertation studies.

Total Credits: 72

Master's

Education Policy, MA

The education policy master's program provides students with foundational grounding in equity-driven education policy analysis. Students learn frameworks and methods for evaluating how policies and systems produce educational opportunities and systemic inequities. Students learn about educational policy trends and effects. And students explore how the (re)design of policies and systems create substantive improvements in learning opportunities for students of all ages. The program includes core content in: education policy systems and implementation, disciplinary grounding, the social contexts of education, policy analysis methods, and electives exploring specific policy topics and issues. The flexible curricular design enables students to choose courses that match their interests. Through community-engaged capstone projects students gain practical experience in policy analysis that is relevant to careers in program evaluation, policy organizations, and research. The program is designed to accommodate part-time and full-time students. Full time students can complete the program in as little as 3 semesters.

Students complete 36 credits.

Education Policy Foundations

Students take 2 policy core courses (6 credits):

- EFOP 2010 - EDUCATIONAL SYSTEMS, MACRO POLICY, AND POLITICS, MA
- EFOP 2011 - EDUCATION POLICY IMPLEMENTATION: STUDENTS, FAMILIES, EDUCATORS, AND POLICYMAKERS, MA SEMINAR

Program Electives

Students select at least 15 credits or 12 credits if completing the optional masters thesis.

Students completing one of the optional ARCOs select 3 credits of electives

- EDUC 3114 - BLACK EDUCATIONAL THOUGHT
- EDUC 3501 - CRITICAL POLICY ANALYSIS
- EDUC 3505 - RESEARCH-PRACTICE PARTNERSHIPS: APPROACHES TO COLLABORATIVE DESIGN, INQUIRY & CHANGE
- EFOP 2096 - INTERNSHIP IN EDUCATIONAL FOUNDATIONS, ORGANIZATIONS & POLICY
- EFOP 2106 - INTERNATIONAL AND GLOBAL EDUCATION
- EFOP 2129 - SOCIAL JUSTICE IN HIGHER EDUCATION SETTINGS
- EFOP 3131 - STUDENT, CAMPUS, AND SOCIETY
- EFOP 3136 - COMPARATIVE HIGHER EDUCATION
- EFOP 3141 - POLICY STUDIES IN HIGHER EDUCATION

- TLL 3021 - LEARNING SCIENCES AND EDUCATIONAL CHANGE
- TLL 3008 - EDUCATIONAL POLICY
- EFOP 3095 - ORGANIZATINAL PERSPECTIVES ON EDUCATIONAL IMPROVEMENT
- TLL 3540 - DESIGN OF EDUCATIONAL SYSTEMS
- EDUC 2100 - EDUCATION AND SOCIETY
- EFOP 2133 - GENDER AND EDUCATION
- EFOP 2305 - SOCIOLOGY OF EDUCATION
- EFOP 2306 - HISTORY OF EDUCATION
- EFOP 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- EFOP 2343 - EDUCATION AND CULTURE
- EFOP 2352 - ANTHROPOLOGY OF EDUCATION
- EFOP 2398 - ECONOMICS OF EDUCATION
- EFOP 3310 - PHILOSOPHY OF EDUCATION, EQUITY, AND JUSTICE
- EFOP 3003 - THEORIES OF EDUCATIONAL INEQUALITY

Psychological Perspectives on Education

Students select 1 course (3 credits) from the following options:

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE
- TLL 3021 - LEARNING SCIENCES AND EDUCATIONAL CHANGE

Research Methods

Students select 3 coures (9 credits) from the following options:

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS
- EDUC 3107 - WAYS OF KNOWING
- EDUC 3501 - CRITICAL POLICY ANALYSIS
- EDUC 3505 - RESEARCH-PRACTICE PARTNERSHIPS: APPROACHES TO COLLABORATIVE DESIGN, INQUIRY & CHANGE
- EDUC 3506 - MIXED METHODS RESEARCH
- EFOP 2001 - INTRODUCTION TO RESEARCH METHODOLOGY
- EFOP 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EFOP 2019 - STATISTICS 2: ANALYSIS OF VARIANCE
- EFOP 2030 - EXPERIMENTAL DESIGN
- EFOP 2353 - APPLIED ANTHROPOLOGY OF EDUCATION
- EFOP 2410 - APPLIED REGRESSION ANALYSIS
- EFOP 3012 - QUALITATIVE DATA MANAGEMENT, ANALYSIS, AND PRESENTATION
- EFOP 3201 - INTRODUCTION TO EDUCATIONAL EVALUATION
- EFOP 3208 - CASE STUDY METHODS IN EDUCATION
- EFOP 3408 - HIERARCHICAL LINEAR MODELING
- EFOP 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS
- EFOP 3472 - CAUSAL INFERENCE IN EDUCATIONAL RESEARCH
- EDUC 3106 - ADVANCED APPLIED QUALITATIVE ANALYSIS

- TLL 3003 - RESEARCH INTERVIEWING

Optional Comparative and International Education ARCO

Students choosing this optional area of concentration select 3 courses (9 credits) from the following:

- EFOP 2106 - INTERNATIONAL AND GLOBAL EDUCATION
- EFOP 3136 - COMPARATIVE HIGHER EDUCATION
- EFOP 3343 - COMPARATIVE EDUCATION
- EFOP 3006 - SOCIAL CHANGE IN LOCAL AND GLOBAL CONTEXTS
- EFOP 3007 - EDUCATION AND INTERNATIONAL DEVELOPMENT

Optional Higher Education Policy ARCO

Students choosing this optional area of concentration select 3 courses (9 credits) from the following:

- EFOP 2129 - SOCIAL JUSTICE IN HIGHER EDUCATION SETTINGS
- EFOP 3015 - ETHICAL ISSUES IN HIGHER EDUCATION
- EFOP 3131 - STUDENT, CAMPUS, AND SOCIETY
- EFOP 3141 - POLICY STUDIES IN HIGHER EDUCATION
- EFOP 3150 - FOUNDATIONS FOR THE STUDY OF HIGHER EDUCATION

Capstone

To complete the capstone requirement, students can complete either the applied policy project or a master's thesis.

If completing an applied policy project, students enroll in 3 credits of either EFOP 2090 or EFOP 2099.

I**f pursuing the thesis option**, students enroll in 6 credits of EFOP 2090 and/or EFOP 2099.

- EFOP 2090 - CAPSTONE SEMINAR IN EDUCATION POLICY
- EFOP 2099 - GUIDANCE IN THE MASTER'S DEGREE

Total Credits : 36

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Completion of all course requirements
- Completion of thesis or applied policy project

Higher Education, MEd

The Master of Education (MEd) in Higher Education provides students with the professional competencies, experiential learning, and personal development needed to serve in entry-level positions in a variety of offices and departments that serve students in higher education. Our curriculum centers equity and justice through practitioner-oriented coursework. 36 credits are required for this degree program. The MEd in Higher Education requires an approved plan of studies, an internship, and a capstone project. The capstone project serves as the comprehensive examination.

Admissions Requirements

- Successful completion of undergraduate degree with 3.0 GPA
- Resume/CV and personal statement

Required Coursework (24 credit)

Students are required to complete the following list of courses

- EFOP 2051 - M.ED RESEARCH METHODS FOR HIGHER EDUCATION
- EFOP 2052 - M. ED INTERNSHIP IN HIGHER EDUCATION
- EFOP 2055 - STUDENT DEVELOPMENT THEORY
- EFOP 2056 - PROGRAM ASSESSMENT IN HIGHER EDUCATION
- EFOP 2131 - HIGHER EDUCATION ADMINISTRATION
- EFOP 2135 - PROFESSIONAL DEVELOPMENT SEMINAR IN HIGHER EDUCATION
- EFOP 2140 - HIGHER EDUCATION CAPSTONE SEMINAR
- EFOP 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION

Electives (12 credits)

Students complete 12 credits of electives, selected from the courses listed below.

- EFOP 2059 - ADVISING AND SUPPORTING SKILLS FOR HIGHER EDUCATION PROFESSIONALS
- EFOP 2089 - SPECIAL TOPICS
- EFOP 2128 - LEADERSHIP
- EFOP 2129 - SOCIAL JUSTICE IN HIGHER EDUCATION SETTINGS
- EFOP 3015 - ETHICAL ISSUES IN HIGHER EDUCATION
- EFOP 3131 - STUDENT, CAMPUS, AND SOCIETY
- EFOP 3134 - CONTEMPORARY LATINX ISSUES IN US HIGHER EDUCATION
- EFOP 3136 - COMPARATIVE HIGHER EDUCATION
- EFOP 3137 - CULTURE, INNOVATION & ORGANIZATION PERFORMANCE
- EFOP 3139 - LEGAL ASPECTS OF HIGHER EDUCATION

Total Credits: 36

Comprehensive Requirement

Students complete EFOP 2140 - HIGHER EDUCATION CAPSTONE SEMINAR to satisfy the comprehensive requirement.

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of comprehensive requirement

Minor

Quantitative Research Methodology Minor

The minor in Quantitative Research Methodology Minor strengthens student competencies in measurement, research design and statistics for a future career.

Admissions Requirements

- Enrollment in a master's or doctoral degree program at the University of Pittsburgh.
- Completion of School of Education graduate minor application.

Curriculum

Statistical Methods

Minimum of 6 credits chosen from:

- EFOP 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EFOP 2019 - STATISTICS 2: ANALYSIS OF VARIANCE
- EFOP 2410 - APPLIED REGRESSION ANALYSIS
- EDUC 3103 - QUANTITATIVE METHODS 2

Measurement

Minimum of 3 credits chosen from:

- EFOP 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
- EFOP 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS

Research Design and Analysis

Minimum of 3 credits chosen from:

- EFOP 2030 - EXPERIMENTAL DESIGN
- EFOP 3408 - HIERARCHICAL LINEAR MODELING
- EFOP 2422 - DATA ANALYSIS USING COMPUTER PACKAGES
- EFOP 3472 - CAUSAL INFERENCE IN EDUCATIONAL RESEARCH
- EDUC 3418 - CAUSAL MODERATION AND MEDIATION ANALYSIS

Electives (6 credits)

The remaining courses must be approved by the faculty coordinator of the Quantitative Methodology Minor.

Total Credits: 18

Graduation Requirements

- 3.000 cumulative Pitt graduate GPA
- Successful completion of all courses towards the minor

Department of Teaching, Learning, and Leading

The Department of Teaching, Learning, and Leading is guided by the School of Education's Mission/Vision and organized by our faculty's purposes, principles, commitments, and praxes.

Our shared purposes are to:

- Support the self-determination of peoples to practice knowledge traditions
- Join in global efforts of collective educational liberation
- Contribute to societal transformation toward freedom through our full range of educational endeavors
- Cultivate rigorous intellectual praxis in educators

Our shared principles are:

- Reciprocal and just relationality
- Common cause and collective responsibility
- Freedom through practice of knowledge traditions
- Refusal of systems and structures of domination

We are committed to:

- Bold, collective study toward liberation
- Struggling together in the internal tensions of freedom work
- Learning, recovering, and recentering knowledge traditions historically excluded from our field
- Collectively imagining and practicing free alternatives and futures
- Collaboratively cultivating freedom and justice in praxis

Our shared praxes are:

- Lifting up, studying, growing, and working across multiple liberatory knowledge and epistemic traditions
- Building community through dialecticism, dialogism, and difference
- Centering freedom stories and storytelling
- Prioritizing the obligations of purposes, principles, and commitments
- Embracing action and activism

The department offers MAT, MEd, EdD, and PhD degrees.

Contact Information

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Degree and Certification Requirements

For additional degree requirement information for many of the following degrees, refer to the school sections on Degree Requirements.

Certificate

Applied Behavior Analysis Certificate

The Applied Behavior Analysis Certification program will provide students an opportunity to learn in-depth about the theories and practical applications of applied behavior analysis while preparing to sit for the BACB exam regulated by the Behavior Analyst Certification Board (BACB) if the student already has a Master's degree approved by the BACB. This rigorous program blends challenging coursework and possible practicum opportunities.

The ABA Certificate program fulfills the coursework requirement set forth by the Behavior Analyst Certification Board (BACB).

Program Duration: 12 months (Part Time)
Time Commitment: Part Time
Term of Enrollment: Summer
Course Requirements: 21 Credits

Admissions Requirements

Students must have earned a Bachelor's degree with a 3.0 cumulative GPA to be eligible for admission.

Certificate Program

- TLL 2564 - APPLIED BEHAVIORAL ANALYSIS 1: FUNDAMENTALS 1
- TLL 2565 - APPLIED BEHAVIORAL ANALYSIS 2: FUNDAMENTALS 2
- TLL 2566 - APPLIED BEHAVIORAL ANALYSIS 3: APPLICATIONS IN DEVELOPMENTAL DISABILITIES
- TLL 2567 - APPLIED BEHAVIORAL ANALYSIS 4: EMOTIONAL BEHAVIORAL DISABILITIES OF CHILDREN AND ADOLESCENTS
- TLL 2568 - APPLIED BEHAVIORAL ANALYSIS 5: CURRENT DEVELOPMENTS IN APPLIED BEHAVIORAL ANALYSIS
- TLL 2578 - APPLIED BEHAVIORAL ANALYSIS 6: ETHICS
- TLL 2590 - RESEARCH SEMINAR IN SPECIAL EDUCATION

BACB Requirement (Optional)

For students wishing to pursue the national Board Certified Behavior Analyst (BCBA)

- TLL 2569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM

Total Credits: 21

Early Childhood Education - Primary Plus: PreK-4 Teacher Preparation Certificate

Admission into this program is temporarily paused for the 2026-27 enrollment cycle

The Primary Plus: PreK-4 Teacher Certification Program is intended for individuals from a wide range of undergraduate degree and work backgrounds. Through coursework and field experiences with pre-kindergarteners and children in grades K-4, students acquire an integrated understanding of academic content and child development in diverse inclusive settings. Upon completion of the program, students are eligible to apply for a Pennsylvania Instructional I Certificate for PreK-4.

The Primary Plus: PreK-4 Teacher Certification Program prepares students to teach young children ages 4-9 in Pre-kindergarten and K-4 classrooms and to work collaboratively with parents and other professionals. Students develop skills for employment in public and private schools and early childhood centers. The program is a Pennsylvania Department of Education-approved teacher certification preparation program. This 36 credit program is designed for full-time study.

Please see Commonwealth Teacher Education Certification Programs for more information

Admissions Requirements

A 3.0 cumulative GPA in undergraduate study is required for admission.

Prerequisite Courses:

- College-level Math (or equivalent) - 6 credits
- Science Lab or Field Course
- U.S. History Course
- Child Development Course
- English Composition Course
- English Literature Course
- Introduction to Early Childhood Education
- Foundations of Special Education
- Teaching English Language Learners
- Language and Literacy for the Young Child

Requirements

- TLL 2047 - INTEGRATED CURRICULUM PRE-K-4
- TLL 2208 - READING/WRITING METHODS 1: PRE K - GRADE 1
- TLL 2209 - READING WRITING METHODS 2: GRADE 2-4

- TLL 2268 - SOCIAL STUDIES METHODS PRE-K - 4
- TLL 2433 - MATH METHODS FOR PreK-4 STUDENTS
- TLL 2434 - SCIENCE METHODS FOR PREK-GRADE 4 STUDENTS
- TLL 2514 - SUPPORTING STUDENTS WITH DISABILTIES IN INCLUSIVE CLASSROOMS
- TLL 2515 - SUPPORTING LITERACIES IN INCLUSIVE CLASSROOMS
- TLL 2800 - STUDENT TEACHING EARLY CHILDHOOD Credits / Units: 3
- TLL 2804 - STUDENT TEACHING - PRIMARY PLUS Credits / Units: 5
- TLL 2824 - STUDENT TEACHING SEMINAR
- TLL 2907 - COLLABORATIVE PARTNERSHIPS WITH FAMILIES AND THE COMMUNITIES

Total Credits: 36

Graduation Requirements

In order to earn the Teacher Certification, students must meet the following requirements:

- Minimum of 3.0 cumulative GPA
- 36 credit hours
- Successfully complete all course requirements
- Meet all associated PDE requirements

Executive Cohort for Educational Leadership Certificate leading to a Superintendent's Letter of Eligibility

The Superintendent's Letter of Eligibility graduate certificate prepares an educator to become a senior administrator in K-12 public and private schools. Graduates are employed as assistant superintendents and superintendents across Pennsylvania school districts in rural, urban, and suburban settings.

While this certificate may be completed independently, many students choose to also enroll in our Doctor of Education (EdD) in Education Leadership program. Courses completed in the superintendent's letter of eligibility program are automatically applied to the education doctorate degree requirements.

The program accommodates the needs of working professionals by offering coursework mostly online, combined with an in-person class once a month. Students receive very clear timelines and a supportive environment geared toward working, adult professionals.

- 24 Credits over twenty months or 5 terms
- All courses approved for Act 45 Credit
- Three 1 credit internship experiences

Admissions Requirements

• Bachelor's degree from an accredited institution, often in education or a related field

• Satisfaction of requirements set forth in 24 P.S. § 12-1209 relating to good moral character

• Valid Pennsylvania administrative or supervisory certificate (or equivalent): principal certification

• Official graduate transcripts showing GPA requirements (often a minimum of 3.0 on a 4.0 scale)

• Experience requirements of at least six years of educational experience, three of which must be in a supervisory or administrative capacity (as required by PDE)

• Letters of recommendation, usually from supervisors or other educational leaders

• Application essay or statement of purpose describing professional goals and rationale for pursuing superintendent certification

• Resume or CV detailing leadership roles and educational experience

Curriculum

- EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE
- TLL 3088 - COMPETENT KNOWLEDGE MANAGEMENT AND UTILIZATION
- TLL 3116 - COMPETENT MANAGEMENT OF HUMAN RESOURCES
- TLL 3093 - INTERNSHIP IN CENTRAL OFFICE ADMINISTRATION
  This course is taken in three (3) separate terms for one (1) credit each
- TLL 3114 - COMPETENT MANAGEMENT OF STUDENT PERSONNEL SERVICES
- TLL 3101 - COMPETENT MANAGEMENT OF FISCAL RESOURCES

Total Credits: 24

Instructional Design and Technology Certificate

The online graduate Instructional Design and Technology (IDT) certificate enables students to interrogate and discuss historical, contemporary, and emerging instructional design theories and models. Through this program, course facilitators and students will explore, discuss and apply critical pedagogy to instructional design practices. We will examine and discuss strategies that ground our instructional design praxis in design justice principles. We will broaden our understanding of instructional design to explore the possibilities of community-led design initiatives. We will use design justice principles and project management strategies to create and present instructional design artifacts for constructive peer review.

Program Outcomes

The online graduate Instructional Design and Technology (IDT) certificate enables students to:

- Interrogate and discuss historical, contemporary, and emerging ID theories and models.
- Explore, discuss and apply critical pedagogy to ID practices.
- Examine how to design justice principles apply to instructional design practices
- Select applicate technology and digital media that support meaningful learning experiences
- Create instructional design artifacts grounded in critical pedagogy and design justice principles
- Use project management strategies to coordinate and complete ID projects

Admissions Requirements

Students must have a graduate degree from an accredited institution or professional experience in instructional design or education-related field.

Curriculum

Required Courses (9 credits)

- LIS 2640 - INSTRUCTIONAL DESIGN
- EDUC 2301 - ONLINE PEDAGOGY AND PRAXIS
- EDUC 2304 - PROJECT-BASED INSTRUCTIONAL DESIGN

Elective Course (3 credits; choose one course from list below)

- EDUC 2300 - DIGITAL MEDIA FOR LEARNING
- EDUC 2302 - CRITICAL DIGITAL LITERACIES, SCHOOLING, AND IDENTITY

Total Credits: 12

K-12 Principal Program Certification

The University of Pittsburgh K-12 Principal Certificate program is built to provide candidates with knowledge, skills, dispositions, and experiences to prepare them to lead equitable and just learning environments for children and school communities. Completion of the program satisfies the requirements for the Pennsylvania Department of Education K-12 Principal Certificate.

The 18-credit asynchronous online format provides working professionals with a flexible learning environment. The courses approach learning from an equitable stance and consider the interplays between health, wellness, and human development.

The program includes an internship component that gives candidates highly practical, real-world experiences with accomplished, practicing principals from various school communities. Career preparation and exposure activities are also included in the program to ensure that candidates are prepared for a successful start to their school leadership career. This program has the approval of the Pennsylvania Department of Education.

Certification

Completion of the program satisfies the requirements for the Pennsylvania Department of Education K-12 Principal Certificate.

Admissions Requirements

Candidates must hold a bachelor's degree from a regionally or nationally accredited college/university, as well as relevant professional certification.

Candidates must satisfy the requirements set forth in section 24 P.S. § 12-1209 relating to good moral character.

Candidates must satisfactorily complete two years of relevant professional education experience that is in an educational setting and related to the instructional process.

Curriculum

Required Courses

- TLL 2409 - MULTI-TIERED SYSTEM OF SUPPORT
- TLL 2410 - INSTITUTIONAL LEADERSHIP
- TLL 2413 - SCHOOL LAW
- TLL 2414 - HEALTH, MENTAL HEALTH, & SAFETY

- TLL 2415 - INSTRUCTIONAL LEADERSHIP
- TLL 2097 - INTERNSHIP (3 Credits - 1 credit taken per term)

*Note: Students are required to complete a 360-hour internship with a practicing principal focused on field-based experiences aligned with the Pennsylvania Core and Corollary Standards for School Leadership and professional development.

Total Credits: 18

Graduation Requirements

- Students must earn a 3.0 cumulative GPA in graduate coursework
- Students must successfully complete all required courses and internships

Orientation and Mobility for Individuals with Visual Impairments and Blindness Certificate

The program in Orientation and Mobility Specialist program (O&M) provides training to become an O&M practitioner for individuals of all ages and abilities. The program prepares students to earn certification as a Certified Orientation and Mobility Specialist (COMS), which is a gateway to a diverse range of employment opportunities. The program is offered in a hybrid format, with most courses online and a limited number of weekend workshops in person. TLL 2750 and 2752 are in-person, on-campus offered during the summer term. Students also complete a clinical experience of at least 350 hours. Pitt offers the O&M Graduate Certificate (26 credits), with the option to add on a Master's Degree in Education for an additional six credits (32 credits total).

Accreditations Associated

This program is fully accredited by the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER).

Admissions Requirements

- Bachelors degree in any subject with minimum 3.0 GPA
- Prerequisite Coursework (can be taken as co-requisites during program)
    - Foundations of Special Education

Student Teaching

This program prepares students for national certification through the Academy for Certification of Vision Rehabilitation & Education Professionals (ACVREP), and must maintain an overall 3.0 GPA. If a student does not maintain a 3.0 GPA, they will be prohibited from starting their internship and may impact completion of their program.

Graduation Requirements

- Minimum 3.0 GPA
- Successful completion of the O&M Internship
- Completion of all coursework with a grade of B- or higher

Curriculum

All courses are 3 credits unless otherwise indicated.

- TLL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- TLL 2531 - EDUCATION OF CHILDREN WITH VI 1
- TLL 2540 - FOUNDATIONS OF ORIENTATION AND MOBILITY
- TLL 2750 - TECHNIQUES OF ORIENTATION AND MOBILITY 1
- TLL 2752 - TECHNIQUES OF ORIENTATION AND MOBILITY 2
- TLL 2541 - PROGRAM DEVELOPMENT: ORIENTATION AND MOBILITY
- TLL 2753 - ORIENTATION AND MOBILITY FOR DIVERSE POPULATIONS
- TLL 2857 - LEVEL 3 INTERNSHIP ORIENTATION AND MOBILITY 5 credits

Total Credits: 26

Reading Specialist Certificate of Advanced Study (PK-12)

The School of Education offers preparation that leads to certification as a Reading Specialist (PK-12). Coursework is completed fully online The curriculum for the Reading Specialist Certificate of Advanced Study (PK-12) is designed to provide candidates with opportunities to build specialized knowledge, engage in principled practice in supervised settings, and prepare for leadership roles in schools and school districts. The curriculum addresses the International Literacy Association's *Standards for Specialized Literacy Professionals* (2017) in the areas of:

- Foundational Knowledge
- Curriculum and Instruction
- Assessment and Evaluation
- Diversity and Equity
- Learners and the Literacy Environment
- Professional Learning and Leadership
- Practicum/Clinical Experiences

Admissions Requirements

Program prerequisites:

- Must hold a current teaching certificaiton
- 3.0 GPA in undergraduate work

Program course prerequisites:

- Teaching of Reading **or** Language Arts (3 credits)
- Human Development **or** Educational Psychology (3 credits)
- Educational Foundations **or** History of American Education (3 credits)

Applicants who hold an Instructional I teaching certification from Pennsylvania earned after January 1, 2011 will have met the following course requirements through their initial certification programs. Applicants who hold a PA certification from an earlier time or who hold an out-of-state certification must meet the following requirements to be eligible to earn the PDE Reading Specialist certification (PK-12):

- Teaching English Language Learners (3 credits)
- Foundations of Special Education (3 credits)
- Supporting Students with Disabilities in Inclusive Classrooms (3 credits)
- Supporting Literacies in Inclusive Classrooms (3 credits)

Curriculum

- TLL 2203 - LANGUAGE AND LANGUAGE SYSTEMS
- TLL 2211 - COMPREHENSION AND VOCABULARY
- TLL 2219 - DISCIPLINARY LITERACY **or** TLL 2515 - SUPPORTING LITERACIES IN INCLUSIVE CLASSROOMS
- TLL 2204 - Supporting Early Literacy
- TLL 2205 - Supporting Adolescent Literacies
- TLL 2207 - LIteracy Practicum
- TLL 2202 - Literacy Leadership in Schools I
- TLL 2206- Literacy Leadership in Schools II

Certification Requirements

To be eligible for the Pennsylvania Department of Education Reading Specialist PreK-12 certification, studentes must:

- Complete all required courses
    - All classes that are not directly field-related (i.e.: student teaching placements and related seminars) must be taken for a letter grade.
- Earn a 3.0 cumulative Pitt graduate GPA
- Take and pass the Reading Specialist Praxis exam

Total Credits: 24

Supervisor of Special Education Certificate

The Supervisor of Special Education Certification Program is an advanced graduate program designed to help meet the growing demand for well-trained and experienced individuals who can provide leadership in special education at the district or Intermediate Unit levels.

This course of study is appropriate for individuals preparing for a professional position with primary responsibility in supervising educational programs and directing the activities of professional and non-professional employees in special education programs.

This part-time, hybrid program (1 course per semester) is offered to candidates who have demonstrated through previous coursework, qualifying work experience, letters of recommendation, and a personal goal statement that they have the appropriate oral and written communication skills, organizational ability and personal motivation to pursue the professional position of Supervisor of Special Education. Then, through coursework and an internship (15 total credits), candidates have the opportunity to develop knowledge of and competence in the fundamental concepts of supervising special education programs. The internship provides opportunities to learn more practically the duties, roles, and responsibilities of supervisors/administrators in special education. Students are required to secure a local, on-site mentor with whom to collaborate in completing the required activities.

The Supervisor of Special Education Certification program results in Pennsylvania Department of Education Certification.

This program provides candidates with the knowledge necessary to implement high quality programming for individuals with disabilities and to comply with federal and state regulations. The major distinguishing characteristic of this program is the application of supervisory theory to the context of special education.

Accreditations Associated

The program prepares students for the Supervisor of Special Education PreK-12 Certificate from the Pennsylvania Department of Education (PDE). Please refer to PDE for special education teaching experience requirements and praxis information.

Admissions Requirements

Completion of 5 years of satisfactory *certified* school experience in the area of special education

Requirements

This certification option in special education is built on the assumption that most supervisory operations in education are, in principle, generic, with their fundamentals of theory and practice in common. Specific emphasis is placed upon activities, relationships, facilities, agencies, persons, and processes that have particular relevance to special education. Students complete a curriculum which includes courses in supervision, finance, curriculum development, current and legal issues in the specialization, and a supervision internship.

- TLL 2542 - WEB CURRNT ISSUES & TRENDS SP ED **-OR-** TLL 3542 - WEB CURRNT ISSUES & TRENDS SP ED
- TLL 3541 - WEB INSTRNL PRACTICES SP EDUC
- TLL 2928 - WEB LEGL & LEGISLTV FDS OF SP ED **-OR-** TLL 3928 - WEB LEGL & LEGISLTV FDS OF SP ED
- TLL 3571 - SUPERVISION AND FINANCING OF SPECIAL EDUCATION
- TLL 2596 - INTERNSHIP IN SPECIAL EDUCATION **-OR-** TLL 3596 - INTERNSHIP IN SPECIAL EDUCATION

Total Credits: 15

Teacher of Students with Visual Impairments and Blindness (TVI) Certificate

The Teacher of Students with Visual Impairments (TVI) program at the University of Pittsburgh School of Education is fully aligned with the Pennsylvania Department of Education (PDE) standards, the curriculum will prepare studentsfor PA state certification to teach in preK-12 classrooms. Pennsylvania Department of Education TVI certification can only be earned by candidates who complete student teaching in Pennsylvania (students from outside PA, must check their state's certification/licensure requirements). The program is offered in a hybrid format, with most courses online and a limited number of workshops in person. Students also complete a semester-long student teaching experience with a certified TVI. The Pitt certificate program features a TVI graduate certificate (29 credits) whose courses lead to state certification.

Students interested in pursuing a master's degree can add 6 credits (see Teacher of Students with Visual Impairments and Blindness (TVI) MEd for further information)

Accreditations Associated

This program is fully accredited by the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER).

Admissions Requirements

- Bachelors degree in any subject with minimum 3.0 GPA
- Prerequisite Coursework (can be taken as co-requisites during program)
    - Foundations of Special Education
    - Teaching English Language Learners
    - Supporting Literacy in the Inclusive Classroom
    - Supporting Students with Disabilities in Inclusive Classrooms

Student Teaching

Pennsylvania Department of Education requires that all students must enter a teacher education program with and maintain an overall 3.0 GPA. If a student does not maintain a 3.0 GPA, they will be prohibited from student teaching or earning certification. A full semester of student teaching is required.

Graduation Requirements

- Minimum 3.0 GPA
- Completion of all coursework with a grade of B- or higher
- Successful completion of a full-time student teaching assignment

Curriculum

All courses are 3 credits except where indicated.

- TLL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- TLL 2531 - EDUCATION OF CHILDREN WITH VI 1
- TLL 2529 - BRAILLE
- TLL 2535 - COMMUNICATION SKILLS FOR STUDENTS WITH VISUAL IMPAIRMENTS
- TLL 2525 - TECHNOLOGY FOR CHILDREN WITH VI
- TLL 2533 - ORIENTATION AND MOBILITY FOR THE TVI
- TLL 2545 - EDUCATION OF CHILDREN WITH VI 2
- TLL 2547 - NEMETH CODE/ABACUS
- TLL 2524 - LEVEL 2 STUDENT TEACHING PRACTICUM IN VISUAL IMPAIRMENTS (5 credits)

Total Credits: 29

Doctoral

Education Leadership, EdD

EdD Curriculum

The EdD program is a three-year 76-credit program. Students are required to transfer 24 credits of relevant graduate work into the EdD program. The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation**: The EdD cohort participates in a virtual orientation in the spring (typically April) before the summer start of the program. Incoming students meet program faculty, current students/alumni, receive an overview of EdD program, participate in cohort-building activities and get an introduction to the summer "on-ramp" courses.
- **Intensive on-ramp**: The EdD cohort will participate in the first-year summer "on-ramp" courses which consist of three in-person Saturdays and a full-week, on-campus experience. The on-ramp consists of two courses-- Foundations 1 and Practitioner Inquiry 1 -- to give new students an immersive introduction to doctoral study, cohort collaborations, and program content. The one-week in-person experience typically takes place in June.
- **Hybrid seminars**: After the first summer on-ramp, students experience a hybrid learning model of education. Each semester courses are largely conducted asynchronously online which is supported through a once a month flipped classroom experience that takes place in-person (typically on Saturdays) on the Pittsburgh campus. Attendance at in-person, on campus sessions is required.

SCHEDULE (all courses are 3 credits unless otherwise noted)

Year 1: Summer	Year 1: Fall	Year 1: Spring
EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER	EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION Major Course 1	EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS Major Course 2
Year 2: Summer	**Year 2: Fall**	**Year 2: Spring**
EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY	EDUC 3006 - PRACTITIONER INQUIRY 2 Major Course 3	EDUC 3007 - PRACTITIONER INQUIRY 3 Major Course 4
Year 3: Summer	**Year 3: Fall**	**Year 3: Spring**
EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)

Foundation Courses: 12 Credits

- Foundations 1: EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER
- Foundations 2: EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- Foundations 3: EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION
- Foundations 4: EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses: 12 credits

- EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Supervised Practitioner Inquiry: 3 credits

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Dissertation-in-Practice Overview: 3 credits

- EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR

Guidance In Scholarly Practice: 10 credits

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Education Leadership Major Courses (12 Credits)

- TLL 3088 - COMPETENT KNOWLEDGE MANAGEMENT AND UTILIZATION
- TLL 3101 - COMPETENT MANAGEMENT OF FISCAL RESOURCES
- TLL 3114 - COMPETENT MANAGEMENT OF STUDENT PERSONNEL SERVICES
- TLL 3116 - COMPETENT MANAGEMENT OF HUMAN RESOURCES

Transfer credits (24 credits)

Total credits: 76 credits

Internship for Optional Superintendent's Letter of Eligibility (3 credits for 79 credits total)

- TLL 3093 - INTERNSHIP IN CENTRAL OFFICE ADMINISTRATION
    - This course is taken in three (3) seperate terms for one (1) credit each

Language, Literacy and Culture, PhD

The Language, Literacy, and Culture (LLC) PhD is for students who aim to conduct research on the interconnection of culture, language, and literacy in both formal and informal educational settings. The goal of the LLC program is to develop interdisciplinary knowledge complemented by specialized knowledge of teaching and learning in foreign and second language, literacy, social studies, and early childhood education. We frame the exploration of teaching and learning within perspectives that promote equity, social justice, and democratic values. Students engage closely with and learn from faculty who conduct research in the field and have a strong commitment to high-quality teaching.

Curriculum

PhD students in the Language, Literacy, and Culture program who enter the program without a Masters degree in a relevant field are required to take eight to nine courses within the major field of LLC, five research methods courses, the first year seminar, annual writing workshops, and elective courses as needed. Students with a Masters degree in a related field can transfer credits toward the PhD with approval by the LLC faculty. PhD students are also required to complete one research practicum and one teaching practicum. PhD students must successfully pass required doctoral milestone projects in order to continue in the program. The PhD program culminates with completion of a doctoral dissertation.

First Year Seminars (3 credits)

EDUC 3101 - FIRST YEAR PHD SEMINAR (3 cr)

Major Field Courses (24-27 credits)

- TLL 3248 - SPECIAL TOPICS-LANGUAGE AND LITERACY
- Additional course options available in the major field with approval of advisor

Research Methods (15 credits)

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS
- Advanced Research Methods electives (6 credits)

Research Practicum (3 credits)

- TLL 3291 - SUPERVISED RESEARCH-LANGUAGE, LITERACY, AND CULTURE

Teaching Practicum (3 credits)

- TLL 3526 - PRACTICUM IN COLLEGE TEACHING

Electives (variable credits)

Writing Workshops (variable credits)

- TLL 3016 - PHD WRITING SEMINAR

Full-time Dissertation Study (0 credits)

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

- FTDG 0000 - FULL-TIME DISSERTATION STUDY

Total Credits: 72

Science, Technology, Engineering & Mathematics (STEM), EdD

The EdD in Science, Technology, Engineering, and Mathematics Education (STEM Education) is for teachers and educators who desire the skills and credentials needed to advance their practice-oriented careers. The program offers a rigorous theoretical and practical orientation for scholar practitioners aspiring to become leaders in K-12 schools and institutions of higher learning. Graduates hold positions such as district STEM curriculum supervisor, faculty member at a teaching-focused university, director of STEM education in informal education settings (e.g., environmental education center), or district leader in the STEM fields of science or mathematics.

EdD Curriculum

The EdD program is a three-year 76-credit program. Students are required to transfer 24 credits of relevant graduate work into the EdD program. The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation**: The EdD cohort participates in a virtual orientation in the spring (typically April) before the summer start of the program. Incoming students meet program faculty, current students/alumni, receive an overview of EdD program, participate in cohort-building activities and get an introduction to the summer "on-ramp" courses.
- **Intensive on-ramp**: The EdD cohort will participate in the first-year summer "on-ramp" courses which consist of three in-person Saturdays and a full-week, on-campus experience. The on-ramp consists of two courses-- Foundations 1 and Practitioner Inquiry 1 -- to give new students an immersive introduction to doctoral study, cohort collaborations, and program content. The one-week in-person experience typically takes place in June.
- **Hybrid seminars**: After the first summer on-ramp, students experience a hybrid learning model of education. Each semester courses are largely conducted asynchronously online which is supported through a once a month flipped classroom experience that takes place in-person (typically on Saturdays) on the Pittsburgh campus. Attendance at in-person, on campus sessions is required.

SCHEDULE (all courses are 3 credits unless otherwise noted)

Year 1: Summer	**Year 1: Fall**	**Year 1: Spring**
EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER	EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION Major Course 1	EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS Major Course 2
Year 2: Summer	**Year 2: Fall**	**Year 2: Spring**
EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY	EDUC 3006 - PRACTITIONER INQUIRY 2 Major Course 3	EDUC 3007 - PRACTITIONER INQUIRY 3 Major Course 4
Year 3: Summer	**Year 3: Fall**	**Year 3: Spring**
EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)

Foundation Courses: 12 Credits

- Foundations 1: EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER
- Foundations 2: EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- Foundations 3: EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION
- Foundations 4: EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses: 12 credits

- EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Supervised Practitioner Inquiry: 3 credits

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Dissertation-in-Practice Overview: 3 credits

- EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR

Guidance In Scholarly Practice: 10 credits

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Science, Technology, Engineering & Mathematics (STEM) Academic Major Courses (12 credits)

- TLL 3470 - IDENTITY AND POWER IN STEM
- TLL 3471 - JUSTICE AND STEM
- TLL 3475 - STEM PEDAGOGIES
- TLL 3476 - POLICY & LEADERSHIP IN STEM

Transfer Credits (24 credits)

Total credits (76 credits)

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of written dissertation in practice and defense

Special Education, EdD

Our EdD in **Special Education major** prepares leadership personnel to serve in public or private pre-K-12 schools or educational environments and services.

The EdD in Special Education major develops your knowledge and skills in leadership, collaboration, management, administration, supervision, pre-service and in-service education, program evaluation, community relations, and recruitment.

Students may focus their studies in applied behavioral analysis; autism; blindness, vision impairment, or orientation and mobility; early intervention; emotional and behavioral disorders; or learning disabilities.

EdD Curriculum

The EdD program is a three-year 76-credit program. Students are required to transfer 24 credits of relevant graduate work into the EdD program. The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation**: The EdD cohort participates in a virtual orientation in the spring (typically April) before the summer start of the program. Incoming students meet program faculty, current students/alumni, receive an overview of EdD program, participate in cohort-building activities and get an introduction to the summer "on-ramp" courses.
- **Intensive on-ramp**: The EdD cohort will participate in the first-year summer "on-ramp" courses which consist of three in-person Saturdays and a full-week, on-campus experience. The on-ramp consists of two courses-- Foundations 1 and Practitioner Inquiry 1 -- to give new students an immersive introduction to doctoral study, cohort collaborations, and program content. The one-week in-person experience typically takes place in June.
- **Hybrid seminars**: After the first summer on-ramp, students experience a hybrid learning model of education. Each semester courses are largely conducted asynchronously online which is supported through a once a month flipped classroom experience that takes place in-person (typically on Saturdays) on the Pittsburgh campus. Attendance at in-person, on campus sessions is required.

SCHEDULE (all courses are 3 credits unless otherwise noted)

Year 1: Summer	Year 1: Fall	Year 1: Spring

EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER	EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION Major Course 1	EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS Major Course 2
Year 2: Summer	**Year 2: Fall**	**Year 2: Spring**
EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY	EDUC 3006 - PRACTITIONER INQUIRY 2 Major Course 3	EDUC 3007 - PRACTITIONER INQUIRY 3 Major Course 4
Year 3: Summer	**Year 3: Fall**	**Year 3: Spring**
EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)

Foundation Courses: 12 Credits

- Foundations 1: EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER
- Foundations 2: EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- Foundations 3: EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION
- Foundations 4: EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses: 12 credits

- EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Supervised Practitioner Inquiry: 3 credits

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Dissertation-in-Practice Overview: 3 credits

- EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR

Guidance In Scholarly Practice: 10 credits

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Special Education Academic Major Courses (12 credits)

- TLL 3542 - WEB CURRNT ISSUES & TRENDS SP ED
- TLL 3541 - WEB INSTRNL PRACTICES SP EDUC
- TLL 3928 - WEB LEGL & LEGISLTV FDS OF SP ED
- TLL 3571 - SUPERVISION AND FINANCING OF SPECIAL EDUCATION

Transfer credits (24 credits)

Total Credits: 76

79 credits needed for students pursuing Special Education Supervisor Certificate.

Optional internship for Supervisor of Special Education certification (3 credits for 79 credits total)

Students wishing to complete the Supervisor of Special Education Certificate must meet the admission requirements for the certificate, make sure the program is declared, and complete one of these following courses for 3 credits.

- TLL 2596 - INTERNSHIP IN SPECIAL EDUCATION
  Or
- TLL 3596 - INTERNSHIP IN SPECIAL EDUCATION

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of written dissertation in practice and defense

Special Education, PhD

The goal of the Special Education PhD degree is to prepare leadership personnel to assume academic faculty positions at the university level. The focus of preparation for the PhD program is on teaching graduate and undergraduate courses, mentoring graduate students, developing a research agenda that will result in funded and published research and translating research outcomes for the improvement of educational and related service programs for children and youth with disabilities. PhD candidates are mentored by a faculty adviser who shares their research interests and are supported by graduate faculty in Special Education. Students may focus their studies in one or more of the following areas: applied behavior analysis, autism, emotional and behavior disorders, learning disabilities, or severe disabilities. The PhD program is writing, and research-intensive and PhD candidates will have multiple opportunities to learn and participate in the review of research literature, the preparation and submission of research grant proposals, the design and implementation of research studies, and the preparation and dissemination of research reports.

The PHD program has a minimum of 72 credits of course work which includes dissertation research.

Special Education Major Field (24 credits minimum)

Required:

- 18 credits minimum at the 3000-level or equivalent
- 15 credits minimum at the University of Pittsburgh

Possible classes:

- Professional Seminar in Special Education 1
- Issues and Trends in Special Education
- Instructional Practices in Special Education
- Professional Seminar in Special Education 2
- Legal and Legislative Issues in Special Education

- Advanced Single-Case Design
- Grant Writing in Special Education

Research Methodology (15 credits)

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS
- 2 additional research methods elective classes (6 credits)

First Year Seminar (3 credits)

- EDUC 3101 - FIRST YEAR PHD SEMINAR (3 cr)

Research Practicum (3 credits)

- TLL 3591 - SUPRVSD RESEARCH IN SPECIAL EDUC

Teaching Practicum (3 credits)

- TLL 3526 - PRACTICUM IN COLLEGE TEACHING

Special Education Writing Seminars (6-8 credits)

One credit per semester, starting in year 2.

Electives (variable credits)

Full-time Dissertation Study (0 credits)

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

- FTDG 0000 - FULL-TIME DISSERTATION STUDY

Total Credits: 72

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of written dissertation and defense

Graduate Certificate

Critical Technology and Digital Media for Learning Certificate

The Critical Technology and Deigital Media for Learning (CriT-DML) certificate program seeks to deepen students' understanding of how we use digital media and technology to communicate, create, design, collaborate, teach, learn, and assess within a range of educational contexts. Through this program, course facilitators and students will work collaboratively to interrogate, deconstruct, and think critically about how we produce and use digital media and technology in education and society. To intentionally work toward equity, justice, and freedom, we seek to design learning experiences that center and support people and human processes. This certificate program is designed for educators, instructional designers, administrators, leaders, school technology directors, technology curriculum specialists, or technologists who wish to broaden their understanding of and experience with digital media and technology applications for learning. Students should identify strongly with the School of Education's mission/vision for equity and justice and apply this lens to their scholarship in the program. The CriT-DML certificate can be a doorway to expanded career opportunities in technology applications across and outside the field of education.

Admissions Requirements

Student must have earned a Bachelor's degree.

Curriculum

- EDUC 2300 - DIGITAL MEDIA FOR LEARNING
- EDUC 2301 - ONLINE PEDAGOGY AND PRAXIS
- EDUC 2302 - CRITICAL DIGITAL LITERACIES, SCHOOLING, AND IDENTITY
- EDUC 2303 - TECHNOLOGY IN CONTEXT

Total Credits: 12

Graduation Requirements

- Cumulative GPA of 3.0
- Successful completion of required coursework

Science, Technology, Engineering, Art & Mathematics (STEAM), Online Certificate

The goal of STEAM is simple: to engage learners in real-world, relevant problem solving that requires a high level of discipline integration. The STEAM certificate supports students in exploring the disciplines that comprise STEAM: science, technology, engineering, arts, and mathematics. Through the four courses in the certificate students will develop transdisciplinary curriculum, assessments, and pedagogies for their own classrooms, try out their curriculum, and interrogate their pedagogical decision-making. Students will have opportunities to delve into the theory and practice of STEAM teaching and learning and walk away with curriculum they developed and tested.

The STEAM certificate is approved by the Pennsylvania Department of Education as meeting the requirements for the STEM PDE endorsement.

Admissions Requirements

- Students must have successfully completed an undergraduate degree.
- Students must have a site of practice where they can implement curriculum.
- Applicants for the PA STEM Endorsement must hold a current PA teaching certification.

Curriculum

- TLL 2007 - STEAM: TRANSDISCIPLINARY LEARNING APPROACHES
- TLL 2008 - STEAM: INSTRUCTIONAL DESIGN
- TLL 2009 - STEAM: ASSESSMENT
- TLL 2010 - STEAM: IMPLEMENTATION
  Field-based hours are required (30 hours) to meet the STEM Endorsement and therefore are a part of all courses. These hours are embedded in coursework of TLL 2007 and TLL 2010.

Total Credits:12

Graduation Requirements

- Cumulative GPA of 3.0 or higher
- Completion of all required coursework

Joint Degree

World and Heritage Language Education with TESOL Certificate, MEd

This option permits qualified individuals for the MEd with a specialization in World and Heritage Language Education to be considered upon application by the Department of Teaching Learning and Leading and by the Department of Linguistics for admission to the University of Pittsburgh certificate program in the Teaching of English to Speakers of Other Languages (TESOL). If accepted, students combine course work for the MEd in World and Heritage Language Education with required courses for the TESOL certificate. Students complete a minimum of 37 credits in this combined specialization.

The University of Pittsburgh TESOL certificate is not to be confused with state certification for teaching in the public elementary or secondary schools. The degree is ideal for individuals seeking positions as English language teachers in other countries or in university English Language Institutes.

Admissions Requirements

Applicants must have earned a Bachelor's degree with a 3.0 cumulative GPA to be elegible for admission.

Each applicant who is not a native speaker of English must: (1) achieve a score of 100 or higher on the internet-based TOEFL (Skill Requirements: Reading and Listening - High; Speaking and Writing - one skill must be at the level of Good) or 7.5 or higher on the IELTS (Skills Requirement: Speaking and Writing - combined minimum of 13) and (2) have good spoken English skills.

Curriculum

- LING 1000 - INTRODUCTION TO LINGUISTICS
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- EFOP 2106 - INTERNATIONAL AND GLOBAL EDUCATION
- TLL 2256 - ISSUES IN FOREIGN LANGUAGE ED
- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- TLL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
- TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- Elective - Graduate level 2000 or higher (Suggested: TLL 2255, 2722, or 2257)

- LING 2146 - SECOND LANGUAGE ACQUISITION
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- LING 2195 - PRACTICUM ESL TEACHING
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS

Comprehensive Requirement

Students will complete a written comprehensive exam.

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successfully complete all course requirements
- Successfully complete comprehensive exam

Total Credits: 37

Master's

Applied Behavior Analysis, MEd

The Applied Behavior Analysis, MEd at the University of Pittsburgh offers rigorous preparation and training in the theoretical foundations and core principles of behavior analysis. Grounded in scientific inquiry and ethical practice, function-based assessment, data-driven decision making, and single-subject research methods are emphasized. The curriculum is designed to develop behavioral scientists with strong conceptual, analytical, and applied competencies. Coursework prepares students to apply for the Board Certified Behavior Analyst (BCBA) examination. Throughout the program, students participate in supervised experiential learning through research mentorship, applying principles in home, school, and community settings.

Admissions Requirements

- Students must have successfully completed a bachelor's degree with a GPA of 3.0.
- Students must be able to obtain all federal and PA state clearances before entering supervised placements.

Curriculum

- TLL 2590 - RESEARCH SEMINAR IN SPECIAL EDUCATION
- TLL 2564 - APPLIED BEHAVIORAL ANALYSIS 1: FUNDAMENTALS 1
- TLL 2565 - APPLIED BEHAVIORAL ANALYSIS 2: FUNDAMENTALS 2
- TLL 2566 - APPLIED BEHAVIORAL ANALYSIS 3: APPLICATIONS IN DEVELOPMENTAL DISABILITIES
- TLL 2567 - APPLIED BEHAVIORAL ANALYSIS 4: EMOTIONAL BEHAVIORAL DISABILITIES OF CHILDREN AND ADOLESCENTS
- TLL 2568 - APPLIED BEHAVIORAL ANALYSIS 5: CURRENT DEVELOPMENTS IN APPLIED BEHAVIORAL ANALYSIS
- TLL 2578 - APPLIED BEHAVIORAL ANALYSIS 6: ETHICS
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
  Electives (9 credits) - choose from list below:
- TLL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- TLL 2511 - CURR PRG DVLP-LOW INCDNC DISABS

- TLL 2521 - PROACTIVE STRATEGIES FOR A POSITIVE CLASSROOM
- TLL 2529 - BRAILLE
- TLL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- TLL 2531 - EDUCATION OF CHILDREN WITH VI 1
- TLL 2533 - ORIENTATION AND MOBILITY FOR THE TVI
- TLL 2540 - FOUNDATIONS OF ORIENTATION AND MOBILITY
- TLL 2569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM
- TLL 2585 - TECHNOLOGY-BASED INTERVENTIONS: AUTISM
- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY

Curriculum Starting in Spring 2027

Required Courses (30 credits)

- TLL 2564 - APPLIED BEHAVIORAL ANALYSIS 1: FUNDAMENTALS 1
- TLL 2565 - APPLIED BEHAVIORAL ANALYSIS 2: FUNDAMENTALS 2
- TLL 2567 - APPLIED BEHAVIORAL ANALYSIS 4: EMOTIONAL BEHAVIORAL DISABILITIES OF CHILDREN AND ADOLESCENTS
- TLL 2569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM (course taken twice; 3 credits each term)
- TLL 2570 - Experimental Analysis of Behavior
- TLL 2571 - Theory and Philosophy in Behavior Analysis
- TLL 2572 - Current Developments of Behavior Analysis
- TLL 2578 - APPLIED BEHAVIORAL ANALYSIS 6: ETHICS
- TLL 2590 - RESEARCH SEMINAR IN SPECIAL EDUCATION

Electives (3 credits)

Choose one course from list:

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- HHD 2007 - FOUNDATIONS OF INFANT MENTAL HEALTH 1
- HHD 2008 - FOUNDATIONS OF INFANT MENTAL HEALTH 2
- HHD 2023 - DEATH AND DYING
- HHD 2024 - FAMILY DYNAMICS
- HHD 2113 - DEVELOPMENTAL PSYCHOPATHOLOGY
- HHD 2380 - BEHAVIOR CHANGE AND HEALTH COACHING
- HHD 2520 - INTRODUCTION TO COUNSELING
- HHD 2532 - PSYCHOSOCIAL ASPECTS OF ILLNESS
- HHD 2562 - PLAY THERAPY AND FIELD WORK
- TLL 2500 - FOUNDATIONS OF SPECIAL EDUC
- TLL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- TLL 2521 - PROACTIVE STRATEGIES FOR A POSITIVE CLASSROOM

Total Credits: 33

Comprehensive Requirement

The requirements for the comprehensive project are completed within TLL 2569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of comprehensive requirement

Combined Applied Studies in Education, M.Ed.

The Master of Education in Combined Applied Studies in Education is within the Department of Teaching, Leading and Learning (TLL) in the School of Education. This degreeserves as the fifth year of the CASE program after completing the related B.S.; students come away from this program with expertise in general education and special education methods, as well as knowledge of practice-focused educational research methods. They are also eligible for both General Educuation PK-4 and Special Education PK-12 certification in PA. This degree is only available to those who complete the CASE B.S. major at the Pittsburgh campus of the University of Pittsburgh. Teacher certifications cannot be obtained until the completion of this graduate year of study.

Certification

Students are eligible for both General Educuation PK-4 and Special Education PK-12 certification in Pennsylvania through the Pennsylvania Department of Education.

Admissions Requirements

- Completion of the CASE undergraduate major at the University of Pittsburgh
- An undergraduate GPA of 3.0 or higher (state requirement)
- US citizen or green card required for PA teacher certification (this is a state policy)

Curriculum

GPA & Grade Requirements

Students must earn a 3.0 GPA in their graduate coursework in order to complete the degree. Students who do not maintain the 3.0 GPA will be placed on Academic Notice and not allowed to enroll or participate in field-based experiences.

All classes that are not directly field-related (ie: student teaching placements and related seminars) must be taken for a letter grade.

Educational Research Coursework

These classes are focused on providing students with a background in practice-focused educational research methodology.

- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY

Methods Coursework

These classes are focused on providing students with the methods and approaches best suited for teaching in early elementary and special education classrooms.

- TLL 2047 - INTEGRATED CURRICULUM PRE-K-4

- TLL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT
- TLL 2511 - CURR PRG DVLP-LOW INCDNC DISABS
- TLL 2512 - ASSMNT INSTRUC-HIGH INCDNC DISAB
- TLL 2513 - INSTRNL METH-HIGH INCIDNC DISABS
- TLL 2521 - PROACTIVE STRATEGIES FOR A POSITIVE CLASSROOM

Field-Based Experiences

These classes are the credit-bearing coursework for students' pre-student teaching and student teaching experiences, and the placement-related seminar course.

- TLL 2824 - STUDENT TEACHING SEMINAR
- TLL 2860 - PRACTICUM IN SPECIAL EDUCATION
- TLL 2504 - STUDENT TEACHING SPECIAL EDUCATION

Comprehensive Requirement

Students are required to complete a comprehensive exam to complete the M.Ed. program.

Total Credits: 30

Graduation Requirements

- Cumulative GPA of 3.0 or higher
- Successful completion of all coursework
- Successful completion of comprehensive exam

Curriculum & Instruction, M.Ed.

The MEd in Curriculum and Instruction degree develops practicing teachers' ability to create and facilitate cross-disciplinary (transdisciplinary) learning experiences that emphasize critical thinking, problem-based learning within real-world contexts, collaboration, creativity, and personal expression. These advanced teaching skills are represented in learning standards in most states, including Pennsylvania. Students' experiences will be framed by equity-oriented teaching practices. The program addresses the gap in professional learning and training for teachers to teach STEAM and critical technology and digital media skills.

Embedded in the curriculum of the MEd are the following graduate certificates:

- Critical Technology and Digital Media for Learning Certificate
- STEAM Certificate

Certification

The STEAM certificate is approved by the Pennsylvania Department of Education as meeting the requirements for the STEM PDE endorsement.

Admissions Requirements

- Applicants must hold a bachelor's degree.

- Applicants must have a site of practice (e.g. classroom, after school program, out-of-school learning experience etc.) and/or students or learners to work with when designing and assessing curriculum.

- Applicants must have at least 1-year teaching or related professional experience in K-12, higher education, informal learning contexts (e.g. museums, after school programs, libraries, etc.), or other educational contexts.

Curriculum

General Core Courses (6 Credits)

The following two courses are required.

- EDUC 2100 - EDUCATION AND SOCIETY
- TLL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS

STEAM Education Courses (12 Credits)

STEAM courses are required and will earn the student a university certificate. This certificate has a STEM endorsement from the Pennsylvania Department of Education (available to PA licensed teachers).

- TLL 2007 - STEAM: TRANSDISCIPLINARY LEARNING APPROACHES
- TLL 2008 - STEAM: INSTRUCTIONAL DESIGN
- TLL 2009 - STEAM: ASSESSMENT
- TLL 2010 - STEAM: IMPLEMENTATION

Critical Technology and Digital Media for Learning Courses (12 Credits)

The Critical Technology and Digital Media for Learning (CriT-DML) courses are required so students can obtain the CriT-DML university certificate.

- EDUC 2300 - DIGITAL MEDIA FOR LEARNING
- EDUC 2301 - ONLINE PEDAGOGY AND PRAXIS
- EDUC 2302 - CRITICAL DIGITAL LITERACIES, SCHOOLING, AND IDENTITY
- EDUC 2303 - TECHNOLOGY IN CONTEXT

Comprehensive Requirement

Students register with the program coordinator and complete an indpendent capstone (completed outside of course requirements) in thier last semester in the program. This will be done concurrently with their last class(es).

Total Credits: 30

Graduation Requirements

- Cumulative GPA of 3.0 or higher
- Completion of all required coursework
- Successful completion of comprehensive requirement

Early Childhood Education, MEd

The Early Childhood Education M.Ed. program is designed to provide candidates with a strong academic and practical background to support the education of young children (from birth to age 8) in varied settings including schools, community agencies, homes, and other settings. Through rigorous coursework, field placements, and hands-on learning, students develop competence in the use of culturally responsive and developmentally appropriate practices to educate infants, toddlers, preschoolers, and primary-age children.

While this program does not lead to a teaching certificate, it does prepare students to work in a variety of early childhood education-related settings such as private schools, preschools, childcare centers, and community agencies.

Admissions Requirements

Successful completion of undergraduate program with a 2.5 minimum GPA.

Requirements

Introduction to Early Childhood Education (3 credits)

- TLL 2041 - INTRO TO EARLY CHILDHOOD ED

Special Education (3 credits)

Choose one of the following 3-credit courses:

- TLL 2500 - FOUNDATIONS OF SPECIAL EDUC
- TLL 2501 - STUDENT W/DISAB IN ELEM CLSSRM
- TLL 2523 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETNGS IN ELEM CLSSRMS
- TLL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS

Community Resources (3 credits)

- TLL 2907 - COLLABORATIVE PARTNERSHIPS WITH FAMILIES AND THE COMMUNITIES

Methods Courses (9 credits)

Choose three of these 3-credit courses over the entirety of the program (9 credits total).

- TLL 2042 - LANGUAGE AND LITERATURE FOR THE YOUNG CHILD
- TLL 2047 - INTEGRATED CURRICULUM PRE-K-4
- TLL 2208 - READING/WRITING METHODS 1: PRE K - GRADE 1 **
- TLL 2209 - READING WRITING METHODS 2: GRADE 2-4 **
- TLL 2268 - SOCIAL STUDIES METHODS PRE-K - 4 **
- TLL 2270 - INTEGRATED ART & MUSIC IN ELEMENTARY SCHOOL
- TLL 2433 - MATH METHODS FOR PreK-4 STUDENTS **
- TLL 2434 - SCIENCE METHODS FOR PREK-GRADE 4 STUDENTS **
- TLL 2563 - SEM: INCLUSION EARLY CHILDHOOD
- TLL 2905 - TEACHING INFANTS, TODDLERS AND PRESCHOOLERS
- Other Elective Approved by Advisor - 3 credits

  **These courses may only be taken by students who are currently enrolled in a teacher certification program or who have already obtained teacher certification.

Introduction to Research Methods (3 credits)

Choose one of the following 3-credit courses:

- TLL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
  OR
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY

Research Seminar (3 credits)

- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS

Education & Human Development/ Psychological Perspectives on Education (3 credits)

Choose one of the following 3-credit courses:

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
  OR
- EDUC 2007 - HUMAN LEARNING

Approved Elective (3 credits)

Choose one 3-credit practicum or approved elective related to Early Childhood Education or Family Studies.

Total Credits: 30

Comprehensive Requirement

Students complete a take-home essay exam within a designated one-week period. This experience will take place at approximately the mid-point of the fall and spring semesters.

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Completion of all coursework
- Successful completion of comprehensive requirement

Education Leadership, M.Ed

The Master of Education in Education Leadership is a 30-credit degree program that includes the 18-credit K-12 Principal Certification Program and four additional 3-credit courses. A capstone project is required to complete the degree. This program is provided in an asynchronous, online format. The program provides candidates with the knowledge, skills, dispositions, and experiences to prepare them to lead equitable and just learning environments for children and school communities.

The courses approach learning from an equitable stance and consider the interplays between health, wellness, and human development. The program includes an internship component that will give candidates highly practical, real-world experiences with accomplished, practicing principals from various school communities. Career preparation and exposure activities are also included in the program to ensure that candidates are prepared for a successful start to their school leadership career. This program has the approval of the Pennsylvania Department of Education to qualify for K-12 Principal Certificate.

Admissions Requirements

- Candidates must hold a bachelor's degree from a regionally or nationally accredited college/university, as well as a valid teaching certification.
- Satisfies the requirements set forth in section 24 P.S. § 12-1209 relating to good moral character.
- Satisfactory completion of two years of relevant professional education experience that is in an educational setting and related to the instructional process.

Curriculum

24 credits of required courses must be completed:

- TLL 2409 - MULTI-TIERED SYSTEM OF SUPPORT
- TLL 2410 - INSTITUTIONAL LEADERSHIP
- TLL 2413 - SCHOOL LAW
- TLL 2414 - HEALTH, MENTAL HEALTH, & SAFETY
- TLL 2415 - INSTRUCTIONAL LEADERSHIP
- TLL 2097 - INTERNSHIP 3 credits taken (1 credit taken each term during the program- summer, fall, spring)
- EDUC 2100 - EDUCATION AND SOCIETY
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS

Select 6 credits of electives from the courses below:

- EDUC 2300 - DIGITAL MEDIA FOR LEARNING
- EDUC 2301 - ONLINE PEDAGOGY AND PRAXIS
- EDUC 2302 - CRITICAL DIGITAL LITERACIES, SCHOOLING, AND IDENTITY
- EDUC 2303 - TECHNOLOGY IN CONTEXT
- EDUC 2304 - PROJECT-BASED INSTRUCTIONAL DESIGN
- TLL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- TLL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT

Comprehensive Milestone

Students complete a capstone project aligned with their field-based internship experience, which is evaluated as a part of TLL 2097 - INTERNSHIP

Total Credits: 30

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Completion of all course requirements
- Successful completion of internship

English Education, MAT

The Master of Arts in Teaching (MAT) program in English Education offers students a rigorous course of instruction in teaching English in grades 7-12. Upon graduation, the MAT program satisfies the requirements for earning a Pennsylvania Instructional I Certificate and provides students with a Master of Arts in Teaching (MAT) degree.

Through coursework and a two-semester internship, the MAT program prepares students to become transformative teachers that: a) center radical care and relationality; b) invite, honor, and support diverse ways of knowing; c) recognize power and seek to remake unjust systems, structures, practices, and norms; c) design and enact specialized pedagogies to teach meaningful concepts and practices; and e) cultivate a deep and reflective professional practice.

Admissions Requirements

Students must have completed a bachelor's degree with a cumulative GPA of 3.0 or higher.

EDUCATION COURSE PREREQUISITES

- 3 credits of Foundations of Special Education
- 3 credits of Adolescent Development

EXPERIENCE WORKING WITH CHILDREN PREREQUISITE

- 30 hours of experience working with K-12 children (preferably adolescents). Typical experiences include work at summer camps, tutoring, community involvement, or other volunteer or paid work with children.
- To document experience with children, candidates, complete the Hours Documentation Form (PDF), is submitted with application materials

ENGLISH COURSE PREREQUISITES

- **12 credits of English Literature**
  - This area requires a minimum of 4 three-credit courses.
  - Courses must include reading, analysis, interpretation, and writing about literatures which reflect a diversity of genders, races, and cultural perspectives.
  - A single course may satisfy more than one of these required foci. Examples include, but are not limited to literature courses such as, American, Women's, African American, Native American, African, Latino/a, Caribbean, LGBTQ, Asian, World, British, or Adolescent.
- **3 credits of English Composition**
  - This area requires a minimum of one, 3-credit course.
  - Courses must have a composition or writing focus.
  - Examples include, but are not limited to, Fiction Writing, Journalism, Poetry, or Prose.
- **6 credits of English Electives**
  - This area requires a minimum of two, 3-credit courses.
  - Courses should focus on writing, English language, or English-related areas.
  - Examples: Linguistics, Sociolinguistics, Uses of Literacy, Fiction, Non-fiction, Journalism, Poetry, Media Studies, Theater Arts, Film Studies, Film Production, Film Analysis, or Rhetorical Studies.

MAT Regulations

Accreditation

PA Department of Education accredited

Certification Requirements

Our graduates satisfy the requirements to earn a Pennsylvania Instructional I Certificate and a Master of Arts in Teaching degree by achieving the following:

- Earning a passing score on the PRAXIS II Exam in their content area
- Completing Stage 3 competencies
- Completing the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430)
- Demonstrating satisfactory performance in courses and the student internship

Internship Experience

During the fall and spring terms, students complete an internship in a local public school under the supervision of a mentor teacher and university coach. Through a gradual release of responsibility, interns observe, analyze, co-teach, and independently teach in the grade levels and subjects of their mentor teacher. In the fall term, MAT students spend approximately 15 hours per week teaching with their mentor teacher. In the spring term, MAT students attend their school sites full time, and eventually take-over their mentor teacher's full responsibilities for a minimum of two weeks.

GPA and Grade requirements

All students enrolled in the MAT majors are required to maintain a grade point average (GPA) of at least 3.0. A student is automatically placed on academic noticeif the cumulative GPA, exclusive of transfer credits, falls below 3.000. No student on academic notice is permitted to participate in student teaching, a teaching internship, or an advanced teaching practicum.

All classes that are not directly field-related (i.e.: student teaching placements and related seminars) must be taken for a letter grade.

Graduation Requirements

Students must complete the 36 credits required by the program plan of study, successfully complete the comprehensive requirement, fulfill all PA Department of Education (PDE) requirements, and obtain the required GPA of 3.00 to meet graduation requirements.

Comprehensive requirement

Completed in TLL 2290 research seminar capstone project

Curriculum

Summer semester (6 credits):

- TLL 2584 - CRITICAL PEDAGOGIES AND PRAXES
- TLL 2581 - CRITICAL HISTORIES OF EDUCATION

Fall semester (15 credits):

School placement: Mid-August through placement school district's last day before winter break

- TLL 2230 - TEACHING AND LEARNING IN SECONDARY ENGLISH 1
- TLL 2871 - TEACHING AND LEARNING IN SECONDARY ENGLISH 2
- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- TLL 2514 - SUPPORTING STUDENTS WITH DISABILTIES IN INCLUSIVE CLASSROOMS
- TLL 2881 - INTERNSHIP-ENGLISH OR COM EDUC

Spring semester (15 credits):

School placement: Placement school's first day back through the end of April

- TLL 2583 - CULTURES, KNOWLEDGE TRADITIONS, AND SOCIAL SYSTEMS OF SCHOOLING 1
- TLL 2515 - SUPPORTING LITERACIES IN INCLUSIVE CLASSROOMS
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- TLL 2824 - STUDENT TEACHING SEMINAR (1 cr)
- TLL 2881 - INTERNSHIP-ENGLISH OR COM EDUC (5 cr)

Total Credits: 36

Mathematics Education, MAT

The Mathematics Education, MAT offers students a rigorous course of instruction in teaching Math content in grades 7-12. Upon graduation, the MAT program satisfies the requirements for earning a Pennsylvania Instructional I Certificate and provides students with a Master of Arts in Teaching (MAT) degree.

Through coursework and a two-semester internship, the MAT program prepares students to become transformative teachers that: a) center radical care and relationality; b) invite, honor, and support diverse ways of knowing; c) recognize power and seek to remake unjust systems, structures, practices, and norms; c) design and enact specialized pedagogies to teach meaningful concepts and practices; and e) cultivate a deep and reflective professional practice.

Admissions Requirements

Students must have completed a bachelor's degree with a cumulative GPA of 3.0 or higher.

EDUCATION COURSE PREREQUISITES

- 3 credits of Foundations of Special Education
- 3 credits of Adolescent Development

EXPERIENCE WORKING WITH CHILDREN PREREQUISITE

- 30 hours of experience working with K-12 children (preferably adolescents). Typical experiences include work at summer camps, tutoring, community involvement, or other volunteer or paid work with children.
- To document experience with children, candidates submit the Hours Documentation Form (PDF) with application materials

MATH COURSE PREREQUISITES

- Completion of a bachelor's degree with a major in mathematics or a mathematics-related field (e.g. physics, engineering, economics)
- Completion of the college-level Calculus Sequence (Calculus 1,2 & 3, or its equivalent)
- College-level experience in Abstract Algebra, Number Theory, Linear Algebra, Geometry, Probability, and Statistics (single courses may satisfy multiple areas; a portion of a course that substantially addresses one of the areas may also be accepted. In either of these cases, further information (e.g. syllabi, course documents) will be required to make a case for approval).

MAT Regulations

Accreditation

PA Department of Education accredited

Certification Requirements

Our graduates satisfy the requirements to earn a Pennsylvania Instructional I Certificate and a Master of Arts in Teaching degree by achieving the following:

- Earning a passing score on the PRAXIS II Exam in their content area
- Completing Stage 3 competencies
- Completing the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430)
- Demonstrating satisfactory performance in courses and the student internship

Internship Experience

During the fall and spring terms, students complete an internship in a local public school under the supervision of a mentor teacher and university coach. Through a gradual release of responsibility, interns observe, analyze, co-teach, and independently teach in the grade levels and subjects of their mentor teacher. In the fall term, MAT students spend approximately 15 hours per week teaching with their mentor teacher. In the spring term, MAT students attend their school sites full time, and eventually take-over their mentor teacher's full responsibilities for a minimum of two weeks.

GPA and Grade requirements

All students enrolled in the MAT majors are required to maintain a grade point average (GPA) of at least 3.0. A student is automatically placed on academic noticeif the cumulative GPA, exclusive of transfer credits, falls below 3.000. No student on academic notice is permitted to participate in student teaching, a teaching internship, or an advanced teaching practicum.

All classes that are not directly field-related (i.e.: student teaching placements and related seminars) must be taken for a letter grade.

Graduation Requirements

Students must complete the 36 credits required by the program plan of study, successfully complete the comprehensive requirement, fulfill all PA Department of Education (PDE) requirements, and obtain the required GPA of 3.00 to meet graduation requirements.

Comprehensive requirement

Completed in TLL 2290 research seminar capstone project

Curriculum

Summer semester (6 credits):

- TLL 2584 - CRITICAL PEDAGOGIES AND PRAXES
- TLL 2581 - CRITICAL HISTORIES OF EDUCATION

Fall semester (15 credits):

School placement: Mid-August through placement school district's last day before winter break

- TLL 2476 - TEACHING AND LEARNING IN SECONDARY MATH 1
- TLL 2874 - TEACHING AND LEARNING IN SECONDARY MATH 2
- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- TLL 2514 - SUPPORTING STUDENTS WITH DISABILTIES IN INCLUSIVE CLASSROOMS
- TLL 2495 - INTERNSHIP - MATH

Spring semester (15 credits):

School placement: Placement district's first day back through end of April

- TLL 2583 - CULTURES, KNOWLEDGE TRADITIONS, AND SOCIAL SYSTEMS OF SCHOOLING 1
- TLL 2515 - SUPPORTING LITERACIES IN INCLUSIVE CLASSROOMS
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- TLL 2824 - STUDENT TEACHING SEMINAR (1 cr)
- TLL 2495 - INTERNSHIP - MATH (5 cr)

Total Credits: 36

Orientation and Mobility for Individuals with Visual Impairment and Blindness, M.Ed.

The Orientation and Mobility for Individuals with Visual Impairment and Blindness, M.Ed. provides students with the professional competencies and experiential learning to become orientation and mobility specialists eligible for certification by the Academy for Certification of Vision Rehabilitation and Education Professionals (ACVREP), the national certifying body in O&M. The program is offered in a hybrid format, with most courses online and a limited number of workshops in person. Students also complete a clinical experience of at least 350 hours.

The program in Orientation and Mobility Specialist program (O&M) provides training to become an O&M practitioner for individuals of all ages and abilities. The program prepares students to earn certification as a Certified Orientation and Mobility Specialist (COMS), which is a gateway to a diverse range of employment opportunities. The program is offered in a hybrid format, with most courses online and a limited number of weekend workshops in person. TLL 2750 and 2752 are in-person, on-campus offered during the summer term. Students also complete a clinical experience of at least 350 hours. Pitt offers the O&M Graduate Certificate (26 credits), with the option to add on a Master's Degree in Education for an additional six credits (32 credits total).

Accreditations Associated

This program is fully accredited by the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER).

Admissions Requirements

- Bachelor's degree in any subject; 3.0 cumulative GPA.
- One prerequisite course is required but can be taken as co-requisite with students' plan of studies:
    - Foundations of Special Education

Curriculum

All courses are 3 credits except where indicated

- TLL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- TLL 2531 - EDUCATION OF CHILDREN WITH VI 1
- TLL 2540 - FOUNDATIONS OF ORIENTATION AND MOBILITY
- TLL 2750 - TECHNIQUES OF ORIENTATION AND MOBILITY 1
- TLL 2752 - TECHNIQUES OF ORIENTATION AND MOBILITY 2
- TLL 2541 - PROGRAM DEVELOPMENT: ORIENTATION AND MOBILITY
- TLL 2753 - ORIENTATION AND MOBILITY FOR DIVERSE POPULATIONS
- TLL 2857 - LEVEL 3 INTERNSHIP ORIENTATION AND MOBILITY (5 credits)
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS **or** TLL 2590 - RESEARCH SEMINAR IN SPECIAL EDUCATION

Student Teaching GPA Requirement

This program prepares students for national certification through the Academy for Certification of Vision Rehabilitation & Education Professionals (ACVREP), and students must maintain an overall 3.0 GPA. If a student does not maintain a 3.0 GPA, they will be prohibited from starting their internship and may impact completion of their program.

Comprehensive Milestone

Students must successfully complete a comprehensive examination to earn the M.Ed.

Total Credits : 32

Graduation Requirements

- 3.0 or higher GPA
- Completion of all O&M program coursework with a grade of B- or higher
- Completion of all other coursework requires a C or higher
- Successful completion of internship
- Comprehensive Examination

Reading Education, M.Ed.

The School of Education offers preparation that leads to certification as a Reading Specialist(PK-12). Coursework is completed fully online The curriculum for the Reading Specialist Certificate of Advanced Study (K-12) is designed to provide candidates with opportunities to build specialized knowledge, engage in principled practice in supervised settings, and prepare for leadership roles in schools and school districts. The Reading Specialist M.Ed. combines the reading specialist coursework with required research coursework to earn an M.Ed. in the field. All coursework is available online.

Admissions Requirements

- Must hold a current teaching certification
- 3.0 or higher GPA in undergraduate work
- Program course pre-requisites:
    - Teaching of Reading **or** Language Arts (3 cr)
    - Human Development **or** Educational Psychology (3 cr)
    - Educational Foundations **or** History of American Education (3 cr)
- Applicants who hold an Instructional I teaching certification from Pennsylvania earned after January 1, 2011 will have met the following course requirements through their initial certification programs. Applicants who hold a PA certification from an earlier time or who hold an out-of-state certification must meet the following requirements to be eligilbe to earn the PDE Reading Speciailst Certification (PK12):
    - Teaching English Language Learners (3 cr)
    - Foundations of Special Education (3 cr)
    - Supporting Students with Disabilities in Inclusive Classrooms (3 cr)
    - Supporting Literacies in Inclusive Classrooms (3 cr)

Certification

Students who meet all course, grade, and GPA requirements will be eligible for the Pennsylvania Department of Education Reading Specialist PreK-12 certification. Students must take and pass the Reading Specialist Praxis exam to earn the certificate.

Curriculum

- TLL 2203 - LANGUAGE AND LANGUAGE SYSTEMS
- TLL 2211 - COMPREHENSION AND VOCABULARY
- TLL 2219 - DISCIPLINARY LITERACY **or** TLL 2515 - SUPPORTING LITERACIES IN INCLUSIVE CLASSROOMS
- TLL 2204 - Supporting Early Literacy
- TLL 2205 - Supporting Adolescent Literacies

- TLL 2207 - Literacy Practicum
- TLL 2202 - Literacy Leadership in Schools I
- TLL 2206 - Literacy Leadership in Schools II
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- Elective - Choose one course from list below:
    - EDUC 2100 - EDUCATION AND SOCIETY
    - EDUC 2300 - DIGITAL MEDIA FOR LEARNING
    - EDUC 2302 - CRITICAL DIGITAL LITERACIES, SCHOOLING, AND IDENTITY
    - TLL 2008 - STEAM: INSTRUCTIONAL DESIGN
    - TLL 2042 - LANGUAGE AND LITERATURE FOR THE YOUNG CHILD
    - TLL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
    - TLL 2409 - MULTI-TIERED SYSTEM OF SUPPORT
    - TLL 2415 - INSTRUCTIONAL LEADERSHIP

Comprehensive Requirement

Students will complete a comprehensive exam as part of the MEd requirements

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of all required courses.
    - All classes that are not directly field-related (i.e.: student teaching placements and related seminars) must betaken for a letter grade.
- Successful completion of comprehensive exam

Total Credits: 30

Science Education, MAT

The Master of Arts in Teaching (MAT) program in Science Education offers students a rigorous course of instruction in teaching English in grades 7-12. Upon graduation, the MAT program satisfies the requirements for earning a Pennsylvania Instructional I Certificate and provides students with a Master of Arts in Teaching (MAT) degree.

Through coursework and a two-semester internship, the MAT program prepares students to become transformative teachers that: a) center radical care and relationality; b) invite, honor, and support diverse ways of knowing; c) recognize power and seek to remake unjust systems, structures, practices, and norms; c) design and enact specialized pedagogies to teach meaningful concepts and practices; and e) cultivate a deep and reflective professional practice.

In this program, students select one of the following areas of specialization in science: Biology, Chemistry, Earth and Space Science, General Science, or Physics.

Admissions Requirements

Students must have completed a bachelor's degree with a cumulative GPA of 3.0 or higher.

EDUCATION COURSE PREREQUISITES

- 3 credits of Foundations of Special Education
- 3 credits of Adolescent Development

EXPERIENCE WORKING WITH CHILDREN PREREQUISITE

- 30 hours of experience working with K-12 children (preferably adolescents). Typical experiences include work at summer camps, tutoring, community involvement, or other volunteer or paid work with children.
- To document experience with children, candidates, complete the Hours Documentation Form (PDF), is submitted with application materials

SCIENCE COURSE PREREQUISITES

PREREQUISITES FOR BIOLOGY APPLICANTS ONLY

- A minimum of 38 credits of college-level coursework in Biology or related fields (e.g., Biochemistry, Environmental Science, etc.) with at least 9 of these credits at the upper level (junior/senior) and/or research internships;
- Foundations of Biology I and II (with labs); General Chemistry I and II (with labs); Organic Chemistry I (with lab); Calculus I (not included in 38 credit total)
- Evidence of coursework (or equivalent academic or professional experiences) in Molecular or Cellular Biology, Genetics, Biochemistry, and Environmental Biology or Ecology (single courses may satisfy multiple areas; a portion of a course that substantially addresses one of the areas may also be accepted. In either of these cases, further information (e.g. syllabi, course documents) will be required to make a case for approval)

PREREQUISITES FOR CHEMISTRY APPLICANTS ONLY

- A minimum of 38 credits of college-level coursework in Chemistry or related fields (e.g., Biochemistry, Geochemistry, etc.) with at least 9 of these credits at the upper level (junior/senior) and/or research internships;
- Foundations of Biology I (with lab); General Chemistry I and II (with labs); Organic Chemistry I and II (with labs); Introduction to Physics I; Calculus I and II (not included in 38 credit total);
- Evidence of coursework (or equivalent academic or professional experiences) in Analytic Chemistry or Instrumental Analysis; Physical Chemistry; Biochemistry, Environmental Science, or Geochemistry; (single courses may satisfy multiple areas; a portion of a course that substantially addresses one of the areas may also be accepted. In either of these cases, further information (e.g. syllabi, course documents) will be required to make a case for approval).

PREREQUISITES FOR GENERAL SCIENCE APPLICANTS ONLY

- A minimum of 38 credits of college-level coursework in the natural sciences and/or mathematics (at least 9 credits at the upper level (junior/senior) and/or research internships
- Foundations of Biology I and II (with labs);
- General Chemistry I and II (with labs); Organic Chemistry; Introduction to Physics I and II; Physics Lab; Calculus I (not included in 38 credit total)
- Evidence of coursework (or equivalent academic or professional experiences) in Molecular or Cellular Biology, Environmental Biology or Ecology, Geology, and Astronomy (single courses may satisfy multiple areas; a portion of a course that substantially addresses one of the areas may also be accepted. In either of these cases, further information (e.g. syllabi, course documents) will be required to make a case for approval).

PREREQUISITES FOR PHYSICS APPLICANTS ONLY

- A minimum of 38 credits of college-level coursework in Physics or related fields (e.g., Biophysics, Mathematics, etc.) with at least 9 of these credits at the upper level (junior/senior) and/or research internships;
- Introduction to Physics I and II (with labs); General Chemistry I and II (with labs); Calculus I, II, and III (not included in 38 credit total);
- Evidence of coursework (or equivalent academic or professional experiences) in Mechanics (above introductory level); Electricity and Magnetism (above introductory level); Optics; Wave Motion; Ethical, Human, and/or Environmental Applications of Contemporary Physics; (single courses may satisfy multiple areas; a portion of a course that substantially addresses one of the areas may also be accepted. In either of these cases, further information (e.g. syllabi, course documents) will be required to make a case for approval).

MAT Regulations

Accreditation

PA Department of Education accredited

Certification Requirements

Our graduates satisfy the requirements to earn a Pennsylvania Instructional I Certificate and a Master of Arts in Teaching degree by achieving the following:

- Earning a passing score on the PRAXIS II Exam in their content area
- Completing Stage 3 competencies
- Completing the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430)
- Demonstrating satisfactory performance in courses and the student internship

Internship Experience

During the fall and spring terms, students complete an internship in a local public school under the supervision of a mentor teacher and university coach. Through a gradual release of responsibility, interns observe, analyze, co-teach, and independently teach in the grade levels and subjects of their mentor teacher. In the fall term, MAT students spend approximately 15 hours per week teaching with their mentor teacher. In the spring term, MAT students attend their school sites full time, and eventually take-over their mentor teacher's full responsibilities for a minimum of two weeks.

GPA and Grade requirements

All students enrolled in the MAT majors are required to maintain a grade point average (GPA) of at least 3.0. A student is automatically placed on academic noticeif the cumulative GPA, exclusive of transfer credits, falls below 3.000. No student on academic notice is permitted to participate in student teaching, a teaching internship, or an advanced teaching practicum.

All classes that are not directly field-related (i.e.: student teaching placements and related seminars) must be taken for a letter grade.

Graduation Requirements

Students must complete the 36 credits required by the program plan of study, successfully complete the comprehensive requirement, fulfill all PA Department of Education (PDE) requirements, and obtain the required GPA of 3.00 to meet graduation requirements.

Comprehensive requirement

Completed in TLL 2290 research seminar capstone project

Curriculum

Summer semester (6 credits):

- TLL 2584 - CRITICAL PEDAGOGIES AND PRAXES
- TLL 2581 - CRITICAL HISTORIES OF EDUCATION

Fall semester (15 credits):

School placement: Mid-August through placement school district's last day before winter break

- TLL 2430 - TEACHING & LEARNING IN SECONDARY SCIENCE 1
- TLL 2873 - TEACHING AND LEARNING IN SECONDARY SCIENCE 2
- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- TLL 2514 - SUPPORTING STUDENTS WITH DISABILTIES IN INCLUSIVE CLASSROOMS
- TLL 2496 - INTERNSHIP - SCIENCE

Spring semester (15 credits):

School placement: Placement district's first day back through end of April

- TLL 2583 - CULTURES, KNOWLEDGE TRADITIONS, AND SOCIAL SYSTEMS OF SCHOOLING 1
- TLL 2515 - SUPPORTING LITERACIES IN INCLUSIVE CLASSROOMS
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- TLL 2824 - STUDENT TEACHING SEMINAR (1 cr)
- TLL 2496 TLL 2496 - INTERNSHIP - SCIENCE (5 cr)

Total Credits: 36

Social Studies Education, MAT

The Master of Arts (MAT) program in Social Studies Education offers students a rigorous course of instruction in teaching Social Studies content in grades 7-12. Upon graduation, the MAT program satisfies the requirements for earning a Pennsylvania Instructional I Certificate and provides students with a Master of Arts in Teaching (MAT) degree.

Through coursework and a two-semester internship, the MAT program prepares students to become transformative teachers that: a) center radical care and relationality; b) invite, honor, and support diverse ways of knowing; c) recognize power and seek to remake unjust systems, structures, practices, and norms; c) design and enact specialized pedagogies to teach meaningful concepts and practices; and e) cultivate a deep and reflective professional practice.

Admissions Requirements

Students must have completed a bachelor's degree with a cumulative GPA of 3.0 or higher.

EDUCATION COURSE PREREQUISITES

- 3 credits of Foundations of Special Education
- 3 credits of Adolescent Development

EXPERIENCE WORKING WITH CHILDREN PREREQUISITE

- 30 hours of experience working with K-12 children (preferably adolescents). Typical experiences include work at summer camps, tutoring, community involvement, or other volunteer or paid work with children.
- To document experience with children, candidates, complete the Hours Documentation Form (PDF), is submitted with application materials

SOCIAL STUDIES COURSE PREREQUISITES

Area 1: Content Prerequisites 15-18 credits)

This area requires a minimum of 5 three-credit courses. Courses must directly address content in the following topic areas. A single course may satisfy more than one of these required foci. If regional, period, and/or topic specific courses are used to meet these prerequisites, up to 3 additional credits will be required in order to meet content expectations.

- U.S. History;
- Western European History;
- World History (non-Western);
- Ancient History;
- Geography; and
- World Cultures

Area 2: Civics (3 credits)

The course must focus on general themes of political science, particularly those related to democracy, civic engagement, American political systems, or related topics.

Area 3: Economics (3 credits)

A course in basic or advanced Economics is required

Area 4: Sociology and Social Foundations (3 credits)

This prerequisite may be satisfied by a course in either the humanities, social sciences, or education that examines how socially constructed categories create advantages and disadvantages in social or educational institutions.

Examples include courses that explore the history, nature, or implications of:

- classism and capitalism;
- heterosexism, homophobia, genderism, and sexism;
- racism, xenophobia, and ethnocentrism;
- religious oppression;
- ableism; and/or
- other, interrelated forms of subordination

MAT Regulations

Accreditation

PA Department of Education accredited

Certification Requirements

Our graduates satisfy the requirements to earn a Pennsylvania Instructional I Certificate and a Master of Arts in Teaching degree by achieving the following:

- Earning a passing score on the PRAXIS II Exam in their content area
- Completing Stage 3 competencies
- Completing the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430)
- Demonstrating satisfactory performance in courses and the student internship

Internship Experience

During the fall and spring terms, students complete an internship in a local public school under the supervision of a mentor teacher and university coach. Through a gradual release of responsibility, interns observe, analyze, co-teach, and independently teach in the grade levels and subjects of their mentor teacher. In the fall term, MAT students spend approximately 15 hours per week teaching with their mentor teacher. In the spring term, MAT students attend their school sites full time, and eventually take-over their mentor teacher's full responsibilities for a minimum of two weeks.

GPA and Grade requirements

All students enrolled in the MAT majors are required to maintain a grade point average (GPA) of at least 3.0. A student is automatically placed on academic noticeif the cumulative GPA, exclusive of transfer credits, falls below 3.000. No student on academic notice is permitted to participate in student teaching, a teaching internship, or an advanced teaching practicum.

All classes that are not directly field-related (i.e.: student teaching placements and related seminars) must be taken for a letter grade.

Graduation Requirements

Students must complete the 36 credits required by the program plan of study, successfully complete the comprehensive requirement, fulfill all PA Department of Education (PDE) requirements, and obtain the required GPA of 3.00 to meet graduation requirements.

Comprehensive requirement

Completed in TLL 2290 research seminar capstone project

Curriculum

Summer semester (6 credits):

- TLL 2584 - CRITICAL PEDAGOGIES AND PRAXES
- TLL 2581 - CRITICAL HISTORIES OF EDUCATION

Fall semester (15 credits):

School placement: Mid-August through placement school district's last day before winter break

- TLL 2260 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 1
- TLL 2872 - TEACHING AND LEARNING IN SECONDARY SOCIAL STUDIES 2
- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- TLL 2514 - SUPPORTING STUDENTS WITH DISABILTIES IN INCLUSIVE CLASSROOMS
- TLL 2883 - INTERNSHIP - SOCIAL STUDIES

Spring semester (15 credits):

School placement: Placement district's first day back through end of April

- TLL 2583 - CULTURES, KNOWLEDGE TRADITIONS, AND SOCIAL SYSTEMS OF SCHOOLING 1
- TLL 2515 - SUPPORTING LITERACIES IN INCLUSIVE CLASSROOMS
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- TLL 2824 - STUDENT TEACHING SEMINAR (1 cr)
- TLL 2883 - INTERNSHIP - SOCIAL STUDIES (5 cr)

Total Credits: 36

Special Education PreK-12, MEd

The Special Education PreK-12 MEd program prepares teachers to implement evidence-based instructional methods for school-age children with disabilities. Graduates meet training eligibility for the Instructional I Special Education PreK-12 teaching certificate from the Pennsylvania Department of Education and earn a Master of Education degree.

Admissions Requirements

Bachelor's degree in any area of study. Candidates can have degrees in education, psychology, and various social science majors. We also welcome students who have worked in different fields.

Prerequisites (6 credits), which can also be taken as co-requisites:

- Foundations of Special Education (3 credits)

- Teaching English Language Learners (3 credits)

Clearances

In order to participate in an internship where students interact with minors as part of the requirements for this program in the School of Education, students must submit all of the required clearances to the School of Education Clearance Portal.

Curriculum

Core Curriculum (24 credits)

- TLL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT
- TLL 2513 - INSTRNL METH-HIGH INCIDNC DISABS
- TLL 2511 - CURR PRG DVLP-LOW INCDNC DISABS
- TLL 2521 - PROACTIVE STRATEGIES FOR A POSITIVE CLASSROOM
- TLL 2512 - ASSMNT INSTRUC-HIGH INCDNC DISAB
- TLL 2860 - PRACTICUM IN SPECIAL EDUCATION (1 credit)
- TLL 2504 - STUDENT TEACHING SPECIAL EDUCATION (4 credits)
- TLL 2824 - STUDENT TEACHING SEMINAR (1 credit)
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS

Structured Literacy Curriculum Course Options (choose 3 credits from below):

- TLL 2203 - LANGUAGE AND LANGUAGE SYSTEMS (online)
- TLL 2208 - READING/WRITING METHODS 1: PRE K - GRADE 1
- TLL 2209 - READING WRITING METHODS 2: GRADE 2-4

Electives (6 credits)

Students work with their advisor to choose elective courses to enhance their teaching preparation in alignment with specific career goals and previous coursework. These courses may be from the fields including but not limited to Reading Education, STEAM education, Human Development, Equity & Justice or Educational Research. Elective courses must be approved in advance by the advisor.

Total Credits : 33

Internship

During the school year, students complete an internship in a local public school under the supervision of a mentor teacher. Students complete 15 hours a week in their placements in the fall and are full-time in the spring. Student teachers observe, analyze, and practice teaching skills in the grade levels and subjects of their mentor teacher.

Comprehensive Milestone

All students are required to pass a Comprehensive Exam in their final term.

Certification Requirements

All students are required to successfully complete Pennsylvania Initial Teaching Certification requirements, including passing necessary Praxis exams, Stage 3 competencies, and PDE 430 evaluation.

Graduation Requirements

- All students are required to maintain a grade point average (GPA) of at least 3.0 throughout the program.

- Successful completion of Comprehensive Exam
- Successful completion of all course and student teaching requirements

Teacher of Students with Visual Impairments and Blindness (TVI) MEd

The Teacher of Students with Visual Impairments (TVI) MEd program at the University of Pittsburgh School of Education is fully aligned with the Pennsylvania Department of Education (PDE) standards, the curriculum will prepare students for state certification to teach in preK-12 classrooms. Pennsylvania Department of Education TVI certification can only be earned by candidates who complete their student teaching in Pennsylvania (students from outside PA must check with their state's certification/licensure requirements). The program is offered in a hybrid format, with most courses online and a limited number of workshops in person. Students also complete a semester-long student teaching experience with a certified TVI. The Pitt MEd program features a TVI graduate certificate (29 credits) whose courses lead to state certification and an additional 6 credits which complete the Master's degree requierments.

Accreditations Associated

This program is fully accredited by the Association for Education and Rehabilitation of the Blind and Visually Impaired (AER).

Admissions Requirements

Bachelor's degree in any subject; 3.0 cumulative GPA.

Four prerequisite courses are required but can be taken as co-requisites with students' plan of studies:

- Foundations of Special Education
- Teaching English Language Learners
- Supporting Literacy in the Inclusive Classroom
- Supporting Students with Disabilities in Inclusive Classrooms

Student Teaching

The Pennsylvania Department of Education (PDE) requires that all students must enter a teacher education program with and maintain an overall 3.0 GPA. If a student does not maintain a 3.0 GPA, they will be prohibited from student teaching or earning certification. A full semester of student teaching is required.

Curriculum

- TLL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- TLL 2531 - EDUCATION OF CHILDREN WITH VI 1
- TLL 2529 - BRAILLE
- TLL 2535 - COMMUNICATION SKILLS FOR STUDENTS WITH VISUAL IMPAIRMENTS
- TLL 2525 - TECHNOLOGY FOR CHILDREN WITH VI
- TLL 2533 - ORIENTATION AND MOBILITY FOR THE TVI
- TLL 2545 - EDUCATION OF CHILDREN WITH VI 2
- TLL 2547 - NEMETH CODE/ABACUS
- TLL 2524 - LEVEL 2 STUDENT TEACHING PRACTICUM IN VISUAL IMPAIRMENTS 5 credits
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS **or** TLL 2590 - RESEARCH SEMINAR IN SPECIAL EDUCATION

Total Credits : 35

Comprehensive Milestone

Students must successfully complete a take-home comprehensive examination to earn the M.Ed.

Graduation Requirements

- 3.0 or higher GPA
- Successful completion of all coursework
- Successful completion of full-time student teaching assignment
- Successful completion of comprehensive examination

World and Heritage Language Education, MAT

The Master of Arts in Teaching (MAT) program in World and Heritage Language Education offers students a rigorous course of instruction in teaching World Languages in grades PK-12 with a specialization in one of the following languages: Spanish, French, German, Latin, Japanese, Chinese or Italian. Upon graduation, the MAT program satisfies the requirements for earning a Pennsylvania Instructional I Certificate and provides students with a Master of Arts in Teaching (MAT) degree.

Through coursework and a two-semester internship, the MAT program prepares students to become transformative teachers that: a) center radical care and relationality; b) invite, honor, and support diverse ways of knowing; c) recognize power and seek to remake unjust systems, structures, practices, and norms; c) design and enact specialized pedagogies to teach meaningful concepts and practices; and e) cultivate a deep and reflective professional practice.

Admissions Requirements

Students must have completed a bachelor's degree with a cumulative GPA of 3.0 or higher.

ORAL PROFICIENCY ADMISSION REQUIREMENT:

- A score of an Intermediate-high or above on the Oral Proficiency Interview (OPI) taken through Language Testing International (LTI)

EDUCATION COURSE PREREQUISITES

- 3 credits of Foundations of Special Education
- 3 credits of Adolescent Development

EXPERIENCE WORKING WITH CHILDREN PREREQUISITE

- 30 hours of experience working with K-12 children (preferably adolescents). Typical experiences include work at summer camps, tutoring, community involvement, or other volunteer or paid work with children.
- To document experience with children, candidates submit the Hours Documentation Form (PDF) with application materials

WORLD AND HERITAGE LANGUAGE COURSE PREREQUISITES

A total of 24 credits are necessary to be distributed across Area 1 and Area 2. At least 12 credits must be completed in both Areas 1 and 2.

Area 1: Languages and Linguistics (At least 12 credits)

- Conversation and Advanced Conversation (3 credits)
- Composition/Writing (3 credits)
- Stylistics (3 credits)
- Phonetics (3 credits)

- Grammar (3 credits)
- Syntax (3 credits)
- Structure of the Language (3 credits)
- Dialects (3 credits)
- Morphology (3 credits)
- Listening Comprehension (3 credits)
- Advanced Reading (not a literature course) (3 credits)
- Professional Translation (3 credits)
- History of the Language (3 credits)
- Introduction to Linguistics (may be taught in English) (3 credits)

Area 2: Literature and Culture (At least 12 credits)

- Civilization I (3 credits)
- Civilization II (3 credits)
- Major Cultural Periods (3 credits)
- Cultural Heritage Courses (3 credits)
- Literature Surveys (3 credits)
- Author Courses (3 credits)
- Genre Courses (3 credits)
- Literary Period Courses (3 credits)
- Cultural Period Courses (3 credits)
- Thematically-based Literature Courses (3 credits)

The following prerequisites must be fulfilled by all applicants of **Latin** *only. A total of 24 credits are necessary, with at least 12 credits in Latin Area 1 and 12 credits in Latin Area 2.*

- **Latin Area 1**
  - Roman Civilization (3 credits)
  - Latin Prose Composition (3 credits)
- **Latin Area 2**
  - At least 12 credits in Latin with a maximum of 144 credits

MAT Regulations

Accreditation

PA Department of Education accredited

Certification Requirements

Our graduates satisfy the requirements to earn a Pennsylvania Instructional I Certificate and a Master of Arts in Teaching degree by achieving the following:

- Earning a passing score on the PRAXIS II Exam in their content area
- Completing Stage 3 competencies
- Completing the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430)
- Demonstrating satisfactory performance in courses and the student internship

Internship Experience

During the fall and spring terms, students complete an internship in a local public school under the supervision of a mentor teacher and university coach. Through a gradual release of responsibility, interns observe, analyze, co-teach, and independently teach in the grade

levels and subjects of their mentor teacher. In the fall term, MAT students spend approximately 15 hours per week teaching with their mentor teacher. In the spring term, MAT students attend their school sites full time, and eventually take-over their mentor teacher's full responsibilities for a minimum of two weeks.

GPA and Grade requirements

All students enrolled in the MAT majors are required to maintain a grade point average (GPA) of at least 3.0. A student is automatically placed on academic noticeif the cumulative GPA, exclusive of transfer credits, falls below 3.000. No student on academic notice is permitted to participate in student teaching, a teaching internship, or an advanced teaching practicum.

All classes that are not directly field-related (i.e.: student teaching placements and related seminars) must be taken for a letter grade.

Graduation Requirements

Students must complete the 36 credits required by the program plan of study, successfully complete the comprehensive requirement, fulfill all PA Department of Education (PDE) requirements, and obtain the required GPA of 3.00 to meet graduation requirements.

Comprehensive requirement

Completed in TLL 2290 research seminar capstone project

Curriculum

Summer semester (6 credits):

- TLL 2584 - CRITICAL PEDAGOGIES AND PRAXES
- TLL 2581 - CRITICAL HISTORIES OF EDUCATION

Fall semester (15 credits):

School placement: Mid-August through placement school district's last day before winter break

- TLL 2252 - TEACHING AND LEARNING IN PK-12 WORLD AND HERITAGE LANGUAGE EDUCATION 1
- TLL 2870 - TEACHING & LEARNING IN PK-12 WORLD AND HERITAGE LANGUAGE 2
- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- TLL 2514 - SUPPORTING STUDENTS WITH DISABILTIES IN INCLUSIVE CLASSROOMS
- TLL 2882 - INTERNSHIP IN WORLD AND HERITAGE LANGUAGE EDUCATION

Spring semester (15 credits):

School placement: Placement district's first day back through end of April

- TLL 2702 - ADVANCED PRACTICUM IN FOREIGN LANGUAGE
- TLL 2515 - SUPPORTING LITERACIES IN INCLUSIVE CLASSROOMS
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- TLL 2824 - STUDENT TEACHING SEMINAR (1 cr)
- TLL 2882 - INTERNSHIP IN WORLD AND HERITAGE LANGUAGE EDUCATION (5 cr)

Total Credits: 36

World and Heritage Language Education, MEd

The Master of Education (MEd) program with a specialization in World and Heritage Language Education is a professional degree for individuals who wish to pursue advanced study in the field of teaching and learning world languages. Courses implement a practice-based approach to enhance students' knowledge and application of particular teaching strategies that have been identified as essential to the field of world language education. The program coursework emphasizes practical application of current theories and methods for teaching and evaluating students as well as curriculum and materials development. Unique features of the program include six credits of practicum coursework and six credits of research methodology.

Full-time or part-time enrollment is allowed, however, full-time students must start in the Fall term.

Admissions Requirements

- 3.0 GPA in undergraduate coursework
- For non-native speakers of English, evidence of language proficiency is required with the following minimum scores:
    - TOEFL - Minimum 80
    - IELTS - Minimum 6.5
    - Duolingo Test - 110

Required Courses (30 credits)

- TLL 2251 - INTRODUCTION TO FOREIGN LANGUAGE EDUCATION
- TLL 2255 - TECHNQ/PROCDR FOREIGN LANG TCH
- TLL 2256 - ISSUES IN FOREIGN LANGUAGE ED
- TLL 2722 - PRACTICUM IN FOREIGN LANGUAGE
- TLL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
- TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- TLL 2702 - ADVANCED PRACTICUM IN FOREIGN LANGUAGE
- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY **OR**
- EFOP 2106 - INTERNATIONAL AND GLOBAL EDUCATION

Elective Courses (6 credits)

Students will choose two 2000-level courses in LING, EFOP, TLL, or HHD that are related to the major. Suggested courses:

- LING 1000 - INTRODUCTION TO LINGUISTICS (only 1000-level course allowed)
- TLL 2041 - INTRO TO EARLY CHILDHOOD ED
- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- TLL 2514 - SUPPORTING STUDENTS WITH DISABILTIES IN INCLUSIVE CLASSROOMS

Comprehensive Requirement

Students complete a comprehensive exam in the last term or second to last term of the program. The comprehensive exam is not included in a course.

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA

- Successfully complete all course requirements
- Successfully complete comprehensive exam

Total Credits : 36

Department of Health and Human Development

The Department of Health and Human Development (HHD) blends health promotion, wellness, and exercise physiology with applied developmental science and evidence-based practices to address 21st century problems in diverse regional, national, and global real-world contexts. Interdisciplinary professionals in HHD apply recommended and equitable practices to promote the health and development of all children, youth, and adults. We place a special emphasis on those who are most vulnerable (e.g. at-developmental risk, with disabilities, and/or with chronic medical conditions). We assess, prescribe, teach, and supervise programs that focus on improving health-fitness and clinical outcomes, human performance, and healthy lifestyle behaviors. We collaborate with community partners in education, healthcare, wellness, and human service settings to provide health promotion and developmental supports.

Our interdisciplinary emphasis enables emerging professionals to become effective leaders by fusing strategies in health and developmental science to address real-world inequities and health challenges through effective interdisciplinary collaboration. Our work is rooted in applied research and implementation and improvement science but is informed by principles of social justice, individual potential, equity, and inclusion for all.

As students, you will become...

- Future leaders in your chosen specializations by modeling ethical behavior and equitable professional practices
- Committed professionals in Exercise Science, Health and Wellness Promotion, and Physiology (e.g. wellness, exercise prescription, cardiac and pulmonary rehabilitation, sports performance, prevention of chronic disease)
- Specialized professionals in Applied Developmental Psychology with competencies in both applied service and applied research (e.g. children with special healthcare needs-child life, behavioral health, infant mental health, child and youth development, program evaluation, early childhood intervention)
- Researchers who inform recommended practices for promoting health and development
- Faculty who educate the next generation of health and development professionals
- Committed professionals who understand the importance of enlightened public policies
- Engaged professionals who use social and political advocacy as a tool for ensuring the human rights of our most vulnerable citizens

Contact Information

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Certificate

Infant Mental Health Certificate

The Certificate in Infant Mental Health (IMH) offers a comprehensive foundation in infant and early childhood development, mental health, and relationship-based practice. This 12-credit program integrates developmental science, applied research, and reflective practice to help students understand how early experiences, relationships, and environments shape lifelong well-being.

Through coursework emphasizing the science of early brain development, attachment, and the effects of risk, adversity, and resilience, students gain a deep understanding of early social-emotional development and psychopathology. The curriculum centers on equity, culture, and ethics as essential dimensions of effective practice with infants, young children, and their families.

Aligned with the Alliance for the Advancement of Infant Mental Health competencies, the certificate prepares students and professionals to apply evidence-informed, relationship-based, and culturally responsive approaches across diverse early childhood settings-including mental health, early intervention, education, health care, and family support systems. The program also provides a strong academic foundation for those pursuing advanced study in infant and early childhood mental health.

Admissions Requirements

Successful completion of an undergraduate degree.

Certification

The Infant Mental Health Certificate is aligned to meet the in-service training requirements for Endorsement for Culturally Sensitive Relationship-Focused Practice Promoting Infant and Early Childhood Mental Health through the Alliance for the Advancement of Infant Mental Health

Curriculum

The following four courses are required. HHD 2007 is required as a first course.

- HHD 2007 - FOUNDATIONS OF INFANT MENTAL HEALTH 1 **
- HHD 2008 - FOUNDATIONS OF INFANT MENTAL HEALTH 2
- HHD 2009 - INFANT MENTAL HEALTH INTERVENTIONS 2
- HHD - 2010 - Diversity, Equity, and Reflection in Infant and Early Childhood Mental Health
  **Students who complete the online, non-credit bearing Foundations of Infant Mental Health Pitt Professional course may enroll in the IMH Certificate and earrn 3 credits for the Foundations of IMH course (HHD 2007) upon (1) meeting in-course criteria including passing module quizzes (15) at the 80% accuracy level or (2) passing the exit exam at the 80% accuracy level.

Total Credits:12

Graduation Requirements

- Successful completion all required courses with a grad of B- or higher
- 3.000 cumulative graduate Pitt GPA.

Doctoral

Exercise Physiology, PhD

The PhD in Exercise Physiology is focused on training students to prepare for academic research careers related to exercise and physical activity to prevent and treat chronic health-related conditions, to improve health and well-being, and to identify the underlying physiological and/or behavioral mechanisms that bring about these health-enhancing outcomes. Specifically, this degree will prepare students for academic careers focused on research, teaching, mentoring, and translation of research findings to a variety of settings. For students interested in an academic research career, this degree will also prepare students for post-doctoral fellowships.

Recipients of this degree must show evidence of superior scholarship, mastery of a special field of knowledge, and the ability to conduct significant and relevant research.

Exercise Physiology Requirements

- The Plan of Study is to be submitted for Graduate Faculty review in the second semester of doctoral study.
- A minimum of 72 credits is required in the Doctoral Program
- A maximum of 30 credits from the master's degree
- Only 3 hours can be in a College Teaching Practicum (enrollment in a College Teaching Practicum Requires Prior Department Approval).

Curriculum

- First Year Seminar: EDUC 3101 - FIRST YEAR PHD SEMINAR
    - To further support students' research competencies, PhD students also participate in a school wide first year seminar (EDUC 3101) . This seminar meets during the fall term and focuses on familiarizing students with practical and ethical issues in research (e.g., necessary clearances for working in schools, resolving questions of authorship and authorship order, human subjects guidelines), and supporting students work on their pre-dissertation proposal (e.g., developing innovative research questions, conducting a literature review).
- Major Field Health and Physical Activity, Exercise Physiology (30-36 Credits)
- Supporting Field Area (9 Credits Minimum)
    - Students are required to take a minimum of 9 credits of courses in an academic discipline that is complementary to the student's major field of specialization. These credits must be graduate-level coursework outside of the student's PhD major program. This requirement does not prohibit students from taking coursework in the School of Education or even within the HHD department so long as it is deemed outside of the student's specific PhD program.
- Research Methodology and Statistics (21 Credits Minimum)
    - EDUC 3101 - FIRST YEAR PHD SEMINAR will count as 3 credits of Research Methodology coursework
    - 18 credits of approved Methodology and Statistics coursework. Students will work with their advisor to determine appropriate coursework.
- Research Practicum (6 Credits Minimum)
- Electives (Credits Variable)

Full-time Dissertation Study (0 credits)

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

- FTDG 0000 - FULL-TIME DISSERTATION STUDY

Total Credits: 72

Health and Physical Activity, EdD

The EdD in Health and Physical Activity trains students to pursue opportunities in public health, community organizations, schools, and government or policy settings, with a focus on applying improvement science to advance health and physical activity. This program will prepare students for leadership positions related to development, implementation, evaluation, or policy of evidence-based initiatives related to health and physical activity. Graduates of the program go on to work in community-health promotion, administrative and health-focused positions in K-12 education, program coordination and training programs in higher education, administrative and leadership positions in non-profit organizations, managing and running programs in healthcare and at health plans.

EdD Curriculum

The EdD program is a three-year 76-credit program. Students are required to transfer 24 credits of relevant graduate work into the EdD program. The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation**: The EdD cohort participates in a virtual orientation in the spring (typically April) before the summer start of the program. Incoming students meet program faculty, current students/alumni, receive an overview of EdD program, participate in cohort-building activities and get an introduction to the summer "on-ramp" courses.
- **Intensive on-ramp**: The EdD cohort will participate in the first-year summer "on-ramp" courses which consist of three in-person Saturdays and a full-week, on-campus experience. The on-ramp consists of two courses-- Foundations 1 and Practitioner Inquiry 1 -- to give new students an immersive introduction to doctoral study, cohort collaborations, and program content. The one-week in-person experience typically takes place in June.
- **Hybrid seminars**: After the first summer on-ramp, students experience a hybrid learning model of education. Each semester courses are largely conducted asynchronously online which is supported through a once a month flipped classroom experience that takes place in-person (typically on Saturdays) on the Pittsburgh campus. Attendance at in-person, on campus sessions is required.

SCHEDULE (all courses are 3 credits unless otherwise noted)

Year 1: Summer	**Year 1: Fall**	**Year 1: Spring**
EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER	EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION Major Course 1	EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS Major Course 2
Year 2: Summer	**Year 2: Fall**	**Year 2: Spring**
EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY	EDUC 3006 - PRACTITIONER INQUIRY 2 Major Course 3	EDUC 3007 - PRACTITIONER INQUIRY 3 Major Course 4
Year 3: Summer	**Year 3: Fall**	**Year 3: Spring**
EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)

Foundation Courses: 12 Credits

- Foundations 1: EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER
- Foundations 2: EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- Foundations 3: EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION
- Foundations 4: EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses: 12 credits

- EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Supervised Practitioner Inquiry: 3 credits

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Dissertation-in-Practice Overview: 3 credits

- EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR

Guidance In Scholarly Practice: 10 credits

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Health and Physical Activity Academic Major Courses (12 credits)

Health and Physical Activity ARCO Courses

- HHD 3114 - EVIDENCE BASED LIFESTYLE PROGRAM DESIGN AND EVALUATION
- HHD 3115 - HEALTH PROMOTION POLICY AND PROGRAM IMPLEMENTATION
- HHD 3116 - RESOURCE AND FUNDING ACQUISITION FOR HEALTH PROMOTION PROGRAMMING
- HHD 3117 - HEALTH PROMOTION PROGRAM TRANSLATION AND SUSTAINABILITY

Transfer Credits (24 credits)

Total Credits: 76

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of written dissertation in practice and defense

Out-of-School Learning, EdD

The EdD in Out-of-School Learning is for experienced informal learning and out-of-school learning professionals who seek advanced training for leadership, consultant, or policymaker positions. The major is part of the school's Doctor of Education (EdD) program, which has a variety of different majors to serve professionals from various fields. Our students and graduates work in museums, after-school learning programs, intermediary organizations, media, digital design, university outreach/extension, youth development, libraries, arts and sports programs, and other areas where designed learning environments exist.

EdD Curriculum

The EdD program is a three-year 76-credit program. Students are required to transfer 24 credits of relevant graduate work into the EdD program. The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation**: The EdD cohort participates in a virtual orientation in the spring (typically April) before the summer start of the program. Incoming students meet program faculty, current students/alumni, receive an overview of EdD program, participate in cohort-building activities and get an introduction to the summer "on-ramp" courses.
- **Intensive on-ramp**: The EdD cohort will participate in the first-year summer "on-ramp" courses which consist of three in-person Saturdays and a full-week, on-campus experience. The on-ramp consists of two courses-- Foundations 1 and Practitioner Inquiry 1 -- to give new students an immersive introduction to doctoral study, cohort collaborations, and program content. The one-week in-person experience typically takes place in June.
- **Hybrid seminars**: After the first summer on-ramp, students experience a hybrid learning model of education. Each semester courses are largely conducted asynchronously online which is supported through a once a month flipped classroom experience that takes place in-person (typically on Saturdays) on the Pittsburgh campus. Attendance at in-person, on campus sessions is required.

SCHEDULE (all courses are 3 credits unless otherwise noted)

Year 1: Summer	**Year 1: Fall**	**Year 1: Spring**
EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER	EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION Major Course 1	EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS Major Course 2
Year 2: Summer	**Year 2: Fall**	**Year 2: Spring**
EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY	EDUC 3006 - PRACTITIONER INQUIRY 2 Major Course 3	EDUC 3007 - PRACTITIONER INQUIRY 3 Major Course 4
Year 3: Summer	**Year 3: Fall**	**Year 3: Spring**
EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)	EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE (5 credits)

Foundation Courses: 12 Credits

- Foundations 1: EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER
- Foundations 2: EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- Foundations 3: EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION
- Foundations 4: EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses: 12 credits

- EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Supervised Practitioner Inquiry: 3 credits

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Dissertation-in-Practice Overview: 3 credits

- EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR

Guidance In Scholarly Practice: 10 credits

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Out-of-School Learning Academic Major Courses (12 credits)

- HHD 3024 - INFORMAL LEARNING: THEORY AND FOUNDATION
- HHD 3023 - YOUTH DEVELOPMENT IN OUT-OF-SCHOOL SETTINGS
- HHD 3006 - FUTURE OF OUT OF SCHOOL LEARNING
- HHD 3022 - ORGANIZATIONS, NETWORKS, AND POLICY IN INFORMAL LEARNING

Transfer credits (24 credits)

Total credits (76 credits)

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of written dissertation in practice and defense

Master's

Applied Developmental Psychology, MS

The Applied Developmental Psychology Master of Science program at the Pitt School of Education emphasizes the application of research to practice in the promotion of positive human developmental outcomes for children, youth, and families. Students who complete the Master of Science degree in Applied Developmental Psychology apply knowledge of child and/or youth development and evidence-based practices to address real-world problems in real-world settings. Students also become experienced in interdisciplinary collaboration as they design, implement, and/or evaluate innovative intervention programs for children, youth, and families.

The Master of Science degree requires 36 credits distributed as follows: Applied Developmental Psychology (ADP) Core courses (18 credits), specialization and/or elective courses (12 credits), and Community-Based Practice Learning (with capstone project) courses (6 credits).

Admissions Requirements

- Successful completion of undergraduate degree with a 3.0 GPA
- Experience working with children or adolescents
- Courses in Research Methods and Developmental Psychology
- Updated Yearly Clearances (PA Criminal Record and Child Abuse, FBI Federal Criminal HIstory)
- Current negative tuberculosis test

Core Courses (18 credits)

All full-time students in the 36-credit Master of Science (MS) program in Applied Developmental Psychology (ADP) complete a common set (18 credits) of core, foundational courses.

- HHD 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- HHD 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE
- HHD 2510 - ASSESSMENT OF CHILDREN'S DEVELOPMENT IN REAL WORLD CONTEXTS
- HHD 2530 - APPLIED DEVELOPMENTAL PSYCHOLOGY (ADP): PROFESSIONAL IDENTITY AND LEADERSHIP
- HHD 2542 - EVIDENCE-BASED INTERVENTIONS IN REAL WORLD CONTEXTS I
- HHD 2543 - EVIDENCE-BASED INTERVENTIONS IN REAL WORLD CONTEXTS 2

Specialization Courses (12 credits)

In the second year of the program, students complete in-depth study and training in courses aligned with their interests in areas such as Behavioral Health in Schools and Communities, Out of School Time, Children with Special Healthcare Needs, Infant Mental Health, and Applied Research Methods for Child and Youth Serving Organizations, Students may create their own academic path by selecting MS level electives approved by their advisor. Students will also complete a community-based practice learning experience that consists of a field placement and development of the Master's capstone project.

Additional ADP MS options include completion of the Applied Behavior Analysis Certificate, Study Abroad, and taking additional elective courses.

Choose 12.0 credits from the following courses (other courses may be chosen based on specialization with advisor approval):

- HHD 2113 - DEVELOPMENTAL PSYCHOPATHOLOGY
- TLL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- HHD 2532 - PSYCHOSOCIAL ASPECTS OF ILLNESS
- HHD 2520 - INTRODUCTION TO COUNSELING
- HHD 2349 - CHILD LIFE PRACTICE IN HOSPITALS
- HHD 2524 - BEHAVIORAL ASSESSMENT AND INTERVENTION
- HHD 2006 - INFANT MENTAL HEALTH INTERVENTIONS I
- HHD 2007 - FOUNDATIONS OF INFANT MENTAL HEALTH 1
- HHD 2008 - FOUNDATIONS OF INFANT MENTAL HEALTH 2
- HHD 2009 - INFANT MENTAL HEALTH INTERVENTIONS 2
- HHD 2562 - PLAY THERAPY AND FIELD WORK

Capstone Courses (6 credits)

Students will create and complete a community-based Capstone project with the support of ADP MS and University of Pittsburgh faculty. The Capstone experience includes a total of six (6) credits including two pro-seminar classes and four (4) credits of community-engaged practice.

- HHD 2316 - ADP PROFESSIONAL SEMINAR 1 (1 credit)
- HHD 2317 - ADP PROFESSIONAL SEMINAR 2 (1 credit)

Students will complete a total of four (4) credits from the following list:

- HHD 2622 - CHILD LIFE PRACTICUM
- HHD 2722 - CHILD LIFE INTERNSHIP
- HHD 2490 - SUPERVISED RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY
- HHD 2765 - COMMUNITY-BASED PRACTICE LEARNING 1
- HHD 2766 - COMMUNITY-BASED PRACTICE LEARNING 2

Total Credits: 36

Comprehensive Requirement

MS students in Applied Developmental Psychology complete the comprehensive examination through completion and approval of a formal Capstone Proposal Presentation, which is completed as an assignment in HHD 2316 ADP Professional Seminar.

Graduation Requirements

- 3.0 cumulative GPA in Pitt graduate classes
- Completion of all required coursework
- Successful completion of comprehensive/capstone requirement

Health and Physical Activity - Clinical Exercise Physiology, MS

The Master of Science (MS) program in Clinical Exercise Physiology prepares students for clinical, applied, or research graduate schools and careers focused on preventing and treating chronic health-related conditions. The MS in Clinical Exercise Physiology degree is fully accredited by the Commission for Accreditation of Allied Health Education Programs (CAAHEP).

Admissions Requirements

The admission requirements include the following:

1. Applicants who possess an undergraduate degree in Exercise Science or a closely related field, or who can demonstrate foundational knowledge in key areas (human anatomy, human physiology, exercise physiology, exercise testing and prescription) are admitted to the Master of Science degree program provided that they meet all other School of Education admission requirements.
2. Applicants who do not possess an undergraduate degree in Exercise Science or a closely related field, or who cannot demonstrate foundational knowledge in key areas are provisionally admitted to the Master of Science Program provided that they complete coursework in the following areas prior to admission into the Master of Science Program in the Department of Health and Human Development (this was previously approved by the University in Spring 2018):
    1. Human Anatomy
    2. Human Physiology
    3. Exercise Physiology
    4. Exercise Testing and Prescription

Undergraduate Degree Requirement or Foundational Knowledge Requirement for Admission to the Master of Science Program in the Department of Health and Human Development	**Provisional Admission Requirement***	
• Undergraduate degree in Exercise Science or a related field of study. OR • Foundational knowledge in Anatomy, Human Physiology, Exercise Physiology, Exercise Testing and Prescription	***Completion of courses in the following areas:**	**Options for Completing this Admission Requirement**
	• Human Anatomy	Complete HHD 1011/12 (Applied Human Anatomy) or complete a comparable course.

	• Human Physiology	Complete HHD 1033 (Human Physiology) or complete a comparable course.
	• Exercise Physiology	Complete HHD 1042 (Physiology of Exercise) or complete a comparable course.
** Indicates that when the application is reviewed, only those courses where a gap in the core knowledge is identified will be required for admission.*	• Exercise Testing and Prescription	Complete HHD 1224 (Fitness Assessment and Exercise Prescription) or complete a comparable course.

Accreditation and External Credentials

The MS in Clinical Exercise Physiology degree is fully accredited by the **Commission for Accreditation of Allied Health Education Programs (CAAHEP)**. This national accreditation - considered the gold standard in the industry - is based on a rigorous review of our curriculum, faculty, facilities, and more.

This accreditation enables our students to sit for *the American College of Sports Medicine Clinical Exercise Physiologist Certification* following graduation and accumulation of 600 hours of clinical experience. Starting in 2027, all students who wish to sit for this certification must have graduated from an accredited program

Curriculum

ore Requirements (21 credits)

- HHD 2268 - PHYSICAL ACTIVITY AND HEALTH
- HHD 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH
- HHD 2380 - BEHAVIOR CHANGE AND HEALTH COACHING
- HHD 2381 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 1
- HHD 2382 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 2
- HHD 2383 - ADVANCED CLINICAL HEALTH AND PHYSICAL ACTIVITY ASSESSMENT
- HHD 2384 - MOVEMENT SCIENCE IN HEALTH AND PHYSICAL ACTIVITY

Students completing the thesis option (15 credits)

- Research Design Course: HHD 2375 - RESEARCH AND EXPERIMENTAL DESIGN IN EXERCISE PHYSIOLOGY **or** EFOP 2030 - EXPERIMENTAL DESIGN
- Statistics Course:HHD 2410 - STATISTICS IN HPA RESEARCH **or** EFOP 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS
- Approved Elective (3 credits)
- HHD 2999 - MASTER'S THESIS RESEARCH (6 credits)

Students completing the non-thesis option (9 credits)

- HHD 2385 - INTERNSHIP IN HEALTH AND PHYSICAL ACTIVITY
- Approved Electives (6 credits)

Comprehensive Requirement

Students must complete a comprehensive exam based on core competencies prior to graduation. Students will complete this exam at the end of spring term (or approximately 24 credits) as a part of a core spring course requirement, which includes both a practical and written assessment. Students will be provided guidance and practice time to assist in their preparation for the comprehensive exam. An 80% or pass is required for graduation.

Total Credits: 30 or 36

Thesis Option: 36 credits

Non-thesis Option: 30 credits

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Completion of all required courses
- Successful completion of comprehensive exam
- Students pursuing the Thesis Option must write and defend their thesis

Health and Physical Activity - Health and Wellness Management, MS

The Master of Science (MS) program in Health and Physical Activity with a Concentration in Health and Wellness Management is a collaborative degree offered through the School of Education's Department of Health and Human Development and Pitt's Joseph M. Katz Graduate School of Business.

This academic graduate program is designed for students with academic training and experience in health-fitness, exercise science, and/or wellness with a desire to advance to a management-level position.

Courses focus on applying evidence-based strategies and knowledge to interactions with health-fitness participants and patient populations in order to enhance engagement, adherence, and the sustainability of a healthy lifestyle business. The program will include the development of strategic management skills for interacting with patients, enhancing organizational compliance, working with patients, and improving the listening and interaction skills of the professional. The skills are applicable specifically to the health-fitness and healthcare settings.

As health and wellness employment opportunities are increasing, this dual-degree option expands the level of training of students and will build on their experience and knowledge in both the health-fitness and the business management fields. As a result, students will be prepared to transition to leadership positions (i.e. cardiac rehabilitation directors, health and wellness directors, YMCA directors, etc.).

Admission Requirements

Applicants need to meet admission requirements for both the School of Education and the Katz Graduate School of Business. These include:

- Bachelor's degree from an accredited U.S. university, as determined by the Commission on Recognition of Postsecondary Accreditation, or the non-U.S. equivalent

- Undergraduate coursework in human anatomy, human physiology, fitness assessment and exercise prescription, and exercise physiology. Applicants without this training can be admitted provisionally and will be required to take these undergraduate courses prior to graduation..

- GRE Exam is not required; however, applicants are encouraged to submit scores if they do not meet at least one of the following criteria:

- Undergraduate cumulative GPA of 3.25 and a B (3.0) average of higher in a minimum of 6 credits of quantitative coursework (on a 4.0 grading scale)
- Have earned a graduate and/or professional degree

- International applicants are also encouraged to submit GRE test scores and are required to submit scores from an English Language Proficiency Verification exam

Prerequisite courses required for admission:

Admission Requirements for the Department of Health and Human Development and School of Education. The admission requirements will be consistent with what is currently required for other Master of Science degree programs in the Department of Health and Human Development. These requirements include the following:

1. Applicants who possess an undergraduate degree in Exercise Science or a closely related field, or who can demonstrate foundational knowledge in key areas (human anatomy, human physiology, exercise physiology, exercise testing and prescription) are admitted to the Master of Science degree program provided that they meet all other School of Education admission requirements.
2. Applicants who do not possess an undergraduate degree in Exercise Science or a closely related field, or who cannot demonstrate foundational knowledge in key areas are provisionally admitted to the Master of Science Program provided that they complete coursework in the following areas prior to graduation from the Master of Science Program in the Department of Health and Physical Activity:
   a. Human Anatomy
   b. Human Physiology
   c. Exercise Physiology
   d. Fitness Assessment and Exercise Prescription

Academic Requirements

Students must complete courses in the appropriate order as outlined on the Plan of Study to be given permission to register for the appropriate courses in this degree.

School of Education Required Courses (9 credits):

- HHD 2380 - BEHAVIOR CHANGE AND HEALTH COACHING
- HHD 2386 - HEALTH AND PHYSICAL ACTIVITY PROMOTION AND MARKETING
- HHD 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING
  (A student's advisor may approve alternative courses based on availability)

School of Education Elective Courses (3 credits - select 1):

- HHD 2268 - PHYSICAL ACTIVITY AND HEALTH
- HHD 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH
- HHD 2381 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 1

The remaining credits are from Katz Business School and the courses are as follows:

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT

- BMIS 2409 - INFORMATION SYSTEMS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM

Total Credits: 30

Comprehensive Requirement

Students must complete a comprehensive assessment based on core skills and competencies prior to graduation. Students will be eligible for the comprehensive assessment near completion of 24 credits and typically will complete it in the spring semester.

Graduation Requirements

- 3.0 cumulative Pitt graduate GPA
- Successful completion of required courses
- Completion of comprehensive requirement

John A. Swanson School of Engineering

John A. Swanson School of Engineering

Overview

The SSoE catalog herein is a supplement to the Regulations Governing Graduate Study (RGGS). All rules therein apply, and deviations from the Regulations, as well as School-specific content, are below.

Graduate study in engineering at the Swanson School is designed for those professionals who wish to further develop the ability to apply engineering principles to the solution of modern society's problems. The programs are flexible and can be used by those interested in research, design, management, and related technical positions in both the public and private sectors. PhD programs are designed for those individuals interested in an academic or industry research career.

The Swanson School of Engineering offers graduate education leading to the Master of Science degree in bioengineering, medical product engineering, chemical engineering, electrical and computer engineering, civil engineering, industrial engineering, materials science and engineering, mechanical engineering, nuclear engineering, petroleum engineering, and sustainable engineering. Swanson School of Engineering MS degree programs have two tracks: a professional track and a research track. The school offers PhD degrees in bioengineering, chemical engineering, civil engineering, electrical and computer engineering, industrial engineering, materials science and engineering, and mechanical engineering as well as computational modeling and simulation. Also offered is a MD/PhD Program with the School of Medicine, a DPT/PhD program with the School of Health and Rehabilitation Sciences, MS/MBA and MS/MS programs with the Katz Graduate School of Business, and Certificate programs in medical product innovation, circular economy, construction management, health care systems engineering, nuclear engineering, physical metallurgy, and sustainable engineering.

Contact Information

The Swanson School of Engineering is housed in the Michael L. Benedum Hall of Engineering. Inquiries and correspondence concerning graduate study toward a PhD, MS, or graduate Certificate, should be addressed to the Graduate Program Coordinator of the appropriate department or program. Inquiries of a general nature can be sent to:

Associate Dean for Graduate Education
104 Benedum Engineering Hall
Swanson School of Engineering
Pittsburgh, PA 15261
E-mail: GradAD_ssoe@pitt.edu
www.engineering.pitt.edu

Admissions

All applicants will be judged on their own merits using a holistic process. GRE scores are not required for applications and admissions, but may be optionally submitted by students who want them included as part of their application package.

Depending on the program, applicants who do not have an engineering degree may have to take prerequisite courses as determined by the program to which the applicant is admitted before beginning their graduate engineering degree program. Applicants may be admitted provisionally until specified prerequisites are completed and/or a 3.000 grade point average is achieved.

Graduate Special Status - A student not currently enrolled at the University of Pittsburgh will be granted temporary admission, typically for at most a total of six graduate credits.. Graduate credits earned during this temporary admission period can be applied toward a graduate degree, with approval of the appropriate Graduate Program Coordinator and admission to a graduate program.

Admissions Procedures

1. Procedures for Admissions follow the requirements of the University of Pittsburgh, as outlined in the Regulations Governing Graduate Study (RGGS).

2. See the Swanson School of Engineering Web site to link to the online application. A fee is associated with the application and is not refundable. Requests for an application fee waiver should be submitted through the application fee waiver request form.

3. Per Regulations, official transcripts are required from all previously attended institutions. Official transcripts should be emailed to ssoeadministration@pitt.edu or mailed to the University of Pittsburgh; Swanson School of Engineering Office of Admissions; 104 Benedum Engineering Hall; Pittsburgh, PA 15261. An official transcript of the undergraduate record is required unless the applicant is a graduate of the University of Pittsburgh.

Once all application materials, including the application fee and complete transcripts, are received, the application will be reviewed. Application deadlines vary by department and program; details can be found here.

Additional Requirements for International Students

Please see the section on Graduate Admissions of International Students in this Catalog for additional University regulations on admissions.

This section also applies to international applicants who are already in the United States.

The Swanson School of Engineering does not require a formal evaluation of the international credentials, though these are welcomed and will assist in admissions review, if available.

Swanson School of Engineering minimum standards for English Proficiency are: TOEFL score of 81 or greater (before January 2026) or 4.5 composite, with listening of 4.5 or greater and all other subscores 4.0 or greater (after January 2026); IELTS score of 6.5 or greater; DuoLingo score of 120 or greater.

Prior to completion of registration for the first academic term, entering engineering graduate students with TOEFL scores below 100 (before January 2026) or 5.0 (after January 2026) on the iBT, below 7.5 on the IELTS, or Duolingo English Test Scores below 140 (or equivalent) may be required to register for additional English language coursework. International students who are citizens of countries where English is the official language, international students who have completed degrees at regionally accredited institutions in the U.S., and international students who have results on the TOEFL above 100 (before January 2026) or 5.0 (after January 2026) on the iBT, above 7.5 on the IELTS, or above 140 on the Duolingo English Test (or equivalent) may be exempted from taking the additional coursework.

Advisors

Three types of advisors are primarily responsible for guiding engineering students through their program:

Graduate Program Coordinator, Associate Chair, or Vice Chair

The Graduate Program Coordinator, Associate Chair, or Vice Chair is the faculty member responsible for the operation of a graduate program. The coordinator supervises the operations of admissions, registration, course scheduling, assignment of advisors, graduation, and academic disciplinary procedures. The graduate recruitment coordinator generally is the best source of information and advice when questions arise or problems are encountered during graduate study.

Faculty Advisor

Each student is assigned a faculty advisor when admitted into a graduate program, and the Faculty Advisor may be the Graduate Program Coordinator, Associate Chair, or Vice Chair for the department. This advisor assists the student in planning a course of study and is responsible for approving the student's registration and all course changes. Once the student begins thesis or dissertation research, the duties of the faculty advisor are typically assumed by the student's major research advisor(s).

Major Research Advisor(s)

The major research advisor (or advisors if joint advisors are designated) is the graduate faculty member who directs the student's research and supervises the preparation of the thesis or dissertation. Generally, the major advisor fulfills the role of faculty advisor and also serves as the chair of the final oral examination (defense) committee for the student's thesis or dissertation.

Registration

Students should work with their Faculty Advisor to register for courses each term during the enrollment period.

Responsibility for Academic Progress

It is the responsibility of students to check their academic progress by working closely with their Faculty Advisor and Graduate Program Coordinator, Associate Chair, or Vice Chair. The student should also become familiar with the program degree requirements and pertinent academic regulations, including department handbooks, this SSoE Graduate Catalog, the Regulations Governing Graduate Study (RGGS), and other policies maintained by the Provost's Office.

Academic Integrity and Code of Conduct

The integrity of the academic process requires fair and impartial evaluation on the part of faculty and honest academic conduct on the part of students. Students are expected to conduct themselves with a high level of responsibility in the fulfillment of their course of study and their conduct in and out of the classroom. Violations of the Academic Integrity Policy can impact a student's grade or status with the University; some serious or subsequent violations could lead to suspension or dismissal. Academic Integrity violations can also affect a student's eligibility for scholarships. It is the corresponding responsibility of faculty to make clear to students those standards by which they will be evaluated and the resources permissible for use by students during their course of study. The educational process is perceived as a joint faculty-student enterprise that will involve professional judgment by faculty and may involve, without penalty, reasoned exception by students to the data or views offered by faculty. Consistent with these considerations (and without limiting their scope and application in their entirety to the academic programs of the University), faculty and students are directed to observe established University of Pittsburgh and Swanson School of Engineering guidelines on academic integrity and the University Code of Conduct.

Academic Standing

The University's Academic Standing policy can be found here. Students on academic notice are not eligible to take the PhD preliminary evaluation or the MS or PhD comprehensive examination and will not be graduated. Students who are dismissed will not be re-admitted to the Swanson School of Engineering.

Allowable Credits

Course Work for Graduate Credit

Only graduate courses (i.e., 2000 or 3000 level courses) will count for graduate credit. Students may not use undergraduate courses taken at the University of Pittsburgh, or another university, to satisfy a graduate requirement.

Online Courses

Online courses are allowed only with the approval of the academic department Graduate Program Coordinator, Associate Chair, or Vice Chair, on a case by case basis. These courses must be:

1. Offered by an appropriate academic graduate program.
2. Suitable for the student's academic program and typically not available on the University of Pittsburgh campus.

Student must submit an official transcript of the course, with grade of 3.0 (B) or better, to be eligible for transfer credit.

Master of Science Programs

All departments in the Swanson School of Engineering offer MS degree programs that have two tracks: a professional (non-thesis) track and a research track. Some MS programs only provide a Professional track.

The professional MS track consists of 30 or more credits (10 courses). Advanced Standing credits are transferred at the discretion of the appropriate Graduate Program Coordinator, Associate Chair, or Vice Chair based on the actual course content and program requirements. These programs typically have a set of required core courses. As a professional degree, while no thesis or comprehensive examination is required, the department may require a special projects course.

The professional MS programs are oriented toward full-time students seeking a career in industry and part-time students currently working in industry. Certain programs may be offered off campus at industrial sites or online. Although students who have an undergraduate degree in a technical area (e.g., mathematics, physics, computer science, or chemistry) may be accepted, depending on the particular program, they may be required to take additional specified prerequisite courses. These prerequisite courses cannot be used to satisfy graduate course requirements. Interested students should contact the Graduate Program Coordinator, Associate Chair, or Vice Chair of their selected graduate program to discuss any additional coursework needs.

Research MS Track

The research track is intended for students who wish to deepen their knowledge of the research process, potentially continuing on to pursue the PhD. Students in this track will be advised to take courses best suited for a research degree. The MS research track requires a minimum of 24 course credits, depending on the selected degree, and at least six credits of thesis research. At the discretion of the appropriate Graduate Program Coordinator, Associate Chair, or Vice Chair, students may transfer graduate coursework from another graduate program to satisfy the course requirements of the Research MS degree, based on the actual course content and program requirements. The department may also specify credit distribution requirements for courses in the major and related areas. The student should see his or her major research advisor for detailed information. Students working under the MS research option are required to present a thesis that demonstrates marked attainment in some area of the student's major subject, as well as acquisition of the methods and techniques of scientific investigation. A comprehensive examination or equivalent is required, which is usually met through the final oral exam for the thesis.

A graduate student may commence MS thesis work only after obtaining full graduate status. A graduate student should initiate preliminary thesis and research work as early as possible. Once research and thesis work has begun, the student must register for thesis credits of research in each succeeding term until successful completion of the thesis and the final oral examination. Exceptions to this rule can be made only upon the recommendation of the student's major advisor, with approval by the Graduate Program Coordinator, Associate Chair, or Vice Chair. Only six credits of MS thesis may be used as partial fulfillment of the requirements for the MS degree.

MS Thesis Oral Examination (Defense)

The purpose of this examination is to evaluate the student's MS thesis and is part of the MS thesis requirements as specified by the program. For additional information on the thesis exam, see Thesis Option under Regulations Pertaining to Master's Degrees .

Electronic Thesis and Dissertation (ETD)

The ETD process requires the completion and submission of related documents to the Swanson School of Engineering Records Office at ssoeadministration@pitt.edu. Questions and problems can be addressed by contacting the School of Engineering Records Office at ssoeadministration@pitt.edu.

Joint MBA/MS Degree Program

The Swanson School of Engineering and the Joseph M. Katz Graduate School of Business have established joint MBA/MS (non-thesis) programs with each engineering Department graduate degree program and the sustainability program. These programs are designed to meet the clear and growing need felt by various industry sectors for managers with sophisticated business and engineering skills. In today's environment, such cross-functional skills are essential in addressing multifaceted problems involving issues related to product development, quality, information systems, modeling and quantitative analysis, finance and accounting, international relations, and marketing.

Both full-time and part-time options are available. The full-time option can be completed in two academic years, whereas the part-time option may typically require a period of four to five years. The programs generally consist of 57-58 credits. These programs are designed for students with undergraduate degrees in engineering and, in some cases, the physical sciences, preferably with industry work experience. Candidates must meet the admissions criteria of both the MBA program and the specific Professional (non-thesis) MS engineering program of interest.

Students accepted into the program will be expected to complete both degrees concurrently. Courses will be scheduled in such a manner as to preclude students from receiving one degree before the other. This program is only for those students seeking a Professional MS engineering degree. Students interested in the Research MS engineering degree track will not be admitted. Students who enroll in the joint degree program are expected to complete both degrees. Full-time students will register for the program through the Joseph M. Katz Graduate School of Business for four semesters; details can be found here.

Doctor of Philosophy Programs

The general PhD requirements of the Swanson School of Engineering are listed below. Further information concerning degree requirements and options can be found under each program's catalog description.

Entrance to the PhD Program

A graduate student who has received the Master of Science degree in one engineering program area or has equivalent preparation is eligible to enter a doctoral program in that same area. To be accepted for a doctoral program, a graduate student must have achieved a superior scholastic record and shown promise for conducting independent research. Evidence of research aptitude, including favorable recommendations, is required. Exceptionally well-qualified students may be permitted to enter the PhD program without an MS degree according to the established criteria and qualifications set by each Department.

Course and Dissertation Credit Requirements

An objective of the PhD program is to attain a high degree of competence in the student's chosen field of specialization. Completion of the PhD program requires a total of 72 credits, of which at least 30 must be for research. The graduate faculty determines the minimum course requirements for each PhD program. Typically, each program has a core of well-coordinated courses followed by advanced course work in one or more specialty areas, with the number of course credits varying among programs. Additional course work may be prescribed in accord with the student's specific needs. However, all PhD students must take a minimum of 24 credits of graduate level didactic coursework (2000 or 3000 level). A student may further attain the required degree of competence beyond these 24 credits by other means including independent study under faculty supervision. Regardless of how the required competence is obtained, it must be certified by passing the appropriate series of examinations.

Prior to completing the Comprehensive Examination (also referred to as the Dissertation Proposal), students register for preliminary dissertation research using a 3990 or 3997 course, as appropriate to the Department or Program. Upon passing the Comprehensive Exam, students are admitted to PhD candidacy and register for dissertation research (3999). The number of dissertation credits for which a student registers should be commensurate with the independent research effort to be undertaken during the term. Minimum registration is three credits per term. The program-specific number of research credits needed to complete the PhD degree (not less than 30) can be in any combination of 3980, 3990, 3997, 3998, and 3999 credits, as appropriate to the department and student status with regard to the comprehensive examination.

Once a student has completed the necessary 72 credits required for PhD study, the preliminary (qualifying) evaluation, and the comprehensive (proposal) exam, they are able to focus on their dissertation research. Doctoral students who are working full-time on their

dissertations should register for Full-Time Dissertation Study (FTD), which carries no credits or letter grade but provides students full-time status. Students so enrolled are assessed a special tuition fee.

Doctor of Philosophy Evaluation/Examinations

To complete the PhD program, students must pass the preliminary evaluation, comprehensive, and final oral examinations. Students who have less than a 3.00 cumulative GPA for all courses that satisfy graduation requirements will be placed on Academic Notice. Students on Academic Notice are not permitted to take any of these examinations until their GPA is brought above 3.00.

Preliminary Evaluation (Qualifying Examination)

See Preliminary Evaluation under Regulations Pertaining to Doctoral Degrees for an overview of the purpose of this examination; school-specific information follows. This examination is usually taken within the first two to four terms of graduate study and is a first step towards the student's formal admission to candidacy for the Doctor of Philosophy degree. Each program determines the exact format and content of this examination, which may consist of written and oral components. Qualifier examinations are usually given once or twice a year at a time specified by the program.

Comprehensive Examination (Combined with the Dissertation Prospectus Meeting)

See Comprehensive Examination under Regulations Pertaining to Doctoral Degrees for an overview of the purpose and regulations of this examination; school-specific information follows. The nature and timing of this examination is determined by the department; it may be combined with students' formal presentation of their dissertation proposal, in which case student readiness and the support of the Major Advisor are recommended. The Comprehensive Examination cannot be taken until at least one full term after successfully completing the Preliminary Examination. The formal thesis proposal should be scheduled as soon as the candidate is prepared to present his/her topic and research plan, and it is recommended that this exam be completed no later than the fourth academic year of study.

Final Oral Examination (Defense)

See Final Oral Examination under Regulations Pertaining to Doctoral Degrees for an overview of the purpose and regulations regarding this examination; school-specific information follows. This examination cannot occur sooner than two full terms following the formal dissertation proposal. The final oral examination determines the acceptability of a student's dissertation and the student's ability to comprehend, organize, and contribute to the chosen field of research. One copy of the dissertation must be submitted to each member of the doctoral committee at least two weeks before the date set for the final oral examination. Because a portion of the defense is open to the public, the student should ensure that the dissertation defense is formally announced at least two weeks prior to the defense date.

Doctoral Committee

See Doctoral Committee under Regulations Pertaining to Doctoral Degrees for an overview of the committee's make up and responsibilities. In addition, the following school-specific rules apply in the Swanson School of Engineering:

Faculty who hold a secondary appointment and actively participate in the department will be considered as internal rather than external members of the doctoral committee. Hence, they may serve as the major advisor. Faculty members whose secondary appointment within the department is viewed as a courtesy appointment may be considered as an external committee member but cannot serve as the student's sole committee chair (major advisor).

The composition of the Doctoral Committee must be approved by the department's Graduate Program Coordinator, Associate Chair or Vice Chair, and the Associate Dean for Graduate Education, prior to the presentation of the formal dissertation proposal. This committee will consist of at least three internal (from the department) and at least one external members. The majority of the members must be primary or secondary faculty in the Swanson School of Engineering, In certain cases, the Graduate Program Coordinator, Associate Chair, Vice Chair, or Associate Dean for Graduate Education may recommend one or more additional members for the committee, if appropriate.

A major advisor has an obligation to assist the student to the successful completion of his/her dissertation. In those rare cases where the major advisor no longer feels that he/she can adequately work with the student, then it is incumbent upon the Department Chair and Graduate Program Coordinator, Associate Chair, or Vice Chair to meet with the committee and, if it is decided that the student is able to complete the dissertation, select a new major advisor, typically from among the remaining members of the committee. A replacement committee member must also be appointed.

Admission to PhD Candidacy

See Admission to Candidacy for the Doctor of Philosophy Degree under Regulations Pertaining to Doctoral Degrees for the requirements for admission. An Application for Admission to Candidacy for the Doctoral Degree must be filed after these requirements have been met.

In order to have the dissertation topic approved, the student must prepare, in consultation with their major advisor(s), a dissertation proposal. A formal dissertation proposal conference will then be held in which the members of the doctoral committee will review the proposal and either unanimously accept, revise, or reject it. Depending on the department's procedure, this conference may be held in conjunction with the comprehensive examination. Approval of the proposal does not imply either the acceptance of a dissertation prepared in accord with the proposal or the restriction of the dissertation to this original proposal.

When the dissertation proposal is unanimously accepted by the doctoral committee, the student is formally admitted to candidacy for the Doctor of Philosophy degree. Such admittance to PhD candidacy must be accomplished at least two terms before the student plans to graduate.

PhD Dissertation

See Dissertation and Abstract for an overview of these requirements; school-specific information follows. Each student must prepare a dissertation embodying an extended original, independent investigation of a problem of significance in the student's field of specialization. The dissertation must add to the general body of knowledge or understanding of that field. Dissertations must be written in English. It is highly recommended that the student use a plagiarism-detection software (e.g., iThenticate) to ensure that no plagiarism, which is considered research misconduct, has been committed, overtly, covertly, or inadvertently.

A dissertation submitted to the Swanson School of Engineering in partial fulfillment of the requirements for an advanced degree must be free from any restriction, other than the author's copyright, concerning its publication by any agency outside the University. Any publication of a dissertation must be with appropriate acknowledgment to the University of Pittsburgh. After the dissertation has been prepared and approved by the major advisor, the final oral examination can be held.

Electronic Thesis and Dissertation (ETD)

In addition to the requirements outlined under Dissertation and Abstract, the ETD process also requires the completion and submission of related documents, all of which can be turned in via email to the Swanson School of Engineering Records Office at ssoeadministration@pitt.edu. Questions and problems can be addressed by contacting the School of Engineering Records Office at ssoeadministration@pitt.edu.

Departmental Requirements

The policies enumerated above represent minimum requirements. In certain cases, individual departments may have stricter requirements. It is the ultimate responsibility of the student to understand the policies/requirements of their graduate program; questions should be directed to their Graduate Program Coordinator, Associate Chair, or Vice Chair.

Computational Modeling and Simulation PhD Program

The Computational Modeling and Simulation (CMS) PhD Program at the University of Pittsburgh provides its graduate students with an integrated program of creative, independent research, course work, and teaching. Our students pursue research in diverse areas of engineering and sciences with concentration on numerical methods and computational schemes. Coupled with the University Center for Research Computing (www.crc.pitt.edu), this program offers unparalleled opportunities for individualized training in high performance computing and physical modeling. An extensive seminar series exposes students and faculty alike to the world's leading scientists and their latest research. Pitt's outstanding research and placement resources, coupled with the university's commitment to being one of the top

centers for computational research, uniquely positions us to help our PhD candidates to meet their objectives. For a review of our PhD Program in CMS, and application to this program, please see: www.cmsp.pitt.edu

Joint MD/PhD Degree Program: Medical Scientist Training Program

The Medical Scientist Training Program (MD/PhD) offers exceptionally talented individuals the opportunity to undertake a physician-scientist training program tailored to their specific research interests. This program is funded partly by the Medical Scientist Training Program of the National Institutes of Health. For students who have a clearly defined interest in biomedical research, the MSTP serves as a bridge between the University of Pittsburgh School of Medicine and 20 graduate programs in basic sciences or engineering at either the University of Pittsburgh or Carnegie Mellon University. During a period of seven to eight years, these individuals meet the degree requirements of both a graduate school and the medical school, thus acquiring the knowledge, skills, and experience to begin careers in some of the most exciting areas of medical research. More information can be found here or by contacting the MD/PhD program at M246 Scaife Hall, mstp@medschool.pitt.edu, 412-648-2324.

Cooperative Education

With the renewed emphasis on professional master degree programs and the development of such initiatives as the MS/MBA, and 3+1+1 (first three years at a home institution, a fourth year at the SSoE to earn the BS degree, and a fifth year at the SSoE to earn an MS degree) programs, there is a strong need to provide graduate students, including international graduate students, with a work opportunity that is an essential part of their education. This also includes PhD students who desire to take a term away from their research in order to obtain industrial experience and perspective via an industrial internship. Not only does the program provide graduate students with needed experience, but it enables them to earn a reasonable amount of money over a 12-16 week work rotation. For more information, please visit https://www.engineering.pitt.edu/coop/.

Swanson School of Engineering Faculty

School of Engineering Faculty

Contact information and research interests of faculty members can be found on the Swanson School of Engineering faculty page.

Program and Course Offerings

Joint Degree

Computational Modeling & Simulation, PhD

Requirements

Course Requirements

http://cmsp.pitt.edu/course-requirements

All students enrolled in the program will be required to satisfy the following requirements:

1. Two courses (3 credits each) in Numerical Methods
2. Two courses (3 credits each) in Scientific Computing/Programming

3. Two courses (3 credits each) from a participating department outside Computer Science, Math, and Statistics, in the Dietrich School of Arts and Sciences or the Swanson School of Engineering
4. 12 credits in a concentration area in a participating department in the School of Arts and Sciences or in the Swanson School of Engineering
5. Enrollment in the Computational Modeling and Simulation Seminar series for all fall and spring semesters in residence

A minimum of 30 credits from categories I-IV are required, there can be overlap in courses satisfying requirement IV and those satisfying I, II, and III.

Preliminary Exam

A student will satisfy the preliminary exam requirements by passing (grade B or higher) the six courses in areas I-III described above. In the case that a student received one grade below B in one of the three main areas, he/she can counter that with a grade of B or above in an additional approved course in that area. If a student receives two grades below B, he/she will no longer be able to continue in the he program. Students who do not meet these requirements but who have an overall grade average of B or better, have the option of doing a literature-based Master's thesis.

Proposal Presentation and Comprehensive Exam

The proposal presentation and comprehensive exam will be taken by the end of the student's seventh semester at Pitt and will focus on the progress that the student has made to date on his/her research. It will consist of a written report/proposal prepared by the student on his/her research, followed by an oral comprehensive examination. The exam will be administered by the doctoral committee of four graduate faculty members, three of whom are affiliated with the CMS program and at least one of whom will be from outside the student's research department. Beyond the four graduate faculty members, the student may add external committee members from outside the graduate faculty.

If a student does not pass the proposal presentation and comprehensive exam, he/she will have the option of continuing in the program for another semester and submitting a Master's thesis based on independent research. The student's committee will decide on whether the thesis warrants awarding the MS degree.

Dissertation/Thesis Defense

Every graduate student has to write and defend a thesis or dissertation before being awarded a MS or PhD degree. All theses and dissertations are submitted online. Visit the EDT Web site for more information on the process.

Master's

Sustainable Engineering, MSSE

Overview

The Master of Science Degree in Sustainable Engineering (MS SE) is housed within the Mascaro Center for Sustainable Innovation (MCSI), with the degree granted from the Swanson School of Engineering. The 30-credit degree was designed to integrate with current MS programs in engineering, providing students with the opportunity to complete two MS degree programs with a limited time increase.

Program Objectives

- Provide advanced education to graduate students to identify and solve sustainability issues using systems approaches in the context of the triple bottom line of environmental, societal, and economic problems.
- Create a rigorous program with breadth and depth to propel graduate students to foster sustainable technologies, science, and practices in the U.S. and abroad.

- Create regional and nationally scalable sustainability solutions through service learning projects with a cohort of students.
- Provide students with experiences that enable them to communicate sustainability issues and solutions to multiple audiences.

For more information or to create a plan of study, please contact the Program Director:

David Sanchez
153 Benedum Hall
david.sanchez@pitt.edu

Course Requirements

A total of 30 credits are required to earn the MS SE professional master's degree. The degree is structured so the participating student is required to take five core courses and five electives.

The five core courses are as follows:

- ENGR 2905 - CURRENT ISSUES IN SUSTAINABILITY
- CEE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS
- CEE 2610 - ENGINEERING AND SUSTAINABLE DEVELOPMENT
- ENGR 2007 - SUSTAINABILITY CAPSTONE

And choose one of the following:

- PIA 2115 - ENVIRONMENTAL ECONOMICS
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2231 - CONTEMPORARY US ENERGY POLICY
- PIA 2502 - ENVIRONMENTAL POLICY: LOCAL & GLOBAL
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
- BSEO 2578 - SUSTAINABLE BUSINESS STRATEGY
- BSPP 2328 - THE BUSINESS OF HUMANITY - STRATEGIC MANAGEMENT IN THE ERA OF GLOBALIZATION, INNOVATION AND ESG
- Students may propose other elective courses from the Graduate School of Public and International Affairs (GSPIA) or the Joseph M. Katz Graduate School of Business (KGSB) to be approved by the Program Director.

Electives:

Students can choose five electives from the areas below. Students may propose other elective courses and other focus areas (tracks) not listed below to be approved by the Program Director.

Sustainable Built Environment & Infrastructure

- CEE 2370 - NONDESTRUCTIVE EVALUATION
- CEE 2340 - DESIGN OF CONCRETE STRUCTURES
- CEE 2720 - URBAN TRANSPORTATION PLANNING

Energy

- ECE 2780 - RENEWABLE AND ALTERNATIVE ENERGY
- ECE 2781 - SMART GRID TECHNOLOGIES AND APPLICATIONS
- ECE 2795 - SPECIAL TOPICS POWER
- ECE 2250 - POWER ELECTRONICS
- ECE 2646 - LINEAR SYSTEM THEORY

- ECE 2774 - COMPUTER ANALYSIS OF POWER SYSTEMS

Environmental and Water Sustainability

- CEE 2410 - WATER RESOURCES ENGINEERING
- CEE 2500 - ENVRNMNTL ENGRG MICROBIOL
- CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY
- CEE 2502 - PHYSICAL-CHEMICAL PRINCIPLES IN ENVIRONMENTAL ENGINEERING
- CEE 2515 - WATSTEWATER COLLECTWASTEWATER COLLECTION AND TREATMENT PLANT DESIGNION AND TREATMENT PLANT DESIGN

Green Computing

- ECE 2160 - EMBEDDED COMPUTER SYSTEM DESIGN
- ECE 2161 - EMBEDDED COMPUTER SYSTEM DESIGN 2
- ECE 2192 - INTRODUCTION TO VLSI DESIGN
- ECE 2193 - ADVANCED VLSI DESIGN
- ECE 2162 - COMPUTER ARCHITECTURE 1
- ECE 3162 - ADVANCED COMPUTER MICROARCHITECTURE

Department of Bioengineering

Contact Information

Department Chair: Sanjeev Shroff, PhD
Main Office: 302F Benedum
412-624-9809
E-mail: sshroff@pitt.edu
https://www.engineering.pitt.edu/bioengineering/

Graduate Degree Programs

The Department of Bioengineering offers three graduate degrees: (1) Doctor of Philosophy (PhD) in Bioengineering, (2) Master of Science in Bioengineering (MS), and (3) Master of Science in Bioengineering - Medical Product Engineering (MS-MPE). The department also offers a certificate program in Medical Product Innovation. In addition, it participates in the MD/PhD program with the School of Medicine's Medical Scientist Training Program, the DPT/PhD program in Physical Therapy with the School of Health and Rehabilitation Sciences, and the MBA/MS program with the Katz Graduate School of Business.

The graduate program in bioengineering incorporates six programmatic tracks that are used for our PhD degree and thesis-based MS degree:

- Bioimaging and Signals
- Biomechanics
- Medical Product Engineering*
- Molecular, Cellular, and Systems Engineering
- Neural Engineering**
- Tissue Engineering and Regenerative Medicine

* This track has separate tracks for the MS and PhD.

** The department also offers a non-thesis MS degree whose curriculum focuses on neural engineering.

The department has an active, interdisciplinary graduate bioengineering program in conjunction with faculty from the School of Medicine, the School of Health and Rehabilitation Sciences, the School of Dental Medicine, the clinicians at the University of Pittsburgh Medical Center hospitals, and other schools and departments at the University of Pittsburgh and Carnegie Mellon University.

The graduate program is directed toward engineering and life science education and research, with particular emphasis on the PhD and the non-thesis Master's degrees. Its scope is broadly defined to incorporate the application of engineering principles, methods, and technology in two general areas: (1) scientific queries into fundamental biological phenomena and (2) the development of instrumentation, materials, devices, and systems relative to application in the biological sciences and medicine. Thus, the bioengineering faculty are applying various forms of engineering principles, mathematics, computation, technology, and methodology to a broad variety of medical and life sciences problems.

Admissions

An undergraduate knowledge of physiology and basic biology and chemistry is assumed. In addition to the above basic requirements, evidence of significant research and/or industrial experience is relavent evidence of ability to perform well at the graduate level. These experiences should be detailed clearly in recommendation letters, as well as in the student's statement of purpose.

Certificate

Bioengineering - Medical Product Innovation Certificate

Requirements

The Graduate Certificate in Medical Product Innovation (C-MPI) is offered by the Department of Bioengineering in conjunction with the Center for Medical Innovation (CMI). The program provides graduate-level education in the clinical, engineering, business, and legal aspects of medical product design, development, and commercialization. The certificate is open to students enrolled in any graduate program at the University of Pittsburgh as well as post-baccalaureate and post-professional students and working professionals.

Certificate candidates must complete a minimum of 5 courses (15 credits) drawn from the following areas:

Medical Product Innovation Core Curriculum - 6 credits

Per approval by program director

- BIOENG 2150 - MEDICAL PRODUCT IDEATION
- BIOENG 2151 - MEDICAL PRODUCT DEVELOPMENT (Prerequisite: BIOENG 2150 or approval by program director)

Electives - 9 credits

Select 3 credits from each of the following subgroups:

Medical Ethics

Per approval by program director - 3 credits

- BIOENG 2241 - SOCTL, POL & ETHCL ISS BIOTEC
- BIOETH 2001 - ETHICS AND AGING
- BIOETH 2661 - THEORETICAL FOUNDATIONS OF APPLIED ETHICS

- BIOETH 2664 - BIOETHICS
- BIOETH 2698 - SPECIAL TOPICS
- CMU 80245 - MEDICAL ETHICS
- LAW 5464 - BIOETHICS AND LAW
- LAW 5980 - ETHICAL ISSUES IN CLINICAL CARE
- NUR 2308 - ETHICAL AND SOCIAL IMPLICATIONS OF BIOTECHNOLOGY

Entrepreneurship/Engineering Management

Per approval by program director - 3 credits

- BIOENG 2165 - MEDICAL PRODUCT ENTREPRENEURSHIP
- BIOENG 2167 - MANAGING MEDICAL PRODUCT INNOVATION
- BIOENG 2175 - HUMAN FACTORS ENGINEERING IN MEDICAL DEVICES
- BSEO 2531 - ENTREP & NEW VENTURE INITIATION
- BSPP 2111 - COMMERCIALIZING NEW TECHNOLOGIES
- CLRES 2730 - FROM BENCHTOP TO BEDSIDE
- IE 2003 - ENGINEERING MANAGEMENT
- IE 2123 - PROJECT MANAGEMENT
- LAW 5135 - COMMERCIALIZING NEW TECHNOLOGIES

Legal Aspects of Medical Product Engineering

Per approval by program director - 3 credits

Consistently Offered Course:

- BSPP 2110 - SCALING INNOVATION STUDIO
- LAW 5135 - COMMERCIALIZING NEW TECHNOLOGIES

Inconsistently Offered Courses (Confirmation Needed):

- LAW 5135 - COMMERCIALIZING NEW TECHNOLOGIES
- LAW 5155 - EHEALTH LAW
- LAW 5210 - PATENT LAW (This is a 2-credit course; if selected as an elective, 1 additional credit is needed to meet the 15-credit requirement for this certificate.)
- LAW 5260 - INTELLECTUAL PROPERTY
- LAW 5395 - HEALTH LAW AND POLICY
- LAW 5631 - LAW AND ENTREPRENEURSHIP
- LAW 5754 - TECHNOLOGY, LAW & LEADERSHIP

Alternative courses permitted per approval by program director.

Note:

Post-baccalaureate and post-professional students and professionals interested only in obtaining the C-MPI need to apply to the Department of Bioengineering for admission to the Certificate program.

Graduate students and professionals who are already enrolled in a Swanson School of Engineering program may add the certificate to their degree without a separate application. They can email msmpe@pitt.edu to start the process. Graduate students from other schools at the University of Pittsburgh and professionals from outside the University must submit a separate application through EngCAS to enroll in the certificate.

Doctoral

Bioengineering, PhD

PhD Requirements

The course requirements for the PhD in Bioengineering include the following:

- Graduate Engineering Mathematics (from an approved list of Math courses) - 3 credits
- Statistics for Bioengineers (from an approved list of Statistics courses) - 3 credits
- Societal, Political, and Ethical Issues in Bioengineering (BIOENG 2241 or equivalent) - 3 credits
- Life Sciences (from an approved list of Life Science courses) - 6 credits
- Track Courses (from a menu of courses for specific track, please see the links below)
    - Bioimaging and Signals Track - 12 credits
    - Biomechanics Track - 9 credits
    - Medical Product Engineering (MPE) - PhD Track - 9 credits
    - Molecular, Cellular, and Systems Engineering (MCSE) Track - 9 credits
    - Neural Engineering (NE) Track - 9 credits
    - Tissue Engineering and Regenerative Medicine (TERM) Track - 9 credits
- Graduate Electives - 3 credits for Bioimaging and Signals Track; 6 credits for all other tracks. These can be any courses in science or engineering that are deemed useful for the student's career with the approval of the Graduate Program Director.
- BIOENG 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP (grant writing) - 1 credit
- Seminar - 6 credits total, 4 credits must be BIOENG 2023 - BIOENGINEERING SEMINAR SERIES. One of the four seminars can be substituted with a Preparation for STEM academic career course, when combined with appropriate certification. The other 2 credits may be from BIOENG 2023 or any other seminars deemed appropriate by the Graduate Program Director. Please see list of Approved Seminar Courses for suggestions.
- Doctoral Dissertation Research, BIOENG 3997 and BIOENG 3999 - must meet the minimum number of credits required by the Swanson School of Engineering; generally, students take 35 or more research credits

Total number of credit hours: 72 credits minimum (not including credits from foundational courses, if applicable.)

Students typically take the PhD preliminary exam after their first year in the program, and PhD proposal (comprehensive examination) is presented generally by the middle of the third year. A final public PhD defense is made by each PhD candidate based on the student's research work.

Preliminary Exam

The PhD Preliminary Exam is given once a year, typically in early June, and is to be taken by students pursuing the PhD degree after their first two semesters of full-time course work. A student is allowed no more than two opportunities to take the preliminary examination.

The purpose of the preliminary examination is to evaluate the student's ability to use fundamental principles of biomedical science and engineering approaches to investigate solutions to bioengineering problems. The exam tests the student's ability to think, present, and defend in an academic environment, as well as demonstrate a sufficient background in the biomedical science and engineering aspects of the chosen problem. It explores a student's strengths, weaknesses, and breadth of knowledge in relation to the proposal as well as assesses the student's potential to become an independent investigator. The examinations will be coordinated within the current graduate tracks. The scheduling will be handled by the track coordinators, who will also determine the suitability of the research question (having both engineering and biomedical science components).

The basis of the examination is a specific research question (problem), chosen by the student and communicated through both written and oral formats. The written proposal conforms to the NIH R03 grant format. The oral presentation focuses on presenting and defending the proposed research question and the approach to its solution. The student is encouraged to focus on one to two experiments and note both alternatives and potential limitations in each experiment. Proper referencing of sources is required for both the oral and written components. The research proposal may be supported by preliminary data, but this is not a requirement. The student may seek assistance from their advisor or any other faculty member for choosing the question but must observe the usual strict standards on plagiarism. In

addition, students must provide a written statement, signed by their advisor, that clarifies the student 's contribution in developing and writing the proposal.

The final result of the preliminary examination will be based on the combined evaluation of the written and oral components, with three possible outcomes: unconditional pass, conditional pass, retake (during the first attempt), and fail (during the second attempt). Conditional pass will be accompanied by specific corrective actions, such as remedial courses to be taken by the student. A minimum of B grade must be achieved in each condition-contingent course; otherwise, the conditional pass is converted to a retake or fail outcome. The retake option is available for the first exam, allowing the candidate to retake the Preliminary Exam one additional time in the following year. During the second attempt, a fail outcome is assigned in cases where a student does not meet the threshold for an unconditional pass or a conditional pass. Students receiving a fail outcome cannot continue on in the PhD program.

Dissertation Committee Selection

In addition to dissertation committee requirements specified in the Regulations Governing Graduate Study (RGGS), the Department of Bioengineering requires that: (1) the majority of the committee must hold either primary or secondary appointment in Bioengineering, and (2) at least one committee member must have a primary appointment in Bioengineering. Regarding the RGGS requirement for an external committee member, note that industry members who are not affiliated with a graduate degree-granting institution do not count toward the external member requirement for the committee. Students are required to receive approval from the faculty Graduate Program Director of the committee, ideally 1-2 months prior to the proposal defense.

PhD students are advised to form and meet with a PhD Dissertation Committee within one year of passing the Preliminary Exam and no later than the end of their third year in the PhD program.

PhD Proposal and Comprehensive Exam

Formal admission to candidacy for the Doctor of Philosophy degree (typically in the 3rd year) constitutes a promotion of the student to the most advanced stage of graduate study. **Note that it is a departmental requirement that students complete their proposal by the end of their third full year in the program.** The student should submit the written proposal in NIH R01 format to the committee at least two weeks in advance of the oral defense to the approved committee. The approval of the proposal and defense of it constitutes passing the proposal and Comprehensive Examination.

Dissertation Defense and Graduation

Students must announce their dissertation defense at least two weeks prior per department instructions. For all other defense and graduation requirements, students should refer to SSoE guidelines.

Joint Degree

Bioengineering, MD/PhD

MD/PhD Requirements

The Department of Bioengineering participates in the University of Pittsburgh's Medical Scientist Training Program (MSTP), which governs admissions and the MD curricular requirements for MD/PhD students. This page specifies the Bioengineering PhD component requirements for MSTP students who choose to pursue their PhD through the Department of Bioengineering. The Department of Bioengineering allows some coursework to concurrently satisfy requirements for the MD and PhD degree. We typically accept medical school coursework to fulfill the life science (6 credits), elective (6 credits), and grant writing workshop (1 credit) requirements. MD/PhD students cannot use their MD courses to opt out of the advanced engineering/math/statistics course requirements for the PhD:

- Track Courses (from a list of approved courses for specific tracks) - 9 credits*
- Life Sciences (fulfilled by passing all components of MED 5218 or equivalent) - 6 credits

- Graduate Electives (fulfilled by passing all components of MED 5116 or equivalent) - 6 credits*
- Graduate Engineering Mathematics (from a list of approved Math courses) - 3 credits
- Statistics for Bioengineers (from a list of approved Statistics courses) - 3 credits
- Ethics - 3 credits. The department does not enforce the 3-credit ethics requirements for MD/PhD students if they have acquired this knowledge through their medical school education. Note that these three credits are not waived. Students must acquire these three credits through another course (didactic or graduate project).
- Seminar - 6 credits total, 4 credits must be BIOENG 2023 - BIOENGINEERING SEMINAR SERIES. One of the four seminars can be substituted with a Preparation for STEM academic career course, when combined with appropriate certification. The other 2 credits may be from BIOENG 2023 or any other seminars deemed appropriate by the Graduate Program Director. Please see list of Approved Seminar Courses for suggestions.
- BIOENG 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP (grant writing) - 1 credit. The department does not enforce this 1-credit requirement for MD/PhD students if they have acquired this knowledge through their medical school education. Note that this 1 credit is not waived. Students may acquire the credit through research credits.
- Students should refer to SSOE policy regarding the minimum number of dissertation credits (BIOENG 3997 and BIOENG 3999) required for graduation.

* The standard policy is 9 credits of track courses and 6 credits of electives. There is an exception for the Bioimaging and Signals track, for which the requirement is 12 credit of track courses and 3 credits of electives. MD/PhD students in this track must take all four track courses.

Total number of credit hours: 72 credits minimum, which includes 12 credits to fulfill the life science and electives requirements but does not include credits from other courses that are part of the MD degree.

Please see Department of Bioengineering's PhD Requirements page for more details.

Bioengineering/Business Administration, MS/MBA

The Department of Bioengineering and the School of Business (KGSB) offer a dual MBA/MS program, with the following requirements for the Professional MS in Bioengineering.

Joint Degree

Students may pursue a joint degree program that results in an MBA from the School of Business and an MS Engineering degree from the Swanson School of Engineering. MS Engineering degrees can be completed in the following disciplines: Bioengineering, Chemical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Materials Science and Engineering, Mechanical Engineering, Nuclear Engineering, Sustainable Engineering, Industrial Engineering.

Note

Joint-degree students take a minimum of 30 credits from the School of Engineering and 33 credits from the School of Business. Students must graduate from both schools at the same time.

Candidates must complete a minimum of 11 courses (30 credits) [25.5 engineering credits] drawn from the following areas:

Graduate Engineering Math or Statistics - 3 credits

Per approval by program director

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT

Medical Product Engineering Core Curriculum - 15 credits

Per approval by program director

- BIOENG 2150 - MEDICAL PRODUCT IDEATION

- BIOENG 2151 - MEDICAL PRODUCT DEVELOPMENT (Prerequisite: BIOENG 2150 or approval by program director)
- BIOENG 2152 - MEDICAL PRODUCT PROTOTYPING I *
- BIOENG 2170 - CLINICAL BIOENGINEERING (Prerequisite: BIOENG 2150 or approval by program director)
- BIOENG 2171 - MEDICAL PRODUCT PROTOTYPING 2 (Prerequisite: BIOENG 2170 or approval by program director)

  *Student has the option to test out of this class with appropriate previous knowledge. Please contact Graduate Program Director for details.

Graduate Engineering/Science Electives - 9 credits

Per approval by program director

- 1st Graduate Engineering/Science Elective
- 2nd Graduate Engineering/Science Elective
- 3rd Graduate Engineering/Science Elective (if tested out of BIOENG 2152)

Medical Ethics - 3 credits

Per approval by program director

- BIOENG 2241 - SOCTL, POL & ETHCL ISS BIOTEC

MBA/MS Project Courses - 3 credits

Per approval by program director

- Students are required to complete an integrated project. Students have the following two options to satisfy this requirement:
  - BIND 2024 - CONSULTING FIELD PROJECT or
  - BIND 2200 - INTEGRATED PROJECT FOR MBA/MS IN ENGINEERING PROGRAM
- BIOENG 2095 - GRADUATE PROJECTS or BIOENG 2250 - CARDIO CLINICAL INTERNSHIPS

Bioengineering Seminar - 0 credits

BIOENG 2024 is a required, zero-credit seminar focused on career development for students in the Professional MS program. It is required for 1 Fall and 1 Spring semester.

MBA Degree Requirements - 33

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM

- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Required Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a students' academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

MBA Elective Courses

Students in the joint degree program must complete an additional 6 elective credits of School of Business courses.

Joint Project Course

Students are required to complete a 3-credit joint project course that integrates the business and engineering disciplines. Common courses used to meet this criteria are BIND 2024 or BQOM 2139. In cases where the 3-credit course completed is a School of Business course, 1.5 credits will count toward the MBA requirements and 1.5 will count toward the 30 credits of MSE requirements.

Total Number of Credits for Joint Degree: 63

Note:

All students must maintain a 3.0 GPA at all times to remain in good standing in the program.

Physical Therapy/Bioengineering, DPT/PhD

Program Overview

The Doctor of Physical Therapy (DPT) - PhD in Bioengineering program combines the entry-level DPT leading to licensure as a physical therapist, with a PhD in Bioengineering that will prepare the student to become an independent researcher.

Contact Information

Patrick Sparto, PhD, PT
Co-Director, DPT-PhD Program
Department of Physical Therapy
Bridgeside Point 1, Suite 210
Pittsburgh, PA 15219-3130
Phone: 412-383-6732
E-mail: psparto@pitt.edu

Application Process

The application opens in mid-June and will need to be submitted through the PT Centralized Application Service (PTCAS) by December 1 for admission to the program the following August. The application is reviewed by faculty in both departments.

Admission Requirements

Students will need to meet the admission requirements of both programs.

Prerequisite Coursework (minimum credit hours listed is based on a semester system equivalent)

Students will need to meet the prerequisite requirements of both programs.

Academic Standards

In addition to the University-wide academic rules and regulations as detailed in the *General Academic Regulations* section of this catalog, the DPT program is regulated by the *SHRS Academic Standards, as well as the policies and procedures in the SHRS Graduate Student Hanbook and the Doctor of Physical Therapy Student Handbook.*

Curriculum Overview

Students will follow the typical plan of study for DPT residential students for the initial seven terms (i.e., 2.3 years) of the program. Then students will follow the plan of study for PhD students in Bioengineering. Clinical internships and research experiences will be performed throughout the program. At a minimum, the program will take 6 years to complete. After completing the didactic and clinical requirements of the DPT program, the student will be allowed to take the licensing exam. Students are required to write and orally defend a dissertation to complete their PhD degree.

DPT Curriculum

Our rigorous curriculum is built around 4 key areas: basic science, clinical science, leadership & professional development,and critical inquiry. The DPT plan of study integrates the basic sciences and clinical practice, emphasizes evidence basedpractice and includes a comprehensive array of course off erings in musculoskeletal, neuromuscular, integumentary,cardiopulmonary, geriatric, and pediatric physical therapy, as well as course content related to leadership & professional development. The first 5 terms are comprised of both didactic instruction as well as two full-time clinical education experiences that are a duration of 6 weeks. The curriculum concludes with two 15-week terminal clinical educational experiences (Summer-Fall). The curriculum is designed to emphasize early and intensive integration of our students into the clinical environment throughout their educational program.

PhD Requirements

The Department of Bioengineering follows university guidelines on students working toward joint degrees like the DPT-PhD in Bioengineering. Typically, we have waived the life science requirement (6 credits) as comparable coursework is covered in the physical therapy curriculum. The remaining course requirements closely follow requirements for the PhD in Bioengineering.

- Bioengineering Track Courses - 9 credits*
- Life Sciences (successfully completing the lecture and lab components of Human Anatomy coursework fulfills this requirement) - 6 credits
- Graduate Electives (successfully completing Musculoskeletal I & II fulfills this requirement) - 6 credits*
- Graduate Engineering Mathematics - 3 credits
- Statistics for Bioengineers - 3 credits
- Societal, Political, and Ethical Issues in Bioengineering (or equivalent bioethics course) - 3 credits
- Seminar - 6 credits total, 4 credits must be BIOENG 2023 - BIOENGINEERING SEMINAR SERIES. One of the four seminars can be substituted with a Preparation for STEM academic career course, when combined with appropriate certification. The other 2 credits may be from BIOENG 2023 or any other seminars deemed appropriate by the Graduate Program Director. Please see list of Approved Seminar Courses for suggestions.
- BIOENG 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP (grant writing) - 1 credit
- Students should refer to SSOE policy regarding the minimum number of dissertation credits (BIOENG 3997 and BIOENG 3999) required for graduation.

*The standard policy for PhD students is 9 credits of track courses and 6 credits of electives. There is an exception for the Bioimaging and Signals track, for which the requirement is 12 credits of track courses and 3 credits of electives. DPT-PhD students in this track must take all four track courses, in which case only 3 elective credits are waived.

Total number of credit hours: 72 credits minimum, which includes 6 credits to fulfill life science requirement but does not include credits from foundational courses if applicable.

DPT/PhD students are also required to complete two teaching practicums before presenting their PhD proposal (comprehensive examination). No more than one practicum can be undertaken in a semester. There is no course registration for this educational experience, and fulfillment is monitored by the department.

Please see the Department of Bioengineering's PhD Requirements page for more details.

Master's

Bioengineering, MS

Students interested in pursuing a Master of Science in Bioengineering have two options:

1. **"Research MS" program**: This is a thesis-based program in which the student completes a combination of didactic coursework and, under the mentorship of an advisor, performs and defends a scholarly thesis project.

2. **"Professional MS" program**: This is a non-thesis-based program in which the student completes didactic coursework related to focused technical areas (biomechanics; data science, imaging, and sensors; molecular, cellular, and systems engineering; neural engineering; tissue engineering and regenerative medicine).

MS Bioengineering (Research or Thesis Track) Requirements

The course requirements for the MS in Bioengineering (research/thesis track) include the following:

- Graduate Engineering Mathematics (from a list of approved Math courses) - 3 credits
- Statistics for Bioengineers (from a list of approved Statistics courses) - 3 credits
- Societal, Political and Ethical Issues in Bioengineering (BIOENG 2241 or equivalent) - 3 credits
- Life Sciences (from a list of approved Life Science courses) - 3 credits
- Track Courses (from a list of approved courses for specific tracks) - 9 credits
- Elective Course - 3 credits
- BIOENG 2999 - M.S. THESIS - 6 credits
- Bioengineering Seminar (BIOENG 2023) - 3 semesters

Total number of credit hours - 30 credits (not including seminar credits, and in addition to credits from foundational courses, if taken). Other required courses may be tailored to the student's background and interests.

The student (under the guidance of their advisor) selects a thesis committee that consists of three faculty members and at least two need to be members of the Bioengineering faculty. The third member can also be a Bioengineering faculty, although an outside member is recommended. The student's advisor will act as Chairman of this committee. The committee meets at least once per year and oversees the Thesis Defense.

MS Bioengineering (Professional or Non-Thesis Track) Requirements

The curriculum in the non-thesis program of graduate education prepares students to work in the exciting and dynamic field of Bioengineering in focused technical areas (biomechanics; bioimaging and signals; molecular, cellular, and systems engineering; neural engineering; tissue engineering and regenerative medicine), as well as in the area of CARE (Clinical Adoption, Realization and

Engineering) in collaboration with the School of Nursing. The concentrations for core competency will be selected in consultation with the program director and will take into consideration the student's previous training and career aspirations.

The course requirements for the MS in Bioengineering (professional/non-thesis track) include the following:

- 12 credits in Concentration 1
- 9 credits in Concentration 2
- 3 credits in life science
- 3 credits in medical ethics
- 3 credits in mathematics/statistics

Total number of credit hours - 30 credits (not including seminar requirements, and in addition to credits from foundational courses, if taken). All students must maintain a 3.0 GPA at all times to remain in good standing in the program. All non-thesis MS students will also register for a zero-credit seminar (BIOENG 2024) that focuses on career development.

Medical Product Engineering, MS-MPE

The Master of Science in Bioengineering - Medical Product Engineering (MS-MPE) is a non-thesis professional degree program administered by the Department of Bioengineering. The program prepares students for careers in the healthcare industry through coursework in medical product design and development, entrepreneurship, regulatory processes, and commercialization. Although the program is primarily directed toward students with an undergraduate engineering background, individuals with a strong quantitative background in a STEM discipline are also eligible. The MS-MPE curriculum also satisfies the engineering degree requirements for the joint MBA/MS program offered through SSOE and the Katz Graduate School of Business.

I. Five Required (Core) Courses: 15 credits

- BIOENG 2150 - MEDICAL PRODUCT IDEATION
- BIOENG 2151 - MEDICAL PRODUCT DEVELOPMENT (Prerequisite: BIOENG 2150 or approval from the Director of Professional MS Programs)
- BIOENG 2152 - MEDICAL PRODUCT PROTOTYPING I *
- BIOENG 2170 - CLINICAL BIOENGINEERING (Prerequisite: BIOENG 2150 or approval from the Director of Professional MS Programs)
- BIOENG 2171 - MEDICAL PRODUCT PROTOTYPING 2 (Prerequisite: BIOENG 2170 or approval from the Director of Professional MS Programs)

  *Student has the option to test out of this class with appropriate previous knowledge. Please contact the Director of Professional MS Programs for details.

II. One Required Biomedical Ethics Course: 3 credits

Students will be expected to enroll in "Societal, Political, and Ethical Issues in Biotechnology" (BIOENG 2241), which is offered both semesters by the Department of Bioengineering. In the event of class conflict, students can enroll in a course offered by another department (e.g., Bioethics) with the approval of the Director of Professional MS Programs.

III. One Required Math/Stats Course: 3 credits (choose one course from the approved lists of graduate level math and statistics courses):

Approved Math Courses

Approved Statistics Courses

Another option that may be well-suited for MS-MPE students is:

- BIOENG 2351 - BIOSIGNAL ACQUISITION AND ANALYSIS

Prerequisites: None

Description: This course is designed to teach you programming in the context of real-world tasks that you will likely encounter in future academic or industrial work.

IV. Elective Courses relevant to Medical Product Engineering curriculum (per approval by program director): 9 credits of Advanced Engineering/Science courses (12 credits if tested out of BIOENG 2152)

Students can take any program relevant 2000+ level courses as electives. Since program students can explore and examine all facets of the medical product engineering process from ideation to prototyping to clinical evaluation, the following list of elective courses, which have been offered one or more times since Fall 2011, are highly appropriate for graduate study in Medical Product Engineering.

- BIOENG 2165 - MEDICAL PRODUCT ENTREPRENEURSHIP
- BIOENG 2167 - MANAGING MEDICAL PRODUCT INNOVATION
- BIOENG 2173 - MEDICAL DESIGN FOR LOW RESOURCE ENVIRONMENTS
- BIOENG 2175 - HUMAN FACTORS ENGINEERING IN MEDICAL DEVICES
- BIOENG 2230 - CARDIO ORGAN REPLACEMENT
- BIOENG 2370 - COMPUTATIONAL SIMULATION IN MEDICAL DEVICE DESIGN
- BIOENG 2385 - ENGINEERING MEDICAL DEVICES FOR QUANTITATIVE IMAGE ANALYSIS AND VISUALIZATION
- BIOENG 2390 - ARTIFICIAL INTELLIGENCE APPLICATIONS IN BIOENGINEERING
- BIOENG 2601 - PRINCIPLES AND PROPERTIES OF COMPLEX ENGINEERED MATERIALS
- BIOENG 2635 - TRIBOLOGY: THE STUDY OF ADHESION, FRICTION, LUBRICATION AND WEAR
- BIOENG 2811 - MICROFABRICATION AND CHARACTERIZATION OF NEURAL INTERFACE DEVICES
- BIOENG 2820 - SYNTHETIC BIOLOGY-ENGINEERING LIVING SYSTEMS
- ENGR 2460 - ADVANCED SCIENTIFIC VISUAL COMMUNICATION
- ENGR 2017 - MANUFACTURING FOR THE FUTURE: FLEXIBLE, GREEN, AND DIGITAL
- ENGR 2051 - PRODUCT REALIZATION
- ENGR 2080 - INNOVATING FOR COMMERCIAL IMPACT
- IE 2003 - ENGINEERING MANAGEMENT
- IE 2011 - FUNDAMENTAL OF MICRO AND NANOMANUFACTURING
- IE 2023 - INTRODUCTION TO MEDICAL PRODUCT DEVELOPMENT
- IE 2102 - LEAN SIX SIGMA I (GREEN BELT)
- IE 2106 - OPERATIONS IMPROVEMENT IN HEALTHCARE
- IE 2108 - HEALTH SYSTEMS ENGINEERING: QUANTITATIVE ANALYTICS
- IE 2123 - PROJECT MANAGEMENT
- IE 2188 - SIMULATION MODELING AND APPLICATIONS
- IE 2303 - WORK DESIGN

V. One Rotation of Co-op/Internship: 0-3 credits

A minimum of one rotation of individually arranged co-op/internship is required. The co-op/internship requirement may be paid or unpaid and is waived for students who are working full-time. As such, when students enter the MS-MPE program, the internship requirement is co-determined with the Program Director.

MS-MPE students can opt to earn 0-3 course credits toward degree requirements, which are a part of the 12 required elective credits. Thus, if a student earns less than 3 credits for the co-op/internship, electives much be taken to hit the required total 30 credits.

- BIOENG 2095 - GRADUATE PROJECTS
- ENGR 2090 - GRADUATE ENGINEERING COOPERATIVE PROGRAM

- BIOENG 2250 - CARDIO CLINICAL INTERNSHIPS

VI. BIOENG 2024 - Bioengineering Seminar for Professional MS: 0 credits

BIOENG 2024 is a required, zero-credit seminar focused on career development for students in the Professional MS program. It is required for 1 Fall and 1 Spring semester.

Department of Chemical and Petroleum Engineering

Contact Information

Vice Chair for Graduate Education
Contact: Graduate Program Administrator
412-624-9646
E-mail: ril3@pitt.edu
https://www.engineering.pitt.edu/departments/chemical-petroleum/

Main Office:
940 Benedum Engineering Hall
412-624-9631
Email: che@pitt.edu

Graduate Degree Programs

The Department of Chemical and Petroleum Engineering awards Master of Science degrees in chemical engineering and the Doctor of Philosophy degree in chemical engineering; offers several dual degree programs; and participates in joint degree programs with the Katz Graduate School of Business and the School of Medicine. The general objective of all programs is to develop the ability of the chemical or petroleum engineer to carry out original research at advanced levels.

The aim of the doctoral program is to develop individuals for careers in academic and industrial research. The program is flexible. Its primary emphasis is on innovative and distinctive research on the cutting edge of engineering science. Students wishing to pursue the PhD should have an outstanding academic background and a desire and ability to carry out original research. PhD students here are given independence and responsibility. They are not only encouraged, but are expected, to develop research ideas, which they propose and defend. They work closely with their faculty research advisors and often participate in a research group addressing relevant engineering problems. To supplement their research, students take advanced courses in areas related to their research work. Candidates for the PhD achieve a high level of proficiency through this advanced course work and individual study in their research area and related areas.

The graduate program offers MS and PhD students the opportunity to pursue independent research in five research focus areas in which the department has developed national and international reputations: biotechnology, catalysis, environment and energy, materials, and multi-scale modeling. Additional research areas exist in programs that have exploited opportunities at the interface between disciplines. The department's recognized research activities impact the following boundaries between established disciplines: biotechnology/environment; biology/medicine/engineering; energy/environment; polymer chemistry/physics; catalysis/chemistry/materials; catalysis/energy; and catalysis/environment.

Admissions

Chemical Engineering: For admission to full graduate status, students should have an undergraduate degree in chemical engineering with high academic standing from an ABET accredited curriculum.

Students from chemistry or from another engineering discipline who desire to pursue a graduate degree in chemical engineering must have a high grade point average and prepare for graduate course work by taking selected undergraduate courses in chemical engineering. See

requirements for students with non-Chemical Engineering BS degree for PhD or MS (select program from the programs list, below). Each case for admission will be evaluated individually, and applications are encouraged. Interested students may apply online. Questions can be sent to che@pitt.edu. Please be sure to include your name and complete mailing address.

Send surface mail to:

University of Pittsburgh
Department of Chemical and Petroleum Engineering
Vice Chair for Graduate Education
940 Benedum Hall
Pittsburgh, PA 15260

Doctoral

Chemical Engineering, PhD

The following special regulations pertain to the Department of Chemical and Petroleum Engineering. *For additional requirements, review the school-wide information in the Doctor of Philosophy Programs section as well as the Regulations Pertaining to Doctoral Degrees.*

Entry to the PhD Program

In order to enter the PhD program, a student must have completed an MS degree and passed the PhD oral qualifying preliminary examination. Especially well-prepared students, with consent of the department faculty, may be granted permission to obtain the PhD degree directly without obtaining an MS degree. This eliminates the required completion of the MS thesis. All MS-level course work is still required.

During the summer of the first year as a graduate student in the department, the student wishing to continue into the PhD program must take the oral preliminary examination. Failure to take this examination at this time will forfeit one of two opportunities to pass this examination. The structure and content of the PhD oral qualifying examination is subject to change in order to meet the requirements of the faculty and PhD program.

PhD Course Requirements

A student's course series will be designed by the student and his/her thesis advisor, approved by the PhD committee, and signed off by the graduate coordinator. This sequence should include courses in the student's research area as well as courses not related to his/her research area. Forty-two credits beyond the MS degree are required and must include the following courses:

- XX 2/3XXX Electives (Science, Math, or Engineering) 12 credits
- CHE 2982 - ISSUES IN RESEARCH AND TEACHING (if not taken at MS level)
- CHE 3990 - ADVANCED GRADUATE PROJECTS
- CHE 3999 - PH.D. DISSERTATION (taken after PhD proposal/comprehensive exam defense)

Additional course requirements may include the following, if the student has not previously completed courses in these areas at the master's level:

- CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS
- CHE 2201 - FUNDAMNTL OF REACTION PROCESSES
- CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1
- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1

Note:

Students must also register for one credit in PhD research methodology and one credit of CHE 3001 - GRADUATE SEMINAR each term.

Dissertation Requirement

A dissertation topic should be selected after passing the PhD oral qualifying examination. This is done by submitting a formal request in writing to the departmental graduate faculty for appointment of a faculty advisor (or advisors). Preliminary work can be done on the dissertation by registering for CHE 3990. After being admitted to PhD candidacy, the student should concentrate on the dissertation, registering for CHE 3999. A minimum of 30 credits of CHE 3990 and CHE 3999 is required. Most students complete more than 30 credits.

PhD Comprehensive Examination and Proposal Conference

This is an oral examination covering chemical engineering at the PhD level and is based upon a written dissertation proposal. If this examination is passed, a doctoral committee will be officially appointed. This exam should be taken at least 18 months before completion of the dissertation and preferably within the first year beyond the MS.

PhD Final Oral Examination

Please refer to the Swanson School of Engineering (SSOE) Graduate Catalog.

Off-Campus Research

Occasionally, a research program can be conducted at a government or industrial site. In those situations the student should submit a proposal for such research to the Vice Chair for Graduate Education for approval by the faculty. The faculty advisor must be actively involved in the research.

Joint Degree

Chemical and Petroleum Engineering Dual Degree, MS

Requirements

A program of study is available in which a student may pursue a dual degree between chemical engineering and petroleum engineering. At least 48 credits are required, including the fundamental courses in the two areas. Both thesis and non-thesis options are possible. The required chemical engineering courses are:

- CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS
- CHE 2201 - FUNDAMNTL OF REACTION PROCESSES
- CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1
- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1

and the required petroleum engineering courses are:

- PETE 2160 - PETROLEUM RESERVOIR ENGINEERING
- PETE 2201 - RECOVERY OF OIL BY WATERFLOODING
- PETE 2204 - ENHANCED OIL RECOVERY PROCESSES
- PETE 2205 - PETROLEUM PRODUCTION ENGINEERING
- PETE 2207 - PETROLEUM AND NATURAL GAS PROCESSING
- PETE 2208 - PETROLEUM DRILLING AND WELL COMPLETION DESIGN
- PETE 2209 - HYDRAULIC FRACTURING MECHANICS AND APPLICATIONS

Additional requirements for the Dual Degree MS, non-Thesis options:

- CHE 2910 - SPECIAL PROJECTS
- 3 course credits in Chemical or Petroleum Engineering coursework
- PETE 2211 - RESERVOIR SIMULATION and 6 additional course credits from the approved list (as specified in the Master of Science in Petroleum Engineering) of graduate offerings in engineering or geology

Additional requirements for Dual Degree MS with Thesis:

- 6 course credits from the approved list (as specified Master of Science in Petroleum Engineering) of graduate offerings in engineering or geology
- CHE 2982 - ISSUES IN RESEARCH AND TEACHING
- CHE 2999 - M.S. THESIS or PETE 2999 - M.S. THESIS
- Registration for one credit of CHE 2980 - MS RESEARCH METHODOLOGY or PETE 2980 - MS RESEARCH METHODOLOGY each fall and spring term until graduation
- Registration for CHE 3001 - GRADUATE SEMINAR each fall and spring term

MS Final Examination

The examination will be administered by the master's committee in accordance with the Regulations Governing Graduate Study (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog .

Note:

No single course can be used to satisfy both a core requirement and elective requirement.

Students without a BS degree in engineering must take, in addition, either the online "bridging course" offered in Jan (1st class) and May (2nd class) by Michigan State University (see http://www.egr.msu.edu/ for details about the bridging courses ChE 804 and 805). Neither of these courses can serve as an elective nor core course substitute in the dual MS in Chemical and Petroleum Engineering required courses.

Master's

Chemical Engineering (Professional Engineer Program), MSCHe

Students who wish to pursue advanced study in chemical engineering may apply for admission to the Professional Engineer Program. It differs from the regular MS program in two important respects:

1. Course work replaces the MS thesis requirement.
2. The student completes a 3-credit special project course, CHE 2910, during their last term in the program. This course could be satisfied, for example, by a project with a faculty member, or a project based on their professional work (for engineers currently working in industry) for which a faculty member agrees to serve as advisor. Submission of a term paper, which is completed under the advisement of a member of the faculty, is required.

A minimum of 31 credit hours of course work is required.

These must include the five core courses and elective courses listed below.

- CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS
- CHE 2201 - FUNDAMNTL OF REACTION PROCESSES
- CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1

- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1
- CHE 2910 - SPECIAL PROJECTS
- ChE 2XXX - Chemical Engineering Elective (Graduate Level)
- ENGR 2/3XXX - Engineering Elective (Graduate Level)
- ENGR 2/3XXX - Engineering Elective (Graduate Level)
- XX 2/3XXX - Elective (Graduate Level)
- XX 2/3XXX - Elective (Graduate Level)

Note:

Up to 6 credit hours may be elected in approved graduate course offerings outside the department (denoted by XX, above); approvals are granted by the ChE Vice Chair for Graduate Education. Students who wish to enter this program should first apply for admission to graduate study in chemical engineering. Once admitted, students can then request admission to the Professional Engineer Program.

No single course can be used to satisfy both a core requirement and elective requirement.

Students without a BS degree in engineering must take, in addition, either the online "bridging course" offered in Jan (1st class) and May (2nd class) by Michigan State University (see http://www.egr.msu.edu/ for details about the bridging courses CHE 804 and 805). In addition, students must take ChE 0613 (senior-level) "Systems Engineering 2: Process Design" prior to graduating with the MS, offered in the spring and summer terms. Neither of these courses can serve as an elective nor core course substitute in the MS in Chemical Engineering required courses.

Chemical Engineering (Research-Oriented Program), MSCHe

Requirements

The candidate for the Master of Science degree must demonstrate proficiency in basic chemical engineering subjects by successfully taking the following required courses:

- CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS
- CHE 2201 - FUNDAMNTL OF REACTION PROCESSES
- CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1
- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1
- CHE 2982 - ISSUES IN RESEARCH AND TEACHING

In addition to these 15 credits, the student must satisfactorily complete the following courses:

- At least 9 additional credits of graduate-level course work, at least 3 of which must be in chemical engineering. Approved courses, with the permission of the student's major advisor and/or the ChE Vice Chair for Graduate Education, can be taken outside the department.
- 6 credits of CHE 2999 - M.S. THESIS must also be taken.
- 3 credits of Research Methodology are required (see below).

A full-time student will normally take 24 didactic credits, 6 thesis credits, 3 credits of research methodology, and up to 3 credits of seminar.

Full-time students are required to register each term for Research Methodology, a 1-credit course. In Research Methodology, a letter grade will be given each term based upon the student's research performance. Full-time students are also required to register for CHE 3001 - GRADUATE SEMINAR during the fall and spring terms. It should be emphasized that the preceding course requirements are minimum requirements, and additional work may be necessary for an individual student, especially if the student's undergraduate degree is not in chemical engineering.

In addition to the University's regulations for Academic Standing for Graduate and Professional Students, should a student receive a grade lower than B- in a required MS course, the student will be required to repeat that course and receive a B- grade or better before being permitted to graduate.

Note:

No single course can be used to satisfy both a core requirement and elective requirement.

Students without a BS degree in engineering must take, in addition, either the online "bridging course" offered in Jan (1st class) and May (2nd class) by Michigan State University (see http://www.egr.msu.edu/ for details about the bridging courses CHE 804 and 805). Neither of these courses can serve as an elective nor core course substitute in the MS required courses.

Petroleum Engineering, MSPE

The candidate for the degree of non-thesis Master of Science in Petroleum Engineering must demonstrate proficiency in petroleum engineering by passing the following:

Mandatory Courses:

- PETE 2160 - PETROLEUM RESERVOIR ENGINEERING
- PETE 2201 - RECOVERY OF OIL BY WATERFLOODING
- PETE 2204 - ENHANCED OIL RECOVERY PROCESSES
- PETE 2205 - PETROLEUM PRODUCTION ENGINEERING
- PETE 2207 - PETROLEUM AND NATURAL GAS PROCESSING
- PETE 2208 - PETROLEUM DRILLING AND WELL COMPLETION DESIGN
- PETE 2209 - HYDRAULIC FRACTURING MECHANICS AND APPLICATIONS
- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1 or PETE 2211 - RESERVOIR SIMULATION

Note:

In addition to these 24 credits, the student must satisfactorily complete two other courses from the accepted electives list in order to fulfill the 30 credits required for the MS degree.

Accepted Electives:

- GEOL 2110 - PLATE TECTONICS
- GEOL 2151 - GROUNDWATER GEOLOGY
- GEOL 2449 - GIS, GPS, AND COMPUTER METHODS
- ME 2055 - COMPUTER AIDED ANALYSIS OF TRANSPORT PHENOMENA
- ME 2060 - NUMERICAL METHODS
- CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY
- CEE 2502 - PHYSICAL-CHEMICAL PRINCIPLES IN ENVIRONMENTAL ENGINEERING
- CEE 2717 - COMPONENTS, PROPERTIES AND DESIGN OF PORTLAND CEMENT CONCRETE
- CEE 2800 - ENGINEERING GEOLOGY
- CEE 3501 - ENVRNMTL ENGRG PROCESSES 1
- CEE 3502 - ENVRNMTL ENGRG PROCESSES 2
- PETE 2910 - SPECIAL PROJECTS

Note:

No single course can be used to satisfy both a core requirement and elective requirement.

Students without a BS degree in engineering must take, in addition, either the online "bridging course" offered in Jan (1st class) and May (2nd class) by Michigan State University (see http://www.egr.msu.edu/ for details about the bridging courses CHE 804 and 805) or the ChE Bridging Program offered by Pitt during the summer term immediately preceding matriculation to the graduate degree program. Neither of these courses can serve as an elective nor core course substitute in the MS in Petroleum Engineering required courses.

Department of Civil and Environmental Engineering

Contact Information

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Graduate Degree Programs

https://www.engineering.pitt.edu/departments/civil-environmental/graduate/graduate-overview/

The Department of Civil and Environmental Engineering offers graduate study and research leading to the Master of Science in Civil Engineering and Doctor of Philosophy degrees. Also offered is a joint degree program resulting in a second Master of Science degree in mathematics, and a joint degree program with the Katz Graduate School of Business resulting in a MBA degree. The MS in Civil Engineering and the PhD in engineering may be pursued in one of the following areas:

The Master of Science degree in Civil and Environmental Engineering is primarily designed for students with an undergraduate degree in engineering, although students with other backgrounds can be accommodated with specially designed programs. An MS degree can be pursued by either a full-time or part-time student in one of the following areas:

- Construction Management
- Environmental Engineering
- Geotechnical and Pavement Engineering
- Structural Engineering and Mechanics
- Sustainable Engineering
- Transportation Engineering
- Water Resources Engineering

The areas of study for the Ph.D. in Civil Engineering in the Department of Civil and Environmental Engineering within the Swanson School of Engineering are divided into two integrated research areas and sub-component specialty areas as follows:

- **Sustainability and Environmental Engineering (SEE):**
  - Environmental Engineering;
  - Sustainable Engineering; and
  - Water Resources Engineering
- **Advanced Infrastructure Systems (AIS):**
  - Geotechnical and Pavement Engineering;
  - Structural Engineering and Mechanics; and
  - Transportation Engineering.

Certificate

Circular Economy Certificate

The certificate in Circular Economy (CE) is housed administratively within the Mascaro Center for Sustainable Innovation (MCSI). The **15-credit** graduate certificate has been developed based on current research on recommended skills and knowledge related to the circular economy.

The objectives of the Circular Economy Certificate (CEC) are:

1. Enable graduate students to develop knowledge of circular economy principles and ultimately create circular and sustainable solutions.
2. Embark on a novel, cross-disciplinary educational experience that integrates existing campus resources with a new course focusing on circular economy design.
3. Create a learning pathway that enables the development of breadth and depth and the skills needed for circular economy solutions.
4. Create regional and nationally scalable circular economy solutions through an existing capstone course.
5. Experience a diverse and inclusive training environment that builds upon and extends our networks, ultimately establishing a diverse and inclusive academic environment for our program.

The CEC graduate certificate is designed for individuals looking to develop the skills and knowledge of circular economy necessary to support promising career opportunities. The curriculum is aimed at existing graduate students or professionals whose academic or professional aspirations require expertise in the understanding and application of circular economy.

The certificate is structured so the participant is required to take five total courses. Three of the courses are required, with two elective courses.

Required Courses

The following three courses are required:

- CEE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS
- ENGR 2007 - SUSTAINABILITY CAPSTONE
- CEE 2630 - DESIGN FOR CIRCULAR ECONOMY

Elective Courses

Students must complete two of the following electives:

- BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT
- LAW 5340 - ENVIRONMENTAL LAW
- PIA 2115 - ENVIRONMENTAL ECONOMICS
- BMKT 2513 - CONSUMER BEHAVIOR 1
  BMKT Consumer Behavior 1 and 2 (3 credits in total).
  Other courses related to CE as approved by advisor.

Total Credits: 15

Civil and Environmental Engineering - Construction Management Certificate

The Construction Management Certificate Program is directed at Part-time students currently employed in the construction industry as well as other students interested in obtaining credentials in construction management.

The Academic Requirements associated with the Graduate and Post-Baccalaureate Certificate in Construction Management include the completion of fifteen (15) credits of coursework within the Civil and Environmental Department from among the following Graduate Level courses:

- CEE 2201 - CONSTRUCTION COST ENGINEERING*
- CEE 2202 - CONSTRUCTION SCHEDULING*
- CEE 2203 - CONSTRCT METHODS AND EQUIPMENT*
- CEE 2204 - CONSTRUCTION LAW AND RISK MGMNT
- CEE 2205 - CONSTRCT FINANCE & COST CONTROL
- CEE 2206 - CONSTRCT & COST OF ELEC SUPPLY
- CEE 2207 - CONSTRCT & COST OF MECHL SYSTEMS
- CEE 2230 - BUILDING INFORMATION MODELING

Students must complete three (3) required courses above (designated with an asterisk *) and may select any two (2) of the remaining courses above as electives in the completion of their Certificate. Additional graduate level courses within the Swanson School of Engineering may be considered as substitutes for the two (2) elective courses with permission of the Program Director to customize the Certificate to meet the educational goals of the student. All courses can be taken either on campus or online.

Doctoral

Civil Engineering, PhD

- Civil Engineering - Advanced Infrastructure Systems - Geotechnical and Pavement Engineering Specialty, PhD
- Civil Engineering - Advanced Infrastructure Systems - Structural Engineering and Mechanics Specialty, PhD
- Civil Engineering - Advanced Infrastructure Systems - Transportation Engineering Specialty, PhD
- Civil Engineering - Sustainability and Environmental Engineering - Environmental Engineering Specialty, PhD
- Civil Engineering - Sustainability and Environmental Engineering - Sustainable Engineering Specialty, PhD
- Civil Engineering - Sustainability and Environmental Engineering - Water Resources Engineering Specialty, PhD

Master's

Civil and Environmental Engineering - Construction Management Area, MSCE

The MS program follows all requirements established by the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

The specific requirements for the option for the Master of Science in Civil and Environmental Engineering - Construction Management Area degree (thesis and professional) are detailed below:

Requirements

Professional Option: 30 course credits (e.g., ten, 3-credit lecture courses) minimum

Thesis Option: 24 course credits (e.g., eight, 3-credit course equivalents) minimum and 6 thesis research (CEE 2999) credits

All M.S. students enter the professional MS program. Students interested in the thesis option should meet with program faculty to explore project options and can transition to the thesis option if they find a thesis advisor and project.

The detailed course requirements for these two degree options are as follows:

Professional MS Degree Requirements

a) 3 credits - CEE 2201 - CONSTRUCTION COST ENGINEERING or Equivalent

b) 3 credits - CEE 2202 - CONSTRUCTION SCHEDULING or Equivalent

c) 3 credits - CEE 2203 - CONSTRCT METHODS AND EQUIPMENT or Equivalent

d) 3 credits - CEE 2204 - CONSTRUCTION LAW AND RISK MGMNT or Equivalent

e) 3 credits - CEE 2205 - CONSTRCT FINANCE & COST CONTROL or Equivalent

f) 3 credits - CEE 2206 - CONSTRCT & COST OF ELEC SUPPLY - OR - CEE 2207 - CONSTRCT & COST OF MECHL SYSTEMS or Equivalent

g) 12 credits - Graduate Technical Electives

Notes: Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count toward the degree program coursework requirements.

MS Thesis Degree Requirements

a) 3 credits - CEE 2201 - CONSTRUCTION COST ENGINEERING or Equivalent

b) 3 credits - CEE 2202 - CONSTRUCTION SCHEDULING or Equivalent

c) 3 credits - CEE 2203 - CONSTRCT METHODS AND EQUIPMENT or Equivalent

d) 3 credits - CEE 2204 - CONSTRUCTION LAW AND RISK MGMNT or Equivalent

e) 3 credits - CEE 2205 - CONSTRCT FINANCE & COST CONTROL or Equivalent

f) 3 credits - CEE 2206 - CONSTRCT & COST OF ELEC SUPPLY - OR - CEE 2207 - CONSTRCT & COST OF MECHL SYSTEMS or Equivalent

g) 6 credits - Graduate Technical Electives

Notes: Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count toward the degree program coursework requirements.

g) 6 credits - CEE 2999 - M.S. THESIS

Thesis Defense

The examination will be administered by the master's committee in accordance with the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

Civil and Environmental Engineering - Environmental Engineering Area, MSCE

The MS program follows all requirements established by the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

The specific requirements for the option for the Master of Science in Civil and Environmental Engineering - Environmental Engineering Area degree (thesis and professional) are detailed below:

Requirements

Professional Option: 30 course credits (e.g., ten, 3-credit lecture courses) minimum

Thesis Option: 24 course credits (e.g., eight, 3-credit course equivalents) minimum and 6 thesis research (CEE 2999) credits

All M.S. students enter the professional MS program. Students interested in the thesis option should meet with program faculty to explore project options and can transition to the thesis option if they find a thesis advisor and project.

The detailed course requirements for these two degree options are as follows:

Professional MS Degree Requirements

a) 3 credits - CEE 2500 - ENVRNMNTL ENGRG MICROBIOL or Equivalent

b) 3 credits - CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY or Equivalent

c) 3 credits - CEE 3501 - ENVRNMTL ENGRG PROCESSES 1 or Equivalent

d) 3 credits - CEE 3502 - ENVRNMTL ENGRG PROCESSES 2 or Equivalent

e) 18 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

MS Thesis Degree Requirements

a) 3 credits - CEE 2500 - ENVRNMNTL ENGRG MICROBIOL or Equivalent

b) 3 credits - CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY or Equivalent

c) 3 credits - CEE 3501 - ENVRNMTL ENGRG PROCESSES 1 or Equivalent

d) 3 credits - CEE 3502 - ENVRNMTL ENGRG PROCESSES 2 or Equivalent

e) 12 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

g) 6 credits - CEE 2999 - M.S. THESIS

Thesis Defense

The examination will be administered by the master's committee in accordance with the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

Civil and Environmental Engineering - Geotechnical Area, MSCE

The MS program follows all requirements established by the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

The specific requirements for the option for the Master of Science in Civil and Environmental Engineering - Geotechnical Engineering Area degree (thesis and professional) are detailed below:

Requirements

Professional Option: 30 course credits (e.g., ten, 3-credit lecture courses) minimum

Thesis Option: 24 course credits (e.g., eight, 3-credit course equivalents) minimum and 6 thesis research (CEE 2999) credits

All M.S. students enter the professional MS program. Students interested in the thesis option should meet with program faculty to explore project options and can transition to the thesis option if they find a thesis advisor and project.

The detailed course requirements for these two degree options are as follows:

Professional MS Degree Requirements

a) 3 credits - CEE 2800 - ENGINEERING GEOLOGY or Equivalent

b) 3 credits - CEE 2801 - ADVANCED SOIL MECHANICS or Equivalent

c) 3 credits - CEE 2802 - GEOTECHNICAL ANALYSIS or Equivalent

d) 3 credits - CEE 2814 - SLOPES & EARTH RETAINING STRUCT or Equivalent

e) 18 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements).

MS Thesis Degree Requirements

a) 3 credits - CEE 2800 - ENGINEERING GEOLOGY or Equivalent

b) 3 credits - CEE 2801 - ADVANCED SOIL MECHANICS or Equivalent

c) 3 credits - CEE 2802 - GEOTECHNICAL ANALYSIS or Equivalent

d) 3 credits -CEE 2814 - SLOPES & EARTH RETAINING STRUCT or Equivalent

e) 12 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996) No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

f) 6 credits - CEE 2999 - M.S. THESIS

Thesis Defense

The examination will be administered by the master's committee in accordance with the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

Civil and Environmental Engineering - Pavement Engineering Area, MSCE

The MS program follows all requirements established by the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

The specific requirements for the option for the Master of Science in Civil and Environmental Engineering - Pavement Engineering Area degree (thesis and professional) are detailed below:

Requirements

Professional Option: 30 course credits (e.g., ten, 3-credit lecture courses) minimum

Thesis Option: 24 course credits (e.g., eight, 3-credit course equivalents) minimum and 6 thesis research (CEE 2999) credits

All M.S. students enter the professional MS program. Students interested in the thesis option should meet with program faculty to explore project options and can transition to the thesis option if they find a thesis advisor and project.

The detailed course requirements for these two degree options are as follows:

Professional MS Degree Requirements

a) 3 credits - CEE 2714 - PAVEMENT DESIGN AND ANALYSIS or Equivalent

b) 3 credits - CEE 2715 - PAVEMENT MAINTENANCE AND REHAB or Equivalent

c) 3 credits - CEE 2717 - COMPONENTS, PROPERTIES AND DESIGN OF PORTLAND CEMENT CONCRETE or Equivalent

d) 3 credits - CEE 3714 - ADVANCED PAVEMENT DESIGN & ANAL or CEE 2716 - PAVEMENT CONSTRUCTION or Equivalent

e) 18 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

MS Thesis Degree Requirements

a) 3 credits - CEE 2714 - PAVEMENT DESIGN AND ANALYSIS or Equivalent

b) 3 credits - CEE 2715 - PAVEMENT MAINTENANCE AND REHAB or Equivalent

c) 3 credits - CEE 2717 - COMPONENTS, PROPERTIES AND DESIGN OF PORTLAND CEMENT CONCRETE or Equivalent

d) 3 credits - CEE 3714 - ADVANCED PAVEMENT DESIGN & ANAL or CEE 2716 - PAVEMENT CONSTRUCTION or Equivalent

e) 12 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996) No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

f) 6 credits - CEE 2999 - M.S. THESIS

Thesis Defense

The examination will be administered by the master's committee in accordance with the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

Civil and Environmental Engineering - Structural Engineering and Mechanics Area, MSCE

The MS program follows all requirements established by the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

The specific requirements for the option for the Master of Science in Civil and Environmental Engineering - Structural Engineering and Mechanics Area degree (thesis and professional) are detailed below:

Requirements

Professional Option: 30 course credits (e.g., ten, 3-credit lecture courses) minimum

Thesis Option: 24 course credits (e.g., eight, 3-credit course equivalents) minimum and 6 thesis research (CEE 2999) credits

All M.S. students enter the professional MS program. Students interested in the thesis option should meet with program faculty to explore project options and can transition to the thesis option if they find a thesis advisor and project.

The detailed course requirements for these two degree options are as follows:

Professional MS Degree Requirements

a) 3 credits - CEE 2320 - ADVANCED MECHANICS OF MATERIALS or CEE 2321 - ELASTICITY, PLASTICITY AND FRACTURE MECHANICS

b) 3 credits - CEE 2333 - INTRODUCTION TO FINITE ELEMENTS or Equivalent

c) 3 credits - SEM Graduate Design Elective - CEE 2340 - DESIGN OF CONCRETE STRUCTURES, CEE 2341 - DESIGN OF STEEL STRUCTURES, CEE 2343 - PRESTRESSED CONCRETE , CEE 2346 - REPAIR AND RETROFIT OF STRUCTURES or CEE 2347 - BRIDGE ENGINEERING

d) 6 credits - SEM Graduate Technical Elective - CEE 2330 - ADVANCED STRUCTURAL ANALYSIS , CEE 2343 - PRESTRESSED CONCRETE , CEE 2347 - BRIDGE ENGINEERING, CEE 2360 - DYNAMICS OF STRUCTURES or CEE 2370 - NONDESTRUCTIVE EVALUATION

Note: CEE 2330 - ADVANCED STRUCTURAL ANALYSIS may not be taken for graduate credit if the student's undergraduate program includes an equivalent course.

e) 15 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements).

MS Thesis Degree Requirements

a) 3 credits - CEE 2320 - ADVANCED MECHANICS OF MATERIALS or CEE 2321 - ELASTICITY, PLASTICITY AND FRACTURE MECHANICS

b) 3 credits - CEE 2333 - INTRODUCTION TO FINITE ELEMENTS or Equivalent

c) 3 credits - SEM Graduate Design Elective - CEE 2340 - DESIGN OF CONCRETE STRUCTURES, CEE 2341 - DESIGN OF STEEL STRUCTURES, CEE 2343 - PRESTRESSED CONCRETE , CEE 2346 - REPAIR AND RETROFIT OF STRUCTURES or CEE 2347 - BRIDGE ENGINEERING

d) 6 credits - SEM Graduate Technical Elective - CEE 2330 - ADVANCED STRUCTURAL ANALYSIS , CEE 2343 - PRESTRESSED CONCRETE , CEE 2347 - BRIDGE ENGINEERING, CEE 2360 - DYNAMICS OF STRUCTURES or CEE 2370 - NONDESTRUCTIVE EVALUATION

Note: CEE 2330 - ADVANCED STRUCTURAL ANALYSIS may not be taken for graduate credit if the student's undergraduate program includes an equivalent course.

e) 9 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements).

f) 6 credits - CEE 2999 - M.S. THESIS

Thesis Defense

The examination will be administered by the master's committee in accordance with the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

Civil and Environmental Engineering - Sustainable Engineering Area, MSCE

The MS program follows all requirements established by the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

The specific requirements for the option for the Master of Science in Civil and Environmental Engineering - Sustainable Engineering Area degree (thesis and professional) are detailed below:

Requirements

Professional Option: 30 course credits (e.g., ten, 3-credit lecture courses) minimum

Thesis Option: 24 course credits (e.g., eight, 3-credit course equivalents) minimum and 6 thesis research (CEE 2999) credits

All M.S. students enter the professional MS program. Students interested in the thesis option should meet with program faculty to explore project options and can transition to the thesis option if they find a thesis advisor and project.

The detailed course requirements for these two degree options are as follows:

Professional MS Degree Requirements

a) 3 credits - CEE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS or Equivalent

b) 3 credits - CEE 2610 - ENGINEERING AND SUSTAINABLE DEVELOPMENT or Equivalent

c) 3 credits - CEE 2620 - ADVANCED GREEN BUILDING AND CONSTRUCTION or CEE 2630 - DESIGN FOR CIRCULAR ECONOMY or Equivalent

d) 3 credits - CEE 2515 - WATSTEWATER COLLECTWASTEWATER COLLECTION AND TREATMENT PLANT DESIGNION AND TREATMENT PLANT DESIGN or CEE 2531 - AIR POLLUTION AND CONTROL or Equivalent

e) 18 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

MS Thesis Degree Requirements

a) 3 credits - CEE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS or Equivalent

b) 3 credits - CEE 2610 - ENGINEERING AND SUSTAINABLE DEVELOPMENT or Equivalent

c) 3 credits - CEE 2620 - ADVANCED GREEN BUILDING AND CONSTRUCTION or CEE 2630 - DESIGN FOR CIRCULAR ECONOMY or Equivalent

d) 3 credits - CEE 2515 - WATSTEWATER COLLECTWASTEWATER COLLECTION AND TREATMENT PLANT DESIGNION AND TREATMENT PLANT DESIGN or CEE 2531 - AIR POLLUTION AND CONTROL or Equivalent

e) 12 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

f) 6 credits - CEE 2999 - M.S. THESIS

Thesis Defense

The examination will be administered by the master's committee in accordance with the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

Civil and Environmental Engineering - Transportation Engineering Area, MSCE

The MS program follows all requirements established by the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

The specific requirements for the option for the Master of Science in Civil and Environmental Engineering - Transportation Engineering Area degree (thesis and professional) are detailed below:

Requirements

Professional Option: 30 course credits (e.g., ten, 3-credit lecture courses) minimum

Thesis Option: 24 course credits (e.g., eight, 3-credit course equivalents) minimum and 6 thesis research (CEE 2999) credits

All M.S. students enter the professional MS program. Students interested in the thesis option should meet with program faculty to explore project options and can transition to the thesis option if they find a thesis advisor and project.

The detailed course requirements for these two degree options are as follows:

Professional MS Degree Requirements

a) 3 credits - CEE 2700 - TRAFFIC MGMNT AND OPERATIONS or Equivalent

b) 3 credits - CEE 2710 - TRAFFIC CONTROL SYSTEMS or Equivalent

c) 3 credits - CEE 2720 - URBAN TRANSPORTATION PLANNING or Equivalent

d) 3 credits - CEE 2730 - HIGHWAY ENGINEERING or CEE 2714 - PAVEMENT DESIGN AND ANALYSIS or Equivalent

e) 3 credits - CEE 2750 - PROJECT DEVELOPMENT AND IMPLEMENTATION

f) 15 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

MS Thesis Degree Requirements

a) 3 credits - CEE 2700 - TRAFFIC MGMNT AND OPERATIONS or Equivalent

b) 3 credits - CEE 2710 - TRAFFIC CONTROL SYSTEMS or Equivalent

c) 3 credits - CEE 2720 - URBAN TRANSPORTATION PLANNING or Equivalent

d) 3 credits - CEE 2730 - HIGHWAY ENGINEERING or CEE 2714 - PAVEMENT DESIGN AND ANALYSIS or Equivalent

e) 3 credits - CEE 2750 - PROJECT DEVELOPMENT AND IMPLEMENTATION

f) 9 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

g) 6 credits - CEE 2999 - M.S. THESIS

Thesis Defense

The examination will be administered by the master's committee in accordance with the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

Civil and Environmental Engineering - Water Resources Engineering Area, MSCE

The MS program follows all requirements established by the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

The specific requirements for the option for the Master of Science in Civil and Environmental Engineering - Water Resources Engineering Area degree (thesis and professional) are detailed below:

Requirements

Professional Option: 30 course credits (e.g., ten, 3-credit lecture courses) minimum

Thesis Option: 24 course credits (e.g., eight, 3-credit course equivalents) minimum and 6 thesis research (CEE 2999) credits

All M.S. students enter the professional MS program. Students interested in the thesis option should meet with program faculty to explore project options and can transition to the thesis option if they find a thesis advisor and project.

The detailed course requirements for these two degree options are as follows:

Professional MS Degree Requirements

Complete three of the following:

a) 3 credits - CEE 2401 - OPEN CHANNEL HYDRAULICS

b) 3 credits - CEE 3414 - ADVANCED HYDROLOGY

c) 3 credits - CEE 2410 - WATER RESOURCES ENGINEERING

d) 3 credits - CEE 2411 - CURRENT ISSUES AND CHALLENGES IN WATER RESOURCES

And:

e) 21 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996). No more than six credits of CEE 2996 may count towards the degree program coursework requirements.

MS Thesis Degree Requirements

Complete three of the following:

a) 3 credits - CEE 2401 - OPEN CHANNEL HYDRAULICS

b) 3 credits - CEE 3414 - ADVANCED HYDROLOGY

c) 3 credits - CEE 2410 - WATER RESOURCES ENGINEERING

d) 3 credits - CEE 2411 - CURRENT ISSUES AND CHALLENGES IN WATER RESOURCES

And:

e) 15 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

f) 6 credits - CEE 2999 - M.S. THESIS

Thesis Defense

The examination will be administered by the master's committee in accordance with the Regulations Governing Graduate Studies (RGGS) and the Swanson School of Engineering (SSOE) Graduate Catalog.

Department of Electrical and Computer Engineering

Contact Information

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http://www.engineering.pitt.edu/ECE/

Additional information concerning the Electrical and Computer Engineering graduate programs may be obtained from the department's Graduate Program Administrator, located at 1238 Benedum Hall, 3700 O'Hara Street, Pittsburgh, PA 15261, and available by email at ecegrad@pitt.edu.

Graduate Degree Programs

The Department of Electrical and Computer Engineering offers a program of graduate study and research for master's and doctoral degree students whose career choice is oriented toward basic or applied research in industry, government, or academic institutions. Degrees awarded are the Master of Science in Electrical and Computer Engineering and the Doctor of Philosophy in Electrical and Computer

Engineering. Course work and faculty/student research in the graduate Electrical and Computer Engineering program are concentrated in the following four areas:

- Computer Engineering
- Optical and Electronic Devices
- Electric Power Engineering
- Signal Processing and Systems

and include research in computer architecture, reconfigurable and high-performance computing, computer-aided design (CAD), very-large-scale integrated (VLSI) design, optical interfacing, embedded systems, parallel processing architectures, networking, photonic and electronic devices, plasmonics, quantum photonic devices, micro/nanorobotics and systems, fiber optics, ultrafast laser processing, 2D/low-dimensional materials and devices, semiconductor device modeling and characterization, power electronics, pattern recognition, biomedical image processing, speech processing, statistical signal processing, wavelets, intelligent and neutral control, human-centered control, networked control, radio-frequency identification (RFID) and tags, electric power systems analysis, simulation and modeling: transmission, distribution systems and technologies, real-time control of power systems, renewable energy interconnections, and smart grid.

Graduate Admissions

https://www.engineering.pitt.edu/ece

Applicants for admission must submit transcripts of all college-level work and two letters of recommendation. GRE scores are not required for applications and admissions, but may be optionally submitted by students who want them included as part of their application package. International applicants whose first language is not English must demonstrate English language proficiency by submitting IELTS, TOEFL or Duolingo test scores. More on Graduate Admissions can be found here.

Certificate

Electric Power Engineering Certificate

- Via Asynchronous or Synchronous, Interactive, Distance-Enabled Delivery

The University of Pittsburgh Swanson School of Engineering has established an Electric Power Engineering Post-Baccalaureate/Graduate Certificate Program that rises to the challenge of meeting the nation's critical development needs for electric power engineering professionals. This is a distance-enabled program in electric power engineering that allows students to take classes either synchronously or asynchronously, depending on the course.

The program is deeply rooted in core electric power engineering principles and focuses on the expansion and enhanced reliability and resilience of electric power grid infrastructure through application of power electronics and advanced control technologies, as well as renewable energy integration and smart grids. Program content - combined with innovative distance-enabled delivery and collaborative program components - makes this program an attractive and unique choice in graduate engineering, particularly for individuals in industry/business. For additional information and to apply, please visit www.engineering.pitt.edu/powercertificate.

Certificate Curriculum

Credit-hours required: 15

Students may select any five of the following courses:

- ECE 2250 - POWER ELECTRONICS
- ECE 2646 - LINEAR SYSTEM THEORY
- ECE 2774 - COMPUTER ANALYSIS OF POWER SYSTEMS
- ECE 2775 - ADVANCED ELECTRIC MACHINES AND DRIVES
- ECE 2776 - MICROGRID CONCEPTS & DISTRIBUTED GENERATION TECHNOLOGIES

- ECE 2777 - POWER SYSTEMS TRANSIENTS 1
- ECE 2778 - FACTS AND HVDC TECHNOLOGIES
- ECE 2780 - RENEWABLE AND ALTERNATIVE ENERGY
- ECE 2781 - SMART GRID TECHNOLOGIES AND APPLICATIONS
- ECE 2795 - SPECIAL TOPICS POWER - Artificial Intelligence and Machine Learning Applications for Modern Power Systems
- ECE 2795 - SPECIAL TOPICS POWER - Electrical Distribution System Engineering & Analysis II
- ECE 2795 - SPECIAL TOPICS POWER - Power Magnetic Devices
- ECE 2795 - SPECIAL TOPICS POWER - Protective Relaying and Substation Automation

Additional Information

Admission Requirements (Apply Here)

- BS in electrical engineering from an ABET-accredited university program (no industry experience required) *OR*
- BS in any engineering field, PLUS a minimum of three years of power industry experience

For more information about the Electric Power Engineering program, contact:

Alexis Kwasinski, PhD, Program Director
Associate Professor, Electrical & Computer Engineering
akwasins@pitt.edu

Doctoral

Electrical & Computer Engineering, PhD ECE

The objective of the PhD program is to achieve a high degree of competence in one major field in Electrical and Computer Engineering.

Degree Requirements

Students who transferred MS credits (30 credits) from a prior institution or obtained a Pitt ECE MS degree:

Beyond the 30-credit MS requirement, a minimum of 42 credits and a dissertation are required for the PhD degree (total of 72 credits beyond BS). The dissertation should embody an extended original and independent investigation of a problem of significance in Electrical and Computer Engineering. Of those 42 credits, at least 18 must be in dissertation research (18 or more in ECE 3997 or ECE 3999), and at least 24 course credits must be attained beyond the MS degree. The 24 credits must include:

1. At least 4 ECE book courses (12 credits) at the graduate level. These courses will be used for the Comprehensive Exam*.

(*) A student with a Pitt ECE MS can waive the 4 ECE book courses requirement. Instead, the book courses can be substituted by a 12-credit combination of research/project courses (ECE 3998 and/or ECE 3995).

2. A maximum 12-credit combination of ECE 3998 and ECE 3995 research/project courses.

(*) A student with a Pitt MS maximum 24-credit combination of ECE 3998 and ECE 3995.

Students who transferred less than 30 credits are still required to enroll in grad courses at Pitt to fulfill the 30-credit MS requirement.

ECE 3995 should be directed toward research. This research course requires the approval of the student's Program Conference Committee (i.e. the Preliminary Exam should be completed before taking this course). In addition, the student is required to write a 1-2 page proposal for each such course citing the topic, the teacher, the rationale for the course, and a deliverable from the course experience. The deliverable can be a submitted journal conference paper, a research proposal for funding, or a complete patent application.

Students who obtained the BS degree only:

Students must complete a minimum of 72 credits beyond the BS degree. Of those credits, at least 18 must be in dissertation research (18 or more in ECE 3997 or ECE 3999), and at least 54 course credits must be attained beyond the BS degree. The 54 credits must include:

1. At least 8 courses (24 credits) that are in the catalog; of those 24 credits, at least 4 courses (12 credits) must be ECE courses at the 2000 or 3000 level. The other courses (up to 4 courses, 12 credits) should be ECE approved courses or be approved by the Graduate Programs Coordinator.
2. A maximum 30-credit combination of ECE 3998 and ECE 3995 research/project courses.

Exams

There are four separate exams that must be passed in order to obtain the PhD degree. The student must also have a Program Conference with a faculty committee to approve his/her plan of study. Descriptions of each follow.

Program Conference

During the first year, a PhD student must schedule a meeting with a faculty committee to present a tentative program of study for approval. The committee consists of the student's advisor, who chairs the committee, and a minimum of two other faculty members from the department.

On the Program Conference form, the student must list all of the courses he/she has taken as a graduate student in the department as well as those for which he/she has obtained advanced standing. Courses that he/she is planning to take in the future in Electrical and Computer Engineering as well as in related areas should also be included. Finally, the form should list the four courses that are required for the PhD Comprehensive Exam and a tentative schedule for the different exams and the residency requirements. The committee can approve, reject or make modifications to the proposed program. The advisor is responsible for supervising the student's progress in the approved program.

Preliminary Exam

The purpose of the preliminary exam is to ascertain the capabilities of a student to do independent research. The exam generally consists of an oral presentation of a written document, prepared by the student, to a committee of ECE faculty members. The student and his/her advisor will determine the subject of the document.

Students completing the MS research option who are interested in pursuing doctoral studies have already demonstrated their ability to do independent research. Therefore, their MS thesis oral and the preliminary exam may be administered simultaneously.

Continuing MS students who elected the professional option or who obtained their degrees from other institutions must schedule a preliminary exam. The student must prepare a written document of the same caliber as an MS thesis. This may be done by either taking a graduate project course (ECE 3998) or by using a thesis presented at another institution. The student's advisor will then assist the student in forming a committee with a composition similar to that of an MS thesis exam committee. Two weeks before the exam, the written report should be given to the committee members and the Graduate Program Administrator should be informed of the composition of the committee, time, title and abstract of the thesis in order to publish an announcement.

PhD Comprehensive Exam

To complete the Comprehensive PhD exam, a student must obtain a minimum QPA of 3.3 in the four courses assigned by the PhD program conference committee no later than the first two years of enrollment in the PhD program.

If the student fails to achieve this requirement, he/she must pass an oral exam that takes place at the same time as the PhD Proposal exam and answer general questions related to his/her research area. If he/she fails this oral exam, the student may take it once more three months later.

To complete the PhD Comprehensive exam, a student must select four courses in his/her area of specialization and have earned a grade of B or higher in each.

Dissertation Proposal Exam

For the dissertation proposal examination, the student prepares a written proposal of his/her dissertation and presents it orally to an exam committee. Students must have a cumulative graduate QPA of 3.30 to be considered for doctoral candidacy. The committee consists of at least five members, four of whom must be from the Electrical and Computer Engineering Department, and at least one who must be from outside the department (external member). Three of the departmental members must be graduate faculty members and at least one of the external members must be a graduate faculty member from another department in the university. Other appropriate member(s) may also serve on the committee. A faculty member from another accredited university may serve as an external graduate faculty member of the committee if that individual's academic background is comparable to the qualifications for graduate faculty status at the University of Pittsburgh.

The dissertation proposal should be given to the committee members at least two weeks before the exam, and the student must inform the Graduate Program Administrator of the composition of the committee and provide a proposal with a completion time line as well as a title and an abstract at least two weeks prior to the exam date.

If the doctoral committee approves the dissertation proposal, the student is then formally admitted to Candidacy for the Doctor of Philosophy Degree. The proposal exam must be completed at least two semesters before the student plans to graduate. Students can register for ECE 3997 for preliminary work for the PhD proposal exam. If a student passed their proposal exam with less than 18 credits of ECE 3997, then they should enroll in ECE 3999. In this case, a student should earn at least 18 total credits of ECE 3997 and ECE 3999 combined. Once this and all other course requirements are met, a student would be eligible to move to FTDH.

Final Oral Exam

The final oral exam is administered by the doctoral committee and determines the acceptability of the student's dissertation and his/her ability to comprehend, organize and make original contributions to his/her area of research.

At least two weeks prior to the exam, the student must submit their written dissertation to the committee. The Graduate Program Coordinator must approve this exam. To get approval, at least two weeks before the exam, the student must submit a copy of their written dissertation and announcement to the Graduate Program Coordinator and Administrator. The final oral exam is open to the public.

Students scheduling their final oral exam must submit at least one paper from their thesis work to a refereed journal. The publication form must be signed by the major advisor and submitted to the Graduate Program Administrator at least two weeks before the final oral exam. Submitting a paper to a refereed journal is a requirement for the PhD degree.

Graduate Certificate

Space Engineering, Graduate Certificate

Our proposed program is a Graduate Certificate (GC) in Space Engineering. This program not only covers the basic components of a traditional astronautics program, which is built on four pillars (astrodynamics, propulsion, structures, and control), but it also emphasizes the modern ECE views and technologies of space engineering. This approach is reflected by the course curriculum (summarized below) for the GC. The key areas, and employment opportunities, that the department can support fall under the following categories: dependable computer architecture, extreme-environment electronics, orbital mechanics, spacecraft attitude dynamics, guidance and control, systems engineering, project management, rockets and launch vehicles, and spacecraft subsystems (communication and data handling subsystem, electrical power subsystem, thermal control subsystem, environmental control and life support subsystem, and structures and mechanisms).

Core Courses for GC in Space Engineering

ECE/ENGR 2073: Introduction to Space Engineering (4 cr. in every Fall semester). This course is a comprehensive overview of space engineering. Topics covered include the importance and applications of space, space environment, basics of orbital mechanics, spacecraft dynamics, systems engineering, control systems, and spacecraft subsystems (such as communication and data-handling subsystem, electrical power subsystem, environmental control and life-support subsystem, and structures), rocket propulsion, space operations, and

space politics and economics. This course includes a lab session which focuses on simulations of spacecraft orbit control and attitude control.

ECE 2165 Dependable Systems (3 cr., every Fall semester). The focus of this course is the analysis, design, evaluation, and optimization of dependable computers and other complex systems for resilient operation in space and other harsh environments while supporting critical applications. Featuring a mix of theory and practice, novel methods in hardware, information, network, software, and time redundancy are studied and employed to mitigate threats and maximize reliability, availability, performability, and safety.

ECE 2095: Extreme Environment Electronics (3cr., every Spring semester). This course covers the fundamentals of widely used circuits tailored for standard settings and advanced versions specifically engineered for challenging environments, such as those characterized by extreme radiation, temperature, vibration, and vacuum. Topics to be covered include impact of extreme environment on electronics; semiconductor device technologies, digital electronics, and analog electronics for wide temperature range and radiation; electronics for vibration and vacuum; packaging for extreme environments; and real-world applications.

ENGR 2686: Space Orbital Mechanics (3 cr., every Spring semester). This course presents rigorous treatment of classical mechanical systems pertaining to spaceflight and orbital dynamics. Students will be able to apply mathematical treatments to Newtonian systems and in the process appreciate both physical nature and engineering feats achieved in successful completion of space missions.

ECE 2098 Space Systems Project (3 cr., every semester). This course provides students in solo and small teams the opportunity to develop requirements for a national space mission and then design, construct, test, and optimize a space system and application for that mission.

Required

- ECE 2073 - INTRODUCTION TO SPACE ENGINEERING
  or
- ENGR 2073 - INTRODUCTION TO SPACE ENGINEERING

Elective

choose 2 from this list:

- ECE 2165 - DEPENDABLE SYSTEMS
- ECE 2095 - SPECIAL TOPICS: GRADUATE
- ENGR 2686 - SPACE ORBITAL MECHANICS
- ECE 2098 - MS PROJECT ON SPACE SYSTEMS

Master's

Electrical & Computer Engineering, MS ECE

The degree of Master of Science in Electrical Engineering can be obtained by following either a research or a professional option. The research option includes a thesis while the professional option is 30 credits of course work. Students who intend to continue for a PhD degree are highly encouraged to take the research option.

Course selection for either the research or the professional degree options is to be done in consultation with the student's advisor according to the following requirements:

1. The course selection must include at least 15 graduate credits in ECE, and
2. Courses outside of ECE must come from a pre-approved list of courses.

(*) Maximum 3 credits of this project course (ECE2x98) can count towards 30-credit MS graduation requirements.

Courses that are required of students admitted on a provisional status are to be considered additional to these requirements. If the student chooses the research option, only 6 credits of ECE 2999 will count towards the degree requirement. Notice that credits in ECE 2997,

research for the MS, and in ECE 3893, the graduate seminar, will not be considered towards the 30-credit degree requirements. However, funded Research MS students are required to earn 2 credits of ECE 3893 to meet degree requirements.

Professional Option. A minimum of 30 credits of course work conforming to the requirements above. Although not required, a three credit graduate project course (ECE 2998) is highly recommended for students who might later choose to enter the PhD program. No comprehensive exam is required for students following the professional option.

Research Option. A minimum of 24 credits of course work is required. In addition, a thesis (with a minimum of six credits of ECE 2999, MS Thesis) must be completed and presented at an oral defense.

It should be emphasized that the above credit requirements for both options are the minimum acceptable and may not necessarily satisfy the degree requirements. In some instances it might be necessary for a student to take undergraduate courses to be accepted into full graduate status. Thus, depending upon the student's background and program, it may be necessary to take more than the minimum number of credits required.

Thesis Requirement. MS students taking the research option must prepare a thesis showing marked attainment in their area of investigation. A graduate student begins thesis work after the fulfillment of the following conditions:

- Completing at least 12 credits,
- Being on full graduate status, and
- Achieving a cumulative QPA of 3.00 or higher.

Students in the research option must defend their theses orally. A committee consisting of three Electrical and Computer Engineering graduate faculty members and chaired by the student's major advisor is formed to evaluate the thesis and defense. The chair is considered one of the three members. Faculty members with a secondary appointment in Electrical and Computer Engineering may also chair or serve on such a committee. The student and committee must agree to a date at least two weeks before the exam. The announcement and a draft of written thesis should be submitted to the Graduate Program Coordinator and Administrator at least two weeks prior to the exam for approval. The announcement should include the names of the faculty on the committee, the location, the date and time, the title and the abstract of the thesis. The announcement will be published two weeks ahead of time provided the schedule and written thesis have been approved. The student must provide the committee with copies of the thesis at least one week prior to the day of the oral exam. The oral exam is open to the public. If the student is interested in pursuing a PhD, this exam may be combined with the PhD Preliminary Exam.

Department of Industrial Engineering

Contact Information

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Additional information concerning the department's graduate program may be obtained from the graduate secretary; please send email to gradie@pitt.edu.

Graduate Degree Programs

The Department of Industrial Engineering's graduate programs prepare engineers to assume leadership positions in industry, government, and service organizations. The Master of Science in Industrial Engineering program is very flexible, and students could either choose to focus on some specific area of interest or opt for a more broad-based curriculum with coursework spanning multiple areas. Narrower concentration areas in Data Science and Engineering Management are also available.

In addition, the department offers two options in cooperation with the School of Business: a joint degree MSIE/MBA program and a joint degree MSIE/MSSCM (Master of Science in Supply Chain Management) program. The department also offers several other options with

the Master's program, including (1) opportunities for Lean Six Sigma Certification and (2) a Graduate Certificate in Nuclear Engineering in cooperation with the Department of Mechanical Engineering and Materials Science.

The Doctor of Philosophy degree is the department's flagship graduate program. Currently, the primary areas of research include all aspects of operations research, analytics, and data science; and manufacturing science and nontraditional manufacturing. Doctoral graduates are qualified for academic research careers as well as technical leadership positions in industry.

Admissions

Applicants must possess an undergraduate or graduate degree from an ABET-accredited program in any engineering discipline, or a degree in a complementary technical discipline, such as mathematics, statistics, or computer science. Outstanding applicants from other disciplines such as physics, chemistry, biology, economics, information systems and quantitative business will also be considered, as long as they have the required prerequisites of undergraduate calculus, linear algebra, and calculus-based probability and statistics. Proficiency in computer programming is also an asset.

Applicants for admission must submit the application form and fee, transcripts of all college-level work, three letters of recommendation, and a statement of career goals/objectives. Submission of scores from the Graduate Record Examination (GRE) is optional. International applicants whose first language is not English must take either the Test of English as a Foreign Language (TOEFL) administered by the Educational Testing Service with a minimum score of 81 (prior to January 2026) or 4.5 composite, with minimum subscores of 4.5 (listening) and 4.0 (all others), the International English Language Testing System (IELTS) exam with a minimum Band of 6.5 (taking the academic writing and reading modules of the test), or the Duolingo English Test with a minimum score of 120. It is desirable for PhD applicants to have an interview with a faculty member, although this is not a requirement for admission.

All applicants are considered on an ongoing basis. However, the following deadlines are strongly recommended for international applicants: Fall term - April 15, and Spring term - September 30. Also, all PhD applicants who wish to be considered for financial assistance must apply before January 31. International applicants are not accepted for enrollment beginning in a summer term. Prospective students are encouraged to apply early whenever possible.

Applications may also be completed online.

Applicants to the MSIE-MBA and MSIE-MSSCM programs must apply through the School of Business.

Concentration

Data Science for Industrial Engineers

Our MS program is very flexible beyond the core requirements, and depending on their interests, students are able to choose either a broadly diversified program, or a more focused program that is concentrated on a particular area. We already advise students who prefer the latter option on how to concentrate their electives classes in specific areas, and this proposal simply aims to formalize this and offer such students the option of a specific concentration area that will also appear on their transcripts.

Data Science for Industrial Engineers is one of these three concentration areas, and like the other concentration areas it requires that students pick 15 credits of coursework from the following list; please note that this does not increase the overall credit requirements for the MS degree, nor does it change the overall degree requirements in any way; it merely specifies some of the electives that students will be required to take to obtain this concentration.

Required

- IE 2007 - STATISTICS AND DATA ANALYSIS
- IE 2064 - APPLIED DATA ANALYTICS

Electives

At least three courses from the following list::

- BQOM 2537 - FORECASTING
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- IE 2086 - DECISION MODELS
- IE 2088 - STOCHASTIC SIMULATION
- IE 2187 - OPTIMIZATION FOR MACHINE LEARNING
- INFSCI 2160 - DATA MINING
- INFSCI 2440 - ARTIFICIAL INTELLIGENCE
- INFSCI 2595 - MACHINE LEARNING
- STAT 2270 - DATA MINING

- Other related graduate courses (with prior advisor approval)

Engineering Management

Engineering Management is one of these three concentration areas, and like the other concentration areas it requires that students pick 15 credits of coursework from the following list; please note that this does not increase the overall credit requirements for the MS degree, nor does it change the overall degree requirements in any way; it merely specifies some of the electives that students will be required to take to obtain this concentration.

Required

- IE 2003 - ENGINEERING MANAGEMENT
- IE 2007 - STATISTICS AND DATA ANALYSIS
- IE 2123 - PROJECT MANAGEMENT

Electives

At least 2 classes from the list below

- IE 2086 - DECISION MODELS
- IE 2102 - LEAN SIX SIGMA I (GREEN BELT)
- IE 2103 - LEAN SIX SIGMA II (BLACK BELT)
- IE 2122 - FUNDAMENTALS OF SYSTEMS ENGINEERING
- IE 2303 - WORK DESIGN
- Appropriate graduate courses, including courses in Finance, Marketing or Organizational Behavior from KGSB (with prior advisor approval)

Doctoral

Industrial Engineering, PhD

This is the department's flagship graduate program and prepares the student for the rigorous demands of a career in research and development, or academia. It requires a strong background in mathematics, probability & statistics, optimization techniques and manufacturing. The PhD student is expected to be a full-time student. Although it is possible to seek candidacy as a part-time student, the PhD candidate must spend at least one academic year on campus full time. The graduate faculty typically works closely with individual doctoral students to create a flexible program tailored to individual needs.

Entrance to the PhD Program: To be admitted to the doctoral program, students must pass the PhD qualifying examination, which is typically given once a year in late April or early May. The examination allows the department to assess students' ability to conduct doctoral-level research by testing their academic preparation and creativity. Students are expected to take the examination in April/May of the calendar year following the one in which they entered the graduate program, although it is acceptable to take the examination earlier. The student must seek faculty approval to take this examination. For approval to take the exam, a student is expected to (i) have a very good academic record, (ii) have an eligible departmental faculty advocate, and (iii) show promise for doing independent research.

Currently, the qualifying examination consists of four separate oral exams that each run for 45 minutes to an hour. These exams cover the core areas of (1) Linear Optimization, (2) Stochastic Processes, (3) Statistics & Data Analysis, and (4) Manufacturing Systems. Each exam is conducted by a committee of two to four faculty members.

The entire faculty then meets and discusses each candidate's performance along with the recommendations of the examination committees to decide on whether the student passes or not.

Doctoral Course and Dissertation Credit Requirements: In addition to the basic core courses, doctoral students take additional courses that may be required in preparation for the PhD degree and the student's dissertation topic. These courses are selected in conjunction with a program approved by the student's advisor. According to University regulations, the PhD requires at least 72 credits beyond the bachelor's degree or 42 credits beyond the master's degree, including 18 credits for dissertation research. Currently, the department requires a minimum of 45 credits in pedagogical coursework; credits typically include the following:

- Qualifying core (IE 2006, IE 2117, IE 2081, IE 2084, IE 2011): 12-15 credits
- Other possible required courses (IE 2100 & either IE 2088 or IE 2188): 6 credits
- Additional course work (at least 6 credits of which must come from offerings outside the Department of Industrial Engineering): at least 24-33 credits
- Dissertation research (IE 3997 & IE 3999): at least 18 credits

Additional Doctoral Requirements: All full-time students must enroll in and attend IE 3095 (Graduate Seminar) each term they are in residence; the credits for these do not count toward the 72-credit requirement.

The comprehensive examination is taken by students typically after completing most of the course work in their concentration. The PhD comprehensive exam is combined with the dissertation proposal presentation and has a three-fold purpose: (1) to test the student's proficiency (knowledge and skills) in his or her major area of interest; (2) to identify deficiencies in the student's background and suggest remedial work; and (3) to test the student's ability to prepare an acceptable dissertation in his or her area of concentration.

All doctoral students are expected to pursue research by working with individual faculty in areas that can lead to a potential doctoral dissertation. A PhD candidate must demonstrate the ability to conduct research of an original nature by completing a dissertation and preparing one or more papers of publishable quality. The dissertation topic is selected by the student in some theoretical or methodological area of interest in consultation with a faculty advisor. A faculty committee must approve the dissertation proposal as part of the PhD comprehensive examination. Information regarding the PhD program can be found here.

Joint Degree

Industrial Engineering/Business Administration, MSIE/MBA

This joint degree program, offered in conjunction with the School of Business, positions individuals with an undergraduate degree in engineering or the hard sciences to take a management role in a company that has a significant engineering and/or technologial focus. Full-time students can complete both degrees in 20 months, while part-time students can do so in four years. Prospective students must apply via the School of Business to the joint program; students who are already in the MBA program are not permitted to enroll in the joint program.

A total of 24 credits from the Department of Industrial Engineering are required (12 credits in core classes and 12 credits in electives).

In particular these credits are divided as follows:

- Required Core (2 courses: 6 credits)*
    - IE 2001 - OPERATIONS RESEARCH
    - IE 2006 - INTRO TO MANUFACTURING SYSTEMS
- Elective Core: at least two of the following (2 courses: 6 credits)

    - IE 2003 - ENGINEERING MANAGEMENT
    - IE 2007 - STATISTICS AND DATA ANALYSIS
    - IE 2088 - STOCHASTIC SIMULATION or IE 2188 - SIMULATION MODELING AND APPLICATIONS
    - IE 2100 - SUPPLY CHAIN ANALYSIS
    - IE 2303 - WORK DESIGN*
- Free Electives (4 courses: 12 credits)
    - Any elective offered by the IE Department (including courses in the elective core above)

*IE 2303 - WORK DESIGN is required for students without an undergraduate degree in IE

For details on the curriculum requirements for the MBA portion of the program, please visit Joseph M. Katz Graduate School of Business.

Joint MSE/MBA

Master of Business Administration requirements: 33

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Required Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a students' academic and personal development as a business professional.

- BIND 2404 - PROBABILITY & STATISTICS: FUNDAMENTALS OF MBA QUANTITATIVE METHODS
- BIND 2406 - BUSINESS MATH: FUNDAMENTALS OF MBA QUANTITATIVE METHODS
- BIND 2506 - TIME VALUE OF MONEY: FUNDAMENTALS OF MBA QUANTITATIVE METHODS
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

MBA Elective Courses

Students in the joint degree program must complete an additional 6 elective credits of School of Business courses.

Joint Project Course

Students are required to complete a 3-credit joint project course that integrates the business and engineering disciplines. Common courses used to meet this criteria are BIND 2024 or BQOM 2139. In cases where the 3-credit course completed is a School of Business course, 1.5 credits will count toward the MBA requirements and 1.5 will count toward the 30 credits of MSE requirements.

Total Number of Credits for Joint Degree: 63

Master of Business Administration requirements: 33

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Required Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a students' academic and personal development as a business professional.

- BIND 2404 - PROBABILITY & STATISTICS: FUNDAMENTALS OF MBA QUANTITATIVE METHODS
- BIND 2406 - BUSINESS MATH: FUNDAMENTALS OF MBA QUANTITATIVE METHODS
- BIND 2506 - TIME VALUE OF MONEY: FUNDAMENTALS OF MBA QUANTITATIVE METHODS
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

MBA Elective Courses

Students in the joint degree program must complete an additional 6 elective credits of School of Business courses.

Joint Project Course

Students are required to complete a 3-credit joint project course that integrates the business and engineering disciplines. Common courses used to meet this criteria are BIND 2024 or BQOM 2139. In cases where the 3-credit course completed is a School of Business course, 1.5 credits will count toward the MBA requirements and 1.5 will count toward the 30 credits of MSE requirements.

Total Number of Credits for Joint Degree: 63

Supply Chain Management and Industrial Engineering, MSSCM/MSIE

Program Requirements

This joint degree program, offered by the Industrial Engineering Department of the Swanson School of Engineering and the School of Business, combines quantitative and analytical engineering coursework with coursework in business topics. It positions individuals with an undergraduate degree in engineering or the hard sciences to leverage their skills and become supply chain professionals who can work in a business environment. With a full load of classes, this program can be completed in 4 terms of coursework over a 20-month period and results in two degrees: the MSIE from Swanson and the MSSCM from the School of Business.

A total of 24 credits from the Department of Industrial Engineering (IE) are required, maintaining a 3.0 GPA:

- 12 credits in required classes, comprising the Department's 3-course, required core (IE 2001 - OPERATIONS RESEARCH, IE 2005 - PROBABILITY AND STATISTICS FOR ENGINEERS 1, IE 2006 - INTRO TO MANUFACTURING SYSTEMS) plus IE 2100 - SUPPLY CHAIN ANALYSIS from the elective core.

- 12 credits in IE electives:

    - At least 3 elective credits (i.e. one course) must come from the remaining four courses in the elective core: IE 2003 - ENGINEERING MANAGEMENT, IE 2007 - STATISTICS AND DATA ANALYSIS, IE 2088 - DIGITAL SYSTEMS SIMULATION or IE 2188 - SIMULATION MODELING AND APPLICATIONS, and IE 2303 - WORK

DESIGN (Note: students without an undergraduate degree in Industrial Engineering are required to take IE 2303 from the elective core).

- The 9 remaining elective credits can come from the elective core or any other graduate IE course.

A total of 24 credits from the School of Business are required, maintaining a 3.0 GPA:

- 13.5 credits in required classes with a minimum requirement of a C grade or better.
  - BQOM 2401 - STATISTICAL ANALYSIS
  - BQOM 2421 - DECISION TECHNOLOGIES
  - BQOM 2523 - PROCESS ENGINEERING
  - BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT
  - BMIS 2074 - STRATEGIC IT IN GLOBAL SUPPLY CHAINS
  - BQOM 2534 - STRATEGIC PROCUREMENT AND SOURCING MANAGEMENT
  - BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS
- 10.5 credits in supply chain management electives. Must complete experience-based learning requirement through a 3-credit consulting field project course focused on supply chain management, a 3-credit global research practicum on supply chain management or complete an internship (with approval from faculty director).

For application instructions and details on the curriculum requirements for the MSSCM portion of the program, please visit the School of Business website.

Master's

Industrial Engineering, MSIE

Requirements for the MSIE Degree

The Master of Science in Industrial Engineering program is very flexible and requires 30 credits of graduate study. It may be obtained with or without a thesis option. With either option, the student is required to take three core courses (IE 2001, IE 2005, and IE 2006) that count for 9 credits, and at least two courses from the elective core (currently IE 2003, IE 2007, IE 2088 or IE 2188, IE 2100, and IE 2303) that count for an additional 6 credits. Students who do not have an undergraduate degree in Industrial Engineering are required to select IE 2303 from this elective core.

- With the non-thesis option, the remaining 15 credits may be freely chosen from the elective core or other departmental graduate courses based on the student's individual interests and the approval of his or her academic advisor. With the permission of the advisor, the student may also take up to 9 of the 15 credits from other relevant graduate offerings outside the department.
- With the thesis option, 9 of the 15 remaining credits may be freely chosen from the elective core or other departmental graduate offerings. In addition, the student must complete a 6 to 8-credit thesis. With this option, approved out-of-department electives could account for 3 of these 15 credits.

In both cases, students who have already taken one or more of the core courses as undergraduates or as part of another graduate program are encouraged to skip such courses and substitute them with more advanced course work in the same area.

Normally the program can be completed in three terms of full-time study or two to three years of part-time study. Many graduate courses are offered in the evening for the convenience of working professionals. Some courses are also offered over the summer term. Information regarding the MS program can be obtained by going to: http://www.engineering.pitt.edu/industrial/graduate/

Department of Mechanical Engineering and Materials Science and Engineering

The Department of Mechanical Engineering and Materials Science (MEMS) offers MS and PhD degrees in both areas, as well as an MS degree in Nuclear Engineering. In addition, the Department offers graduate certificates in Nuclear Engineering and Processing, Properties and Performance of Engineering Metals, which are open to all graduate students within the Swanson School of Engineering. These certificates are also available to qualified post-baccalaureate students who are not seeking to earn an MS degree.

Contact Information

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Department website:
https://www.engineering.pitt.edu/Departments/MEMS/

Application Requirements & Deadlines

Applicants are urged to visit the Swanson School of Engineering graduate admissions webpage or graduate catalog for all application requirements and deadlines.

In addition to the SSoE requirements, an applicant applying to any MS or certificate program must have a quality point average (QPA) or cumulative grade point average (GPA) equal to or higher than 3.0 (B) on a 4.0 scale in the same or closely related field. Students who do not meet this requirement may be able to enter the program based on experience demonstrating their excellence, as evaluated by the program's Graduate Committee.

In some cases, depending on previous background and QPA or cumulative GPA, students may be admitted initially on a provisional basis. This usually requires students to secure grades of 3.0 (B) or better in courses that are required to obtain a better background in the chosen field and/ or other graduate-level courses as deemed necessary by the Graduate Admissions Committee.

Academic admission to the graduate program does not imply the granting of financial support.

Materials Science and Engineering

The Department of Mechanical Engineering and Materials Science offers broad-based educational and research programs in materials science and engineering leading to the degrees of Master of Science and Doctor of Philosophy in Materials Science and Engineering. These programs are oriented toward the application of fundamental knowledge of materials science and engineering to the solution of real-world materials problems that impede technological progress. They are designed to educate engineers by providing them with the tools to become successful in research, development, production, management, and teaching.

Basic courses on the structure, properties, and energetics of materials are taken in common. The student, working with faculty advisors, tailors the program to suit individual interests and demands of the student's chosen field of specialization through advanced and specialty courses.

The range of research projects in materials science and engineering reflects the broad spectrum of interest of the faculty. However, interest in the structure and properties of materials and their relationship to materials processing is a common thread that ties together many of the programs. Research is aimed at building an understanding of basic phenomena that will lead to solutions of materials problems at the forefront of technological and social progress.

Current research interests are centered in several areas of metals and ceramics, including corrosion and oxidation; high-temperature materials; materials for energy applications; additive manufacturing; metal-forming processes; phase transformations in metals and ceramics; intermetallic phases; plastic deformation of metals; surfaces and interfaces; thermomechanical processing of steels; ceramic processing and sintering science; electronic properties of ceramics; nanostructured materials; catalytic materials; thin film science and technology; and laser processing of materials.

Six core courses (MSE 2003, MSE 2011, MSE 2013, MSE 2015, MSE 2030, MSE 2067) are offered annually and other graduate courses are offered on a two-year rotation. A full list of MSE courses is available at the end of this catalog page.

In addition to the MS and PhD degrees, the Department also offers a dual-degree program with the Katz Graduate School of Business.

Master of Science Program

The Master of Science in Materials Science and Engineering degree (MSMSE) may be pursued as either a Professional MS Track program (for practicing engineers) or a Research MS Track program. Students can tailor their individual MS program to emphasize different aspects of materials science and engineering (e.g., ceramics, metallurgy, etc.).

Doctor of Philosophy Program

The Doctor of Philosophy Program in Materials Science and Engineering is a research degree leading largely to careers in teaching and research in academia and industry. This program is designed for excellent students. As the studies progress, students develop an understanding at the highest level in their area of specialization that must lead to an original contribution to the field in the PhD dissertation.

Processing, Properties, and Performance of Engineering Metals Certificate

The graduate-level Certificate in Processing, Properties, and Performance of Engineering Metals is designed primarily to meet the needs of working engineers who wish to pursue or enhance a particular aspect of materials science and engineering and of traditional graduate students in science and/or engineering who want to supplement their program with courses having a metals focus.

The academic requirements associated with the Certificate in Processing, Properties, and Performance of Engineering Metals include the completion of fifteen (15) credits of coursework within the Department of Mechanical Engineering and Materials Science.

Mechanical Engineering

The Department of Mechanical Engineering and Materials Science offers Doctor of Philosophy (PhD) and Master of Science (MS) degrees in mechanical engineering. Each graduate program student's plan of study is developed individually under the guidance of a faculty advisor and is carefully tailored to meet his or her needs and objectives while meeting the minimum requirements for the degree.

The graduate curriculum is an integrated program of study in applied sciences and mathematics, and modern computational methods that are pertinent to the research emphasis in the department.

In addition to the MS and PhD degrees, the Department also offers a dual-degree program with the Katz Graduate School of Business.

Master of Science Program

The Master of Science in Mechanical Engineering (MSME) degree may be pursued as either a Professional MS course-only program, suitable for most practicing engineers, or a a thesis-based, Research-Track MS program that requires the completion of a thesis.

Doctor of Philosophy Program

The goal of the Doctor of Philosophy in Mechanical Engineering program is to prepare the student for the rigorous career demands of engineering research either in the industry or academia. Students are expected to develop a commanding knowledge in their area of specialization that must culminate in the form of original contributions to the field of engineering and sciences in the PhD dissertation.

Nuclear Engineering

The Department of Mechanical and Materials Science offers graduate studies in advanced nuclear engineering. The graduate faculty is committed to high-quality research and teaching. The curriculum is an integrated program of study in applied sciences, applied mathematics, and modern computational procedures that are relevant to the research emphasis in the department. The research is focused on: (1) Nuclear Energy Technology (2) Nuclear Operations and Safety (3) Nuclear Materials (4) Nuclear Modeling and Simulations and (5) Radiology and Radiochemistry.

Master of Science Programs

An application for the MS program is judged on the student's prior academic record, the accreditation of the prior degree granting school, and the capability of the department to match the applicant's interest with the program. Students with a Bachelor of Science degree in another engineering field, mathematics, or physics will also be considered for the graduate program with the possibility that prerequisite courses may be required. A part-time program is available for students who are employed in local industries. Part-time students usually carry from three to six credits per term in either day or evening classes.

Applicants who do not meet these requirements will be considered on an individual basis with strong emphasis given to academic promise, career orientation, work experience, and preparation in engineering and related disciplines. In some cases, applicants may be admitted provisionally until certain deficiencies in either coursework or academic achievement are satisfied.

Nuclear Engineering Graduate Certificate

The Department of Mechanical Engineering and Materials Sciences is offering a certificate for students in the Swanson School of Engineering with an interest in nuclear science and technology. Students from the Bioengineering, Civil, Chemical, Industrial, Mechanical, Materials Science, and Electrical/Computer engineering programs may be most interested in obtaining this certificate.

Fifteen units are required to complete the certificate. This certificate may be combined with graduate courses in any one of the School's seven Master of Science (MS) degree programs or the certificate may be awarded stand-alone as a post-baccalaureate certificate. All nuclear courses (labeled NUCE) count toward a Nuclear Engineering certificate. Courses designated as (NUCE/ME) on the Nuclear Engineering MS and Certificate program pages (linked below) will also be recognized for credit toward an MS or PhD in Mechanical Engineering.

This program provides coursework for graduate level nuclear engineering education with a focus on nuclear operations and safety. This focus on nuclear operations and safety not only fulfills a recognized educational need but is also designed to take advantage of unique industrial resources in the Pittsburgh area which will greatly facilitate student learning.

The renaissance of nuclear science and technology in the United States has created a need in the marketplace once again for engineers with nuclear knowledge. The University of Pittsburgh aims to meet these marketplace needs by preparing engineers through the graduate certificate in nuclear engineering. Classes are taught by current and former nuclear engineers, including faculty with experience conducting commercial nuclear operations programs for Westinghouse or the Beaver Valley Nuclear Station and with certificates or operation licenses from the US Nuclear Regulatory Commission.

The objectives of the nuclear engineering certificate are:

- To develop the basic competencies needed by science and engineering graduates to contribute quickly and effectively to the renaissance of nuclear science and technology in the United States and abroad.
- To create a benchmark educational program that can serve as a model throughout academia.

Doctoral

Materials Science and Engineering, PhD

Requirements for the PhD Degree

A minimum of 72 credits is required for the PhD in Materials Science and Engineering (MSE). A minimum of 36 of these 72 credits must be didactic coursework beyond the Bachelor of Science (BS) degree. This requirement cannot be satisfied by graduate seminar (MSE 2185 / ME 2085), PhD Research MSE 3997), or PhD Dissertation (MSE 3999). The coursework consists of (I) MSE core (six required courses that students must take in the first year of enrollment), (II) a group of elective courses tailored for each student's research and as required for technical broadening beyond the MSE focus, (III) course(s) to address mathematical/numerical skills, and (IV) PhD Research credits. The student's advisor must approve the course sequence selection.

Transfers: Students can transfer up to 30 didactic course credits from an MS or equivalent degree as a block, subject to approval by the MSE graduate program. While students can transfer up to a 30-credit block from a previous MS degree, they still need to satisfy the core MSE course requirement and the math requirement described below. If a student has already taken similar contents to the core MSE courses, content waivers could be requested on a case-by-case basis. In all cases, students need to take at least 12 credits of didactic MSE graduate courses, even if core class content waivers are granted.

Program Milestones: In addition to the credit requirements, students must complete the PhD-required milestones, as described in the MSE graduate handbook, including passing the preliminary (qualifying) exam, comprehensive exam (along with the dissertation proposal), and dissertation defense

Credit Requirements are elaborated below:

Core Courses Requirement

The 18-credit core course component must be taken within the first year of the program*.

- MSE 2003 - STRUCTURE OF MATERIALS
- MSE 2011 - ENERGETICS
- MSE 2013 - KINETICS IN MATERIALS SCIENCE

- MSE 2015 - ELECTROMGNTC PROPS MATERIALS
- MSE 2030 - MECHANICAL BEHAVR OF MATERIALS
- MSE 2067 - ELEMENTS OF MATRLS SCI & ENGRG 1**

Typically, full-time PhD students are expected to carry a course load of three courses per semester in addition to research credits (MSE 3997) until their coursework is completed. If a student's background is insufficient for a given graduate course, the student must prepare by attending appropriate undergraduate courses or through independent study. This should be arranged in consultation with the student's faculty advisor and the lecturing faculty of the relevant course(s). Students must take the PhD Preliminary (qualifying) exam at the end of their second semester as they complete the core courses. Students who fail in their first attempt can be allowed a second attempt in the following semester upon approval of their research advisor. Students who fail the exam at both attempts are dismissed from the MSE PhD program.

Note:

*:A student must score at least a B (3.0) in each of these six classes. If a student does not get at least a letter grade of B, the class must be taken a second time. All didactic classes must be successfully completed before the student can apply for admission to PhD Candidacy.

**:If a student has a background in MSE such as a bachelor's degree in Materials Science and Engineering, MSE 2067 can be waived upon the permission of the MSE graduate program. In this case, one (1) more advanced/technical elective course must be substituted for MSE 2067 to complete the requirements for the PhD degree.

Advanced and Technical Elective Requirement

In addition to core courses, a student must take at least 15 credits from advanced and technical elective courses in the MSE graduate program and relevant science and engineering disciplines. As a part of advanced and technical elective courses, up to twelve (12) credits of didactic coursework counting towards the 36 course credits requirement may consist of non-MSE courses in other Engineering, Science or Mathematics disciplines with consultation of the student's advisor and approval of the MSE graduate program. The selection of courses, in general, must be approved by the student's Major Research Advisor.

Mathematics Requirement

A student must take one mathematics/numerical course for three (3) credits beyond those required for the materials science and engineering Bachelor of Science degree. This can be satisfied by courses from the following list: ME 2001, ME 2002, ME 2060, ME 2063, MSE 2012, MSE 2049 or as approved by the MSE graduate program. This requirement may be waived if it was met in a previous graduate program which the student attended before entering.

Graduate Seminar Requirement

All PhD students are required to register for Graduate Seminar (MSE 2185) in the fall and spring semesters, unless on full-time dissertation (FTD) study, enrolled part-time or excused by the MSE graduate program. A satisfactory grade is based on attendance.

PhD Research Requirement

Each student must also have at least thirty (30) credits of MSE Research (e.g. MSE 3997 or MSE 3999). Before passing the comprehensive examination (dissertation proposal), students should register for MSE 3997 (PhD Research). After passing the comprehensive examination, students should register for MSE 3999 (PhD Dissertation).

The requirements described in these guidelines represent the minimum requirements. The minimum requirement of 72 credits of graduate work must be satisfied by combinations of research, course work and transfer credits for the award of a PhD degree. Students are allowed to take additional courses with the agreement of their advisors. In some cases, these courses may be suggested by the PhD advisor for better preparation for a given research area.

Mechanical Engineering, PhD

The goal of the Doctor of Philosophy program in the Mechanical Engineering and Materials Science (MEMS) Department is to develop the student for the rigorous career demands of engineering research either in the industrial or academic fields. The student is educated at the pioneering edge of technical, management, systems design, and decision-making concepts. This work requires a strong background in mathematics and one of the specialty areas of mechanical engineering. The PhD student is expected to attend full time. It is possible, however, to seek candidacy as a part-time student with the stipulation that the PhD candidate must spend at least one full-time academic year on campus.

Plan of Study

A minimum of 72 credits is required for the PhD degree. Of the total 72 credits, a minimum of 36 credits must be completed as coursework at the 2000 or higher levels beyond the Bachelor of Science (BS) degree. Students entering the PhD program with a master's degree in mechanical engineering or a closely related field are required to complete at least 12 graduate course credits. Students must take and pass the PhD preliminary (qualifying) exam at approximately the end of their first year. Students who fail the qualifying exam in their first attempt will have a second chance in the following semester. Students who fail the exam at both attempts cannot proceed with the PhD program and are terminated.

Each student must also have:

- Thirty (30) credits of 3000-level research, including at least eighteen (18) credits of ME 3997 (PhD Research)

The course requirements described in these guidelines are a minimum requirement. The minimum requirement of 72 credits of graduate work must be satisfied by combinations of research, course work and transfer credits for the award of a PhD degree. Students are allowed to take additional courses with the agreement of their advisors. In some cases, these courses may be suggested by the PhD Committee for better preparation for a given research area. Students are urged to review the Graduate Handbook available on the department webpage for details and additional requirements for coursework.

Seminar requirement: All PhD students must register for Department Seminar (ME 2085) and attend unless excused by the program coordinator.

The most current list of courses in the MEMS Department can be found at the bottom of the Department page.

Total Credits: 72

Graduate Certificate

Nuclear Engineering Certificate

Graduate Certificate in Nuclear Engineering Overview

U.S. domestic nuclear capacity has the potential to scale from ~100 GW in 2023 to ~300 GW by 2050 based on power system decarbonization modeling, which suggests that the U.S. will need ~200 GW of additional nuclear generation capacity, while creating up to 275,000 high-paying jobs. A key need in the nuclear technology marketplace is for engineers from diverse disciplines who possess knowledge of nuclear phenomenology and technology. The University of Pittsburgh meets these marketplace needs by preparing engineers through the graduate certificate in Nuclear Engineering.

Students have the option to complete this certificate 100% online.

Objective

The objective of the nuclear engineering certificate is to provide the advanced competencies needed by science and engineering graduates to contribute quickly and effectively to light water and advanced nuclear science and technology in the United States and abroad.

This program provides coursework for graduate level nuclear engineering education with a focus on nuclear operations and safety. The certificate may be combined with graduate courses in any one of the seven MS degree programs (Bioengineering, Chemical, Civil, Electrical and Computer, Industrial, Materials Science and Mechanical Engineering) or taken as a post-baccalaureate certificate. The focus on nuclear operations and safety not only fulfills a recognized educational need, but also takes advantage of unique industrial resources in the Pittsburgh area which greatly facilitate student learning.

All nuclear courses (labeled NUCE) count toward a Nuclear Engineering certificate. Those labeled NUCE/ME can also count toward an MS or PhD degree in Mechanical Engineering.

Requirements

All students must successfully complete five of the nuclear courses listed below in order to earn the graduate certificate. Nuclear Engineering certificates are conferred only on those students who have completed all course requirements with at least a 3.00 GPA.

Contacts

If you have questions about the curriculum, please contact either the Director or Associate/Academic Director of the Nuclear Engineering program. Current contact information can be found here.

If you have questions about registration, please contact the Graduate Administrator at mems_gradadmin@pitt.edu.

Nuclear Engineering Graduate Courses

- NUCE 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING **(NUCE/ME)**
- NUCE 2101 - NUCLEAR CORE DYNAMICS
- NUCE 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL **(NUCE/ME)**
- NUCE 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE
- NUCE 2104 - NUCLEAR OPERATIONS AND SAFETY
- NUCE 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS
- NUCE / MSE 2110 - NUCLEAR MATERIALS
- NUCE 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY
- NUCE 2113 - RADIATION DETECTION AND MEASUREMENT
- NUCE / MSE 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS **(NUCE/ME)**
- NUCE 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY
- NUCE 2120 - MATHEMATICALL MODELING OF NUCLEAR PLANTS
- NUCE 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER
- NUCE 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS
- NUCE 2130 - THE NUCLEAR FUEL CYCLE
- NUCE 2131 - METAL COOLED REACTORS
- NUCE 2132 - BOILING WATER REACTOR SYSTEMS AND SAFETY

Note:

Courses designated as (NUCE/ME) in above list will also be recognized for credit toward an MS or PhD in Mechanical Engineering; these courses include NUCE 2100, NUCE 2102, and NUCE/MSE 2115.

Processing, Properties, and Performance of Engineering Metals Certificate

The graduate-level Certificate in Processing, Properties, and Performance of Engineering Metals is designed primarily to meet the needs of working engineers who wish to pursue or enhance a particular aspect of materials science and engineering and of traditional graduate students in science and/or engineering who want to supplement their program with courses having a metals focus.

The academic requirements associated with the Certificate in Processing, Properties, and Performance of Engineering Metals include the completion of fifteen (15) credits of coursework within the Department of Mechanical Engineering and Materials Science as follows:

Required Courses

Students must complete the following two (2) courses:

- MSE 2030 - MECHANICAL BEHAVR OF MATERIALS
- MSE 2067 - ELEMENTS OF MATRLS SCI & ENGRG 1

Electives

Students may select three (3) of the following courses as electives:

- MSE 2046 - PHYSICAL METALLURGY ENGR ALLOYS
- MSE 2047 - ANALYSIS AND CHARACTERIZATION AT THE NANO-SCALE
- MSE 2055 - PRIN OF SOLIDIFICATION ENGRNG
- MSE 2088 - POWDER PROCESSING OF MATERIALS
- MSE 2090 - CORROSION AND FAILURE ANALYSIS

Note:

If students have a bachelor's degree in Materials Science and Engineering, MSE 2067 can be waived upon the permission of the Program Director. In this case, one (1) more elective course must be substituted for MSE 2067 to complete the requirements of the Certificate. All courses must be taken on campus.

Master's

Materials Science and Engineering - Professional Track, MSMSE

The professional MS track is a coursework-based Master's degree in Materials Science and Engineering (MSE) suitable for both part-time students currently working in industry and full-time students.

MS in MSE - Professional Track Requirements

The professional track consists of a minimum of 30 course credits (equivalent to 10 didactic courses). There are no thesis or comprehensive examination requirements for this degree. Up to nine (9) credits of didactic coursework counting towards the 30 course credits requirement may consist of non-MSE courses in other Engineering, Science or Mathematics disciplines that are approved by a student's advisor. At least 21 didactic course credits must be obtained from MSE 2000 and 3000 courses, **not** including Graduate Seminar (MSE 2185 or ME 2085), MS Research (MSE 2997), and MS Thesis (MSE 2999). Each student is encouraged to complete an independent graduate project (MSE 2998) after consultation with the student's faculty advisor, which may account for 3 of the 21 required MSE credits. Students with non-MSE backgrounds are required to take for credit introductory courses (e.g. MSE 2067 or equivalent). Consistent with Regulations Governing Graduate Study (RGGS) at the University of Pittsburgh, MS degrees in MSE are conferred only on those students who have completed all course requirements with at least a 3.00 GPA.

Materials Science and Engineering - Research Track, MSMSE

The research track is a thesis-based Master's degree in Materials Science and Engineering (MSE) suitable for full-time students who have the intention to pursue a PhD or are strongly oriented toward a research career. The University transcript will include an entry indicating that a student is in the research MS track.

MS in MSE - Research Track Requirements

The Research Track MS degree requires a minimum of 30 credits of graduate-level course and research-based study, including at least 24 didactic course credits. A minimum of 15 didactic course credits must be derived from 2000- and 3000-level MSE courses, not including credits associated with Graduate Seminar (MSE 2185 or ME 2085), MS Research (MSE 2997), or MS Thesis (MSE 2999). At most up to nine (9) credits of coursework counting towards the required minimum of 24 course credits may consist of technical didactic courses in other non-MSE Engineering, Science or Mathematics disciplines that are approved by a student's advisor. Students with non-MSE backgrounds are required to take for credit introductory courses (e.g. MSE 2067 or equivalent). The student's advisor must approve the course sequence selection. In addition to coursework requirements, a minimum of six (6) credits of MS Thesis (MSE 2999) are required. Consistent with Regulations Governing Graduate Study (RGGS) at the University of Pittsburgh, MS degrees in MSE are conferred only on those students who have completed all courses required for the degree with an average grade of least a 3.00 GPA.

MS Thesis

An MS student should initiate research work as early as possible. Once thesis preparation has begun, a student must register for thesis credits (MSE 2999) in each succeeding term until successful completion of the thesis and a final oral defense and comprehensive exam. The MS thesis document is at least expected to be a report on independently conducted research and must adhere to the School of Engineering defined style and format.

The purpose of an MS thesis oral defense is to evaluate an MS thesis and the student's command of the research subject. The successful completion of a defense is a requirement for the MS degree. The thesis examining committee consists of at least three members of the graduate faculty chaired by the student's advisor and approved by the program. After successfully completing a defense, a student must deposit an electronic and/or hard copies of the approved thesis in accordance with the current guidelines for thesis submissions available from the School of Engineering or the MSE Graduate Program.

Part-time students may pursue the research MS track. However, they must recognize that, although their thesis topics may be related to the broad technical area of their employment, results of work-related routine technical activities, analysis, surveys, or studies conducted for employers are not acceptable for inclusion in MS theses. Furthermore, part-time students should become aware of the University Intellectual Property Ownership Policy before undertaking theses. Prospective students must clarify all of these issues before contemplating a research-based MS degree.

Mechanical Engineering - Professional Track, MSME

Master of Science - Professional Track

The Master of Science, Professional Track is designed for individuals seeking advanced study in mechanical engineering. The program is oriented toward full-time students seeking a career in industry, and part-time students currently working in industry.

At the beginning of the program, the student must select at least one of the following study tracks with the purpose of developing mastery of specified knowledge and skills in one or more of the following areas: (1) Advanced Manufacturing and Design; (2) Computational and Data-Driven Engineering; (3) Dynamic Systems and Controls; (4) Solid Mechanics; and (5) Thermo-Fluids Engineering. Course plans for each study track can be found here.

Completion of the professional master's degree requires a total of 30 didactic letter-graded course credits. At least one of the courses must be a mathematics course from the following list:

- ME 2001 - DIFFERENTIAL EQUATIONS
- ME 2002 - LINEAR AND COMPLEX ANALYSIS
- ME 2646 - LINEAR SYSTEM THEORY or
- ECE 2646 - LINEAR SYSTEM THEORY

Students may take up to 9 graduate course credits from other engineering, mathematics, or science departments with the approval of their faculty advisor.

The most current list of courses in the MEMS Department can be found at the bottom of the Department page.

Mechanical Engineering - Research Track, MSME

Master of Science - Research Track

The Master of Science, Research Track is designed for individuals seeking an in-depth research experience in mechanical engineering. Students will gain a deep understanding of their area of interest through an extended research project under the supervision of a major research advisor. This option is particularly appropriate for students interested in pursuing a PhD degree. Students working under the MS research track are required to pursue a thesis project and present a thesis that demonstrates marked attainment in some area of the student's major subject, as well as acquisition of the methods and techniques of scientific investigation.

During the first term in the program the student must submit a plan of study for approval by the department. This plan of study should be prepared under the guidance of the student's major advisor.

Completion of the MS degree requires at least 24 didactic letter-graded course credits and at least six credits of thesis research (ME 2999 - M. S. THESIS). At least one of the didactic courses must be a mathematics course from the following list:

- ME 2001 - DIFFERENTIAL EQUATIONS
- ME 2002 - LINEAR AND COMPLEX ANALYSIS
- ME 2646 - LINEAR SYSTEM THEORY or
- ECE 2646 - LINEAR SYSTEM THEORY

Students may take up to 9 graduate course credits from other engineering, mathematics, or physics departments with the approval of their faculty advisor. In addition, each full-time MS student is required to register for ME 2085 - GRADUATE SEMINAR during each fall and spring terms unless excused by the program coordinator.

The most current list of courses in the MEMS Department can be found at the bottom of the Department page.

Nuclear Engineering, MS

The Nuclear Engineering Graduate Program

The Department of Mechanical Engineering and Materials Science offers graduate studies in nuclear engineering. Broad areas covered in the curriculum include: (1) Nuclear Energy Technology, (2) Nuclear Operations and Safety, (3) Nuclear Materials, (4) Nuclear Modeling and Simulations, and (5) Radiochemistry and Radiation Measurement.

Students have the option to complete this program 100% online.

Degree Programs

Master of Science Program

The degree requirements can be met by either of the two options described below. Upon entering, the student plans a program of study with the aid of a faculty advisor.

Thesis Option (Research M.S. Track)

The research MS track is primarily for those students focused on technology development. Further, full time graduate students who are supported by department scholarships must choose the research MS track. The thesis examining committee will consist of at least three members of the faculty recommended by a major advisor and approved by the MEMS Department Chair. The final oral examination in defense of the master's thesis is conducted by the thesis committee, and a report of this examination signed by all members of the committee must be filed in the Office of the Dean.

Requirements

Completion of the research MS degree in Nuclear Engineering requires at least 24 didactic course credits and at least six credits of thesis research (ME 2999 - M. S. THESIS).

The didactic courses must also include at least five of the nuclear engineering courses listed below (totaling at least 15 credits).

Students may take up to 9 graduate course credits (6 for MS/MBA students) from other engineering, mathematics, or physics departments, as approved by the Nuclear Engineering program directors. Students must maintain a minimum cumulative QPA of 3.0.

Non-Thesis Option (Professional M.S. Track)

The professional MS program is oriented toward full-time students seeking a career in industry, and part-time students currently working in industry. Full-time Grad Student Research-supported students might change to the Professional MS track, upon approval by the sponsoring faculty advisor and the graduate program.

The professional master's degree requires the completion of at least 30 course credits of graduate study approved by the Nuclear Engineering program directors, with at least a 3.00 GPA. No more than six credit hours may be granted as transfer credit for work done at another accredited graduate institution. All credits earned in the ME master's degree program must be at the graduate level (the 2000 or 3000 series courses).

Requirements:

To complete the requirement of 30 graduate credits for the Professional MS, students must complete:

At least five of the nuclear engineering courses listed below (totaling at least 15 credits)

Up to 9 graduate credits (6 for MS/MBA students) from courses offered in other engineering departments or in the mathematics or physics departments (totaling up to 9 credits) as approved by Nuclear Engineering program directors.

MS/MBA students are also required to complete an integrated project course. Please contact the Graduate Directors for a copy of the guidelines for the integrated project course.

Nuclear Engineering Graduate Courses

- NUCE 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING **(NUCE/ME)**
- NUCE 2101 - NUCLEAR CORE DYNAMICS
- NUCE 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL **(NUCE/ME)**
- NUCE 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE
- NUCE 2104 - NUCLEAR OPERATIONS AND SAFETY
- NUCE 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS
- NUCE / MSE 2110 - NUCLEAR MATERIALS
- NUCE 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY
- NUCE 2113 - RADIATION DETECTION AND MEASUREMENT
- NUCE / MSE 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS **(NUCE/ME)**
- NUCE 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY

- NUCE 2120 - MATHEMATICALL MODELING OF NUCLEAR PLANTS
- NUCE 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER
- NUCE 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS
- NUCE 2130 - THE NUCLEAR FUEL CYCLE
- NUCE 2131 - METAL COOLED REACTORS
- NUCE 2132 - BOILING WATER REACTOR SYSTEMS AND SAFETY
- ME 2097 - SPECIAL STUDY MECHANICAL ENGRG (as agreed with Advisor)

Note:

Courses designated as (NUCE/ME) in above list will also be recognized for credit toward an MS or PhD in Mechanical Engineering; these courses include NUCE 2100, NUCE 2102, and NUCE/MSE 2115.

If you have questions about the curriculum, please contact either the Director or Associate/Academic Director of the Nuclear Engineering program. Current contact information can be found here.

If you have questions about registration, please contact the Graduate Administrator at mems_gradadmin@pitt.edu.

School of Health and Rehabilitation Sciences

School of Health and Rehabilitation Sciences

At the University of Pittsburgh School of Health and Rehabilitation Sciences (SHRS), we are driven by the possibilities of what can be achieved. Read more about SHRS's mission, values and vision on About | Pitt SHRS .

Philosophy of Graduate Education

The faculty of the School of Health and Rehabilitation Sciences (SHRS) believes that it has a major responsibility in graduate education to broaden the perspectives and awareness of students in the health professions toward high standards of scholarship and recognition of its relevance to technological and human needs.

Graduate programs provide depth in a substantial area of the student's profession and foster critical thinking through a variety of scholarly and creative activities, thereby generating an atmosphere of scientific inquiry. These substantive areas include knowledge of the scientific basis for the development of advanced clinical expertise within the professions represented in the school. An equally important function is to encourage health professionals to be sensitive to the needs of the human beings they are serving and to adapt their methods to the changing social, economic and technological environments in which they practice.

Accordingly, these professionals should develop the capacity to perform newly emerging and expanding roles of roles of advanced clinical services, research, teaching, and administration in the health care systems, advancing the frontiers of their particular field of expertise.

On the assumption that the accumulation and mastery of basic factual knowledge have been accomplished, graduate education focuses on synthesis and integration to allow for new systemic insights into the application and extension of that knowledge. The linkage of various educational experiences with research projects enhances problem-solving skills. Through interdisciplinary and multi-disciplinary didactic, clinical and research experiences, individual professional identity is fostered, while the ability to function both on an independent and collaborative level with colleagues from other disciplines is enhanced.

Contact Information

University of Pittsburgh
School of Health and Rehabilitation Sciences
3396 Fifth Avenue Pittsburgh, PA 15213
412-383-6558
https://www.shrs.pitt.edu/directory/

Programs and Certificates

Accelerated Programs

- Athletic Training, Accelerated MS
- Dietitian Nutritionist, Accelerated MS

Master's Programs

- Athletic Training (MS)

- Clinical Mental Health Counseling (MS)
- Health Informatics (MS)
- Master of Rehabilitation Technology (MRT)
- Neuromuscular Physical Therapy (MS)
- Nutrition and Dietetics (MS)
- Occupational Therapy (MS)
- Physician Assistant Studies (MS)
- Physician Assistant Studies Hybrid (MS)
- Prosthetics & Orthotics (MS)
- Speech-Language Pathology (MA/MS)
- Sports Science (MS)

Doctoral Programs

- Doctor of Audiology (AuD)
- Doctor of Chiropractic (DC)
- Doctor of Clinical Science in Occupational Therapy (CScD)
- Doctor of Occupational Therapy (OTD)
- Doctor of Physical Therapy (DPT)
- Doctor of Physical Therapy (DPT)/Doctor of Philosophy in Bioengineering (PhD)
- Doctor of Medical Science (DMSc)
- Communication Science and Disorders (PhD)
- Rehabilitation Science (PhD)

Certificate Programs

- Advanced Practice Certificate in Implementation of Evidence in Clinical Practice
- Health Data Analytics
- Leadership in Health Informatics

Admission

SHRS is committed to fostering a diverse and inclusive academic environment to create a more equitable health care system by welcoming applicants of all abilities/disabilities, religions, marital statuses, familial statuses, sexes, ages, sexual orientations, veteran statuses, national origins, all ethnic and racial backgrounds, genetic information, and gender identities and expressions.

Each program at SHRS has specific admission requirements. Please visit See Yourself At SHRS | Pitt SHRS for detailed information.

Application Procedures

Application portals vary by program. Please visit the SHRS website for detailed information.

Admission Status

Acceptable students are admitted to graduate study in a specific department or school with "full," "provisional," or "special" graduate status depending on their qualifications and objectives. The qualifications described below represent the minimum standards of the University. These may be made more stringent or specific at the option of the department or school.

Full Status: For admission to full graduate status, an applicant must be a graduate of an accredited U.S. college or university and must be considered qualified for advanced study by the department or school. International applicants must meet the admissions guidelines described under "Admission of Students from Other Countries." Qualification for advanced study normally is demonstrated by a B average (a grade point average of 3.00 on a 4.00 scale) or better in the total undergraduate program. If students with less than a B average present alternative evidence (such as completion of an advanced degree or successful relevant work experience) of superior ability, they may be considered for full graduate status on the recommendation of the department of proposed graduate study. Only students with full graduate status may be considered for the award of an advanced degree.

Provisional Status: Applicants who are graduates of a recognized college or university, but who do not qualify for admission to full graduate status because of deficiencies in either their undergraduate course program or their scholastic achievement may be considered for provisional graduate status if strong supporting evidence of their ability to complete a graduate program is provided. Courses taken to remove deficiencies do not contribute toward completion of graduate degree requirements. Transfer from provisional to full graduate status is initiated and recommended by the department and is possible only after removal of deficiencies and other conditions noted at the time of admission and satisfactory progress in graduate work.

Special Status: Students may be granted temporary admission as "special status" under the following circumstances:

1. Individuals who are seeking advanced degrees, but who are unable to meet the deadline for filing all required credentials for admission may be granted temporary admission provided they present acceptable evidence concerning their qualifications for graduate study. Regular admission must be completed within the first term of registration.
2. Individuals not seeking an advanced degree but with specific qualifications for one or more courses, including courses required for licensing or certification, may register for such courses subject to review by the department and the dean. Schools providing such an opportunity may specify the number of credits or courses for which an individual may enroll while in this status and should also clearly specify the limitations on transfer of such credits toward a graduate degree if the individual is subsequently admitted to a graduate degree program.

Admission of Students from Other Countries

The University of Pittsburgh welcomes applications from students in other countries. An inquiry from a prospective student from abroad should receive from the department or school a prompt response that includes a description of the program(s), the necessary application forms, and instructions concerning the completion of an application, including information about applying online.

Academic credentials must be originals written in the language in which credentials are normally issued. Certified translations must accompany credentials which are not in English as well as an academic credential evaluation from Educational Credential Evaluators, Inc. or Word Education Services, Inc.

Each foreign applicant must provide clear evidence of proficiency in English. (See English Language Proficiency.) In addition, each applicant must provide evidence of adequate financial resources for the estimated length of study at the University of Pittsburgh. The Office of International Services (OIS) will determine whether or not this requirement has been satisfied by the applicant.

When a department or school has completed its evaluation of the credentials of an applicant, it notifies the candidate that he or she is or is not academically qualified for admission. In all cases, a duplicate copy of the letter of admission and award of financial aid, if any, must be sent to OIS. Upon satisfaction of all academic and non-academic requirements, the OIS will issue, as appropriate, the Form I-20 Certificate of Eligibility for Non-Immigrant "F-1" Student Status or Form DS-2019 Certificate of Eligibility for Exchange Visitor "J-1" Status. Along with visa documents, OIS will send information concerning arrival and orientation. The University reserves the right, even after the arrival and enrollment of a student from another country, to require, at his or her own expense, individual curricular adjustments whenever particular deficiencies or needs are found. This could include enrollment without credit in additional course work in English as a foreign language or in courses prerequisite to his or her regular course of study. New students from abroad should be encouraged to use the services of OIS to help them in their adjustment to the United States and to facilitate their total educational experience.

English Language Proficiency

Graduate students must possess sufficient knowledge of English to study without being hindered by language problems, to understand lectures, and to participate successfully in class discussion. The determination that the applicant has sufficient proficiency is made by the admitting department or school, subject to the Assessment for English Language Proficiency for Admission Academic Regulation.

Non-Degree Status: Applicants who do not wish to enroll in a degree program may apply for admission as non-degree students to take one or more courses of particular interest if written permission is obtained from the course instructor. Non-degree students are permitted to take

a total of six (6) credits. A non-degree student wishing to register for more than 6 credits must receive approval from the Department Chair/Program Director. Information concerning such requests should be directed first to the Director of Admissions, 3396 Fifth Avenue , University of Pittsburgh, Pittsburgh, PA 15213 or via email at admissions@shrs.pitt.edu.

Deferral of Admission

Requests to defer admission must be submitted by the student, in writing, BEFORE the start of the first term of admission. If approved, the student must pay the tuition deposit (if required) which will be held by Student Financials and applied to their account, if enrolled. If they do not enroll, the deposit is forfeited.

Request for Readmission

In each of the circumstances below, the student will be discontinued from PeopleSoft and must initiate reinstatement to rejoin the program by contacting their program director. Reinstatement is not guaranteed, and the program director may require a student to formally reapply. Tuition deposits will not be refunded after the start of the term.

- If a student begins their 1st term and then drops all courses BEFORE the add/drop deadline.
- If a student begins their 1st term and then requests to withdraw from all classes AFTER the add/drop deadline and before 60% of the term has passed, the student would need to go through the Student Appeals office: Tuition Adjustments | Student Payment Center and their tuition will be prorated based on the last day of attendance.
- In extenuating circumstances, at the discretion of the Department Chair and the Associate Dean, a student could request a late drop of the enrollment after the add/drop deadline which would remove the courses from their transcript and their bill.

Financial Information

Graduate Cost of Attendance | Tuition: Tuition Rates and Fees

Online Graduate Cost of Attendance | Tuition Rates and Fees

Mandatory Fee Descriptions

Determining How Students are Billed

University Catalog | Financial Information

University of Pittsburgh Financial Aid Office

PittFundsme

Financial Wellness Center

General information on SHRS merit, individual department, school wide scholarships and awards can be found on Tuition, Scholarships and Financial Aid | Pitt SHRS.

SHRS Academic Regulations

Academic Integrity Policy

Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Should a student be accused of a breach of academic

integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights.

SHRS Guidelines on Academic Integrity

In addition to the University-wide regulations and standards detailed in the section on General Academic Regulations, each student in SHRS is expected to be familiar with these school-specific regulations and academic standards:

- students enrolled in accelerated programs must maintain a 3.000 minimum GPA to progress from the undergraduate to graduate portion of their program.
- it is the student's responsibility to review her/his academic standing, to identify graduate program requirements and prerequisites for intended graduate program(s) and to monitor their completion.
- all required and prerequisite coursework must be taken for a grade, when letter grade option is available, unless approved by the Department Chair/Program Director.
- students must receive a grade of C or better in all courses required by their program curriculum.
- students must earn a grade of C or higher in any course intended to count towards their SHRS major and as written in the SHRS Academic Advisement Report. This includes general education requirements, pre-requisites, and elective courses that are part of the degree requirements.
- any student who does not earn a C or better in any coursework should consult with their academic advisor.
- all Pitt grades will still appear on the transcript and be calculated into the GPA unless the student repeats the course. However, credits from courses in which students have earned unacceptable grades will not be counted toward graduation.
- students who receive a grade below a C in a required course must repeat that course and attain a grade of C or better.
- students will not be permitted to register for a course until they attain a C or better in its prerequisites.
- failure to receive an acceptable grade after the allowed opportunities to complete a required course may result in the student being dismissed from the program and SHRS

Allowable Credits

Transfer Credits

The completion of requirements for advanced degrees must be satisfied through registration at the University of Pittsburgh. Graduate students already enrolled may-when approved in advance by their Department Chair and the Dean-spend a term or more at another graduate institution to obtain training or experience not available at the University of Pittsburgh and transfer those credits toward the requirements for an advanced degree. In such instances, neither the University nor any of its components are responsible for providing any financial assistance to the graduate student.

Transcripts certifying graduate courses completed at another institution prior to admission to the University of Pittsburgh should be submitted at the time of application and will be evaluated for acceptability as transfer credits early in the student's graduate career by the advisor and Department Chair.

Transfer credits will not be accepted for courses in which a grade lower than B (GPA= 3.000), or its equivalent, has been received. No credit is granted toward an advanced degree for work completed in extension courses, correspondence courses, or in the off-campus center of another institution unless those credits are approved for equivalent graduate degrees at the institution and the institution has an accredited program.

Master of Arts and Master of Science degrees - no more than six (6) credits may be transferred. The Office of Student Affairs will enter the transfer credits on the student's transcript. Grades (and quality points) are not recorded for credits accepted by transfer.

Professional master's degrees - no more than one-third of the total number of required credits may be granted to a student as transfer credit for work done at another accredited graduate institution.

Doctor of Philosophy - up to 30 credits taken at the graduate level (2000 & 3000 level courses) toward a master's degree may be transferred. In all cases, at least 36 credits must be completed as a PhD student at the University of Pittsburgh. No undergraduate credits (1000 level course) may be applied towards the doctoral degree. All transfer credits must be submitted to and approved by the Associate Dean of Graduate Studies.

Advising

Master and Clinical Doctorates

Master's students are assigned an advisor who could be either a member of the SHRS faculty holding a regular, research, clinical, or adjunct appointment or an SHRS academic advisor, having at least a master's degree. The director of the program to which the student has been accepted selects advisors for SHRS graduate students.

Students are notified of their advisor after their enrollment. It is the student's responsibility to contact the advisor to schedule an initial meeting.

Doctor of Philosophy

PhD students are assigned to an academic advisor in the student's main area of specialization. The academic advisor and student will plan course work and other experiences to enable the student to meet program requirements and her/his academic goals.

Change of Advisor

If either the student or his or her assigned advisor prefers, the student can choose another advisor. The student must obtain a Change of Advisor form, located on the SHRS Student Resource Hub under Student Services & SHRS Registrar. The student must complete the form and secure the required signatures and return the form to the Office of Student Services. As a general rule, students who have more than 50% of the credits required for graduation should not initiate a change of advisor procedure.

Academic Advisement Report (AAR)

AAR reports list all your degree requirements, and as you progress through your program enrolling in courses and completing requirements, updated information directly populates into the report from PeopleSoft. Eventually the whole plan will show as satisfied, indicating that your degree is complete.

These reports will be used by the SHRS Registrar to certify you for graduation.

The instructions on how to pull your AAR can be found at this link: Academic Record/Academic Advisement Report (AAR) | Office of the University Registrar

Credential Overlap

Students may pursue dual degrees within SHRS or between SHRS and another school at the University.

- The student must complete all requirements necessary to complete each degree.
- The student must also work with the academic advisors in both programs to monitor progress toward each degree.
- Students must contact SHRS Admissions Office to be admitted prior to the midpoint of their studies.

More Information is available on: Credential Overlap | Office of the Provost | University of Pittsburgh

Internships and Clinical Education

An internship is a period of supervised, planned, practical experience providing an opportunity to apply previously learned skills or theories designed to complement the didactic phase of the academic program. The internship may be primarily clinical, teaching, or administrative in nature. Many programs require internship experiences, coordinated by the student's advisor or an identified Clinical Coordinator, who provides oversight regarding internship objectives and activities, administrative and contractual relationships with the site, and ensures that students meet all SHRS and site criteria.

Clinical Education

Clinical learning experiences are an integral part of SHRS professional programs. Clinical learning experiences provide the student with the opportunity to apply their knowledge in a supervised environment to develop clinical skills and judgment.

Independent Studies

Independent Study provides an opportunity for the student to complete an intense, self-designed project with faculty supervision in an area of special interest. A maximum of six (6) independent study credits may be accepted toward meeting degree requirements for the program.

The independent study must be supervised by an SHRS approved faculty member. To register for an independent study, the student must:

- Identify and develop an independent study project with independent study supervisor to include objectives for the independent study, methods to be used to meet those objectives, and measurable assessment methods for determining degree to which objectives were met. Independent studies must have an academic focus, and the academic rigor of the objectives and assessment methods will determine the number of credits to be earned.
- Complete the Independent Study Form, which will need to be signed by the Independent Study supervisor, academic/faculty advisor, and Associate Dean for Graduate Studies.
- Submit the completed Independent Study Form to Student Services to receive a permission number for enrollment.
- The form can be found on the Student Resource Hub under forms.

Thesis and Non-Thesis Options and Procedures

Thesis Option

A thesis is a written report of an investigative study conducted by the student during their graduate program. The completion of a thesis requires that the student has the necessary knowledge and skills to conduct a valid study, and that the thesis project is the investigation of a research question appropriate to their focus of study. The thesis is usually a concluding experience in Master of Science programs and completed under the guidance of a research mentor.

Completion of a thesis may be required for specific graduate programs within SHRS. Students should refer to the specific program requirements to determine if a thesis is required for completion of their program. Students should refer to their program requirements for specific guidelines for completing the thesis, the minimum number of thesis credits required, and for required courses.

Non-Thesis Option

Many SHRS graduate programs provide a non-thesis option as an alternative to completing a thesis. The non-thesis option is program-specific and reflects the culminating assignment to demonstrate the student's mastery of their area of study. Some programs require the student to complete the non-thesis option while others may give the student the opportunity to choose between completing a thesis or the non-thesis option. Students should refer to their home program/department for specific information on the non-thesis option.

Scholarly Paper

As part of the non-thesis option for a Master of Science degree, some programs/departments may require a scholarly paper. A scholarly paper is of publishable quality in a focused area.

Examples of scholarly papers include but are not limited to substantial reviews of the literature on a particular topic, development of health care policies, or development of evidence-based treatment procedures. Students who complete this option must register for HRS 2926 Scholarly Paper for 1-6 credits depending on the requirements of their plan of study.

Comprehensive Examination

Comprehensive Examinations are required for many graduate programs in SHRS. Successful completion of the Comprehensive Examination is needed for the student to demonstrate mastery of their field of graduate study. Each individual department/program will specify the content and procedure for the scheduling, administration, and grading of the Comprehensive Examination. Please refer to individual program descriptions or handbooks for details of Comprehensive Examinations for each program.

Enrollment Status

Graduate students cannot enroll for more than (15) units without approval from the SHRS Registrar. Only the SHRS Registrar's can enroll a student after approval is received for the additional unit(s).

Graduate students registered for 9 to 15 credits in the Fall and Spring Terms are regarded as full-time students.

Students cannot enroll in courses that meet at the same time.

Active Status

All graduate students must register for at least 1 credit or full-time dissertation study during the 12-month period preceding graduation. PhD students who have completed their course work and have successfully passed their dissertation proposal must be enrolled in dissertation credits or FTDI (Full time Dissertation Study) in the fall and spring terms to maintain active status.

Inactive Status

A student who has not registered for at least 1 credit or for full-time dissertation study during a 12- month period will be transferred to inactive status. Inactive students cannot apply to graduate or take Preliminary or Comprehensive Examinations. While on inactive status, a student is not eligible to use University facilities and should not expect to receive counseling by the faculty or active supervision by their advisor and committee.

Consult your academic advisor about the proper procedure of repeating a class and for information on how this will affect your grades and the calculation of your Grade Point Average (GPA). When you repeat a class, you must officially enroll and pay for the class again.

University policy prohibits any student from attending a class without being officially enrolled for that class. A repeated course has a notation appearing underneath the previous course taken designating that it is excluded from the GPA. The original course and grade will always remain on your record/transcript.

The course repeat policy for the University can be found at: Course Repeat | Office of the Provost | University of Pittsburgh.

All SHRS graduate programs adhere to the University's grading system and grading policies for graduate students. Please refer to the Office of the University Registrar on Grades or the University Catalog on Grading and Records.

Satisfactory/No Credit (S/NC) grading option

Prerequisite and required courses must be taken for a letter grade when available, and a student must earn a B or better.

Academic Standing for Graduate and Professional Students | Office of the Provost | University of Pittsburgh

Masters

The purpose of the statute of limitations is to ensure that a graduate degree from the University of Pittsburgh represents mastery of current knowledge in the field of study. All requirements for MA and MS degrees must be completed within a period of four consecutive calendar years from the student's initial registration for graduate study; all professional masters within five years (including both full time and part time students). Dual degrees and joint degrees that require course work in excess of 50 credit hours may be granted a longer statute of limitations by the University Council on Graduate Study.

PHD/Doctoral

From the student's initial registration for graduate study, all requirements for the PhD degree must be completed within a period of 10 years or within eight years if the student has received transfer credits. A student who is unable to complete all degree requirements within a five-year period after passing the comprehensive examination may be re-examined at the discretion of the department or school. Programs for professional doctoral degrees, for which the majority of candidates pursue part-time study while working full-time within their chosen disciplines, may be granted a longer statute of limitations by the schools offering the degrees.

Extension

Under exceptional circumstances, a candidate for an advanced degree may apply for an extension of the statute of limitations. The request must be approved by the department or departmental committee (master's or doctoral) and submitted to the Associate Dean of Graduate Studies for final action. Requests for an extension of the statute of limitations must be accompanied by a departmental assessment of the work required of the student to complete the degree as well as documented evidence of the extenuating circumstances leading to the requested extension.

Students who request an extension of the statute of limitations must demonstrate proper preparation for the completion of all current degree requirements.

A Leave of Absence (LOA) allows SHRS students to temporarily pause their studies while maintaining good standing with the school. LOAs are available starting in the second term of enrollment.

A LOA is not required for summer if your program does not mandate summer enrollment.

Use this link for SHRS - Leave of Absence to submit a formal request.

Failure to Communicate

Students should stay in regular communication with their academic advisor and faculty members.

To facilitate this, students are strongly encouraged to review the SHRS Policy on Failure to Communicate which is located on the SHRS Student Resource Hub.

Graduation Requirements

Graduation requirements for a graduate degree from SHRS are as follows:

- Satisfactory completion of required credits
- Minimum cumulative GPA 3.000
- GPA will be calculated as a composite of all courses taken at the University of Pittsburgh and counting toward completion of the degree.
- Completion of all requirements for the program in which student has enrolled.
- No outstanding D, F, G or I grade in a required course.

- The student AAR (Academic Advisement report must show all requirements satisfied.
- A student must be considered an "active student" at the time of graduation; they must have been registered for at least one credit at the University of Pittsburgh within the last three terms or sessions.
- Students may not enroll in courses outside the University of Pittsburgh in the semester they are graduating.

An application for graduation must be submitted by the student in PeopleSoft the term prior to the graduation term. A student with outstanding financial obligations to the University is not eligible to receive the diploma, official academic transcripts, or any certification of completion of the academic program.

Credits Required

The number of credits required for the master's degree varies among the departments within SHRS, but all departments require at least 30 credits. Many departments offer a variety of emphases. Individual departments should be contacted for the requirements specific to the degree.

SHRS Faculty

SHRS Faculty

SHRS Programs and Course Offerings

Department of Communication Science and Disorders (CSD)

Master of Arts and Master of Science Degrees in Communication Science and Disorders

The Communication Science and Disorders program provides students with a specialized academic education in communication processes and disorders, including disorders of speech, language, swallowing, hearing and balance. It includes the knowledge and skills needed to critically evaluate empirical research, and clinical expertise in the diagnosis and treatment of individuals having communicative disorders.

The master's degree program has two concentrations: one in speech-language pathology, and one in audiology. There is also an option for meeting educational certification requirements to be a speech-language pathologist in Pennsylvania schools. For students interested in the clinical practice degree in audiology, please see the section on the Doctor of Audiology (AuD) degree in this bulletin.

A research track (resulting in the Master of Science degree) in speech-language pathology is also available for students electing to do a master's thesis.

The Master of Arts / Master of Science degree (MA / MS) education program in speech-language pathology is a residential program at the University of Pittsburgh that is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2200 Research Boulevard, #310, Rockville, MD 20850, 800-498-2071 or 301-296-5700.

Contact Information CSD Department

Department of Communication Science and Disorders
School of Health and Rehabilitation Sciences
3396 Fifth Avenue
412-383-6540
Website: http://www.shrs.pitt.edu/CSD/

Contact Information for Admissions

Email: csdadmissions@shrs.pitt.edu
Administrator of Admissions for master's degree Programs: 412-383-3938

General Admission Requirements (CSD MA/MS) Degree

- A baccalaureate degree from an accredited institution. Applicants who do NOT have a CSD major will need to satisfactorily complete the prerequisite coursework listed below.
- A minimum overall and prerequisite GPA of 3.0 is required. However, a GPA of 3.5 or higher is strongly recommended.
- A grade below C- in a CSD major or prerequisite course is not acceptable and must be repeated.
- Applicants who do not meet the minimum requirements for admission may be considered if strong evidence of their ability to complete a graduate program is provided.
- Ability to satisfactorily perform all of the technical standards required for this profession.
- Applications are accepted online through CSDCAS.

Prerequisite Coursework

Applicants should have a minimum of one 3-credit course in each of the following topic areas:

- Anatomy and Physiology of Speech and Hearing
- Language Development
- Speech and Hearing Science
- Transcription Phonetics

ASHA Requirements

In order to be eligible for clinical certification by the American Speech-Language-Hearing Association (ASHA), you must meet the standards specified by Council for Clinical Certification in Audiology and Speech-Language Pathology (CFCC). This includes satisfactory completion of at least one 3-credit course in each of the following areas prior to starting the graduate program:

- Biology coursework provides knowledge in areas related to human or animal sciences (eg., biology, human anatomy and physiology, neuroanatomy and neurophysiology, human genetics).
- Chemistry or physics coursework provides foundational knowledge in areas below.
    - Chemistry: Substances and compounds that are composed of atoms and molecules, and their structure, properties, behavior, and the changes that occur during reactions with other compounds. This knowledge contributes to better aquisition and synthesis of the underlying processes of speech and hearing science.
    - Physics: Matter, energy, motion, and force. This knowledge contributes to a better appreciation of the role that physics plays in everyday experiences, society, and technology.
- Social and/or behavioral sciences coursework provides knowledge in the analysis and investigation of human and animal behavior through controlled naturalistic observation and disciplined scientific experimentation.
- Statistics and/or research methods coursework focuses on learning from data and from measuring, controlling, and communicating uncertainty. This coursework provides the knowledge essential for controlling the course of scientific and societal advances. The course should not focus soley on research design.

These requirements must be met before students enroll in the MA/MS program courses.

Observation

Students enrolling in the speech-language pathology program must complete at least 25 total hours of guided clinical observation to be eligible for clinical certification by the CFCC. Prior to beginning the MA/MS SLP program courses students must complete a minimum of 15 of the total 25 observation hours.

Information for International Applicants

All international degrees will need a credential evaluation. We only accept a 4-year bachelor's degree or an international degree that is equivalent as determined by one of the following transcript evaluators: Educational Credential Evaluators Inc. or World Education Services (WES). The program's foreign transcript policies do not apply to study abroad coursework that is itemized on a US college or university transcript (study abroad is processed in the same way as US coursework). International applicants who have earned an undergraduate or graduate degree in the United States do not need a transcript evaluation.

International applicants whose native language is not English must complete a test of English Language Proficiency (Duolingo, IELTS, or TOEFL) within 12 months of the due date of the application. Applicants from Quebec Province are required to submit English Language Proficiency scores; all other Canadian applicants are exempt from the English language proficiency requirement.

Your application for admission will not be reviewed until your credential evaluation and English Language Proficiency scores have been received.

Academic Standards

In addition to following the University-wide academic rules and regulations as detailed in the *General Academic Regulations* section of this bulletin, the master's degree program is regulated by the *SHRS Academic Standards*, as well as the departmental *Student Handbook on Academic and Clinical Requirements*.

Graduate students must have a 3.0 cumulative GPA to be eligible to graduate.

Graduate students who have completed at least 9 credits and whose cumulative GPA falls below a 3.0 will be placed on academic probation and will receive written notification of this status. At this point, it is the student's responsibility to meet with their advisor. To be removed from academic probation, the student will need to achieve a cumulative GPA of 3.0 within their next two terms of study. Failure to do so may result in the student's immediate dismissal from the program. Students who fail to demonstrate progress toward meeting graduation requirements in a timely manner may be placed on academic probation or be dismissed from the program.

Doctor of Clinical Science (CScD) Degree in Medical Speech-Language Pathology

This program is under revision and currently not enrolling students.

The CScD is an advanced clinical doctorate recommended for the student or clinician seeking to employ state of the art clinical excellence and leadership as a speech-language pathologist in settings such as medical centers, private practices, educational settings, and academic institutions.

The primary objectives of the CScD program are to provide students with advanced academic course work, clinical skills, case-based learning experiences, leadership skills, and knowledge and skill in supervision. Graduates of this program will excel in their specialties and assume leadership roles. Graduates will be prepared for independent clinical practice in the medical setting and clinical faculty positions.

Students are expected to meet the eligibility requirements for application for both American Speech-Language-Hearing Association certification (Certificate of Clinical Competence CCC-SLP) and appropriate state licensure over the course of their studies. There is no dissertation project required for the CScD degree; however, students will demonstrate expertise in the critical analysis and application of scientific information.

Contact Information

CSD Administrator
Department of Communication Science and Disorders
School of Health and Rehabilitation Sciences
3396 Fifth Avenue
412-383-3938
Email: csdadmissions@shrs.pitt.edu
www.shrs.pitt.edu/csd

Admission Requirements

A SLP MS/MA is required in order to fulfill the clinical component of this program.

Once your application is complete, it will be forwarded to the CSD Department for review by the CScD Admissions Committee.

Applicants will be required to participate in interviews addressing content knowledge and discussions of the program.

The department has an application **deadline of January 15th** to begin the program the following fall term. All application materials must be received by the deadline. Rolling admissions means the department will review and admit qualified applicants until a class is full.

All applicants considering the CScD must email CSD admissions before starting the application process.

All applicants are advised to ensure that they meet the certification and licensing requirements before applying to the program.

Graduate students must have a 3.000 cumulative GPA to be eligible to graduate.

Graduate students who have completed at least 9 credits and whose cumulative GPA falls below a 3.000 will be placed on academic probation and will receive written notification of this status. At this point, it is the student's responsibility to meet with his or her adviser. In order to be removed from academic probation, the student will need to achieve a cumulative GPA of 3.000 within his or her next two terms of study. Failure to do so may subject the student to immediate dismissal from the program. Students who fail to demonstrate progress toward meeting graduation requirements in a timely manner may be placed on academic probation or be dismissed from the program.

Doctor of Audiology (AuD) Degree

The primary objective of the AuD program is to provide students with the academic course work, clinical skills, and experience (beyond that obtained with the master's degree) needed to be a licensed audiologist, enter the professional community and assume independent leadership roles. The AuD is the required entry-level degree for audiologists. Graduates will be prepared for independent clinical practice and academic positions upon graduation and will be immediately eligible for professional licensure and for Certification from the American Speech-Language and Hearing Association and American Board of Audiology.

The Doctor of Audiology degree (AuD) education program in audiology is a residential program at the University of Pittsburgh accredited by the Council on the Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2200 Research Boulevard, #310, Rockville, MD 20850, 800-498-2071 or 301-296-5700.

Contact Information CSD Department

Department of Communication Science and Disorders
School of Health and Rehabilitation Sciences
3396 Fifth Avenue
412-383-6540
Website: http://www.shrs.pitt.edu/CSD/

Contact Information for Admissions

Email: csdadmissions@shrs.pitt.edu
Administrator of Admissions for AuD Program: 412-383-3938

<u>General Admission Requirements AuD Degree</u>

- A bachelor's degree from an accredited institution.
- A minimum GPA of 3.0 (based on 4.0) is required.
  - GPA of 3.5 or higher is strongly recommended
- Applicants should have a minimum of one 3-credit course in each of the following topic areas:

- Science: This course should include biological, physical, or behavioral science
- Statistics (not research design)

- Ability to satisfactorily perform all of the technical standards required for this profession.
- Applications are accepted online through CSDCAS.

There are no communication science and disorders specific prerequisite courses required to apply

ASHA Requirements

In order to be eligible for clinical certification by the American Speech-Language-Hearing Association (ASHA), you must meet the standards specified by the Council for Clinical Certification in Audiology and Speech-Language Pathology (CFCC).

Information for International Applicants

All international degrees will need a credential evaluation. We only accept a 4-year bachelor's degree or an international degree that is equivalent as determined by one of the following transcript evaluators: Educational Credential Evaluators Inc. or World Education Services (WES). The program's foreign transcript policies do not apply to study abroad coursework that is itemized on a US college or university transcript (study abroad is processed in the same way as US coursework). International applicants who have earned an undergraduate or graduate degree in the United States do not need a transcript evaluation.

International applicants whose native language is not English must complete a test of English Language Proficiency (Duolingo, IELTS, or TOEFL) within 12 months of the due date of the application. Applicants from Quebec Province are required to submit English Language Proficiency scores; all other Canadian applicants are exempt from the English language proficiency requirement.

Your application for admission will not be reviewed until your credential evaluation and English Language Proficiency scores have been received.

Academic Standards

In addition to following the University-wide academic rules and regulations as detailed in the *General Academic Regulations* section of this bulletin, the AuD program is regulated by the *SHRS Academic Standards*, as well as the departmental *Academic Handbook for SLP MA/MS and AuD Degree Students*.

Graduate students must have a 3.0 cumulative GPA to be eligible to graduate.

Graduate students who have completed at least 9 credits and whose cumulative GPA falls below a 3.0 will be placed on academic probation and will receive written notification of this status. At this point, it is the student's responsibility to meet with their advisor. To be removed from academic probation, the student will need to achieve a cumulative GPA of 3.0 within their next two terms of study. Failure to do so may result in the student's immediate dismissal from the program. Students who fail to demonstrate progress toward meeting graduation requirements in a timely manner may be placed on academic probation or be dismissed from the program.

Doctor of Philosophy Degree in Communication Science and Disorders

Contact Information

CSD Administrator
Department of Communication Science and Disorders
School of Health and Rehabilitation Sciences
3396 Fifth Avenue
412-383-6540

E-mail: lcf36@pitt.edu
Website: www.shrs.pitt.edu/aud/

The PhD program in Communication Science and Disorders is oriented toward the basic scientific questions in the discipline, with an emphasis on basic and applied research.

The expectations of graduating PhD students are that they are able to conduct a program of independent, creative, scholarly research, and that they can plan and execute effective teaching at all levels of pedagogy.

Admission Requirements

Applicants will apply online using the GradCAS application.

No one will be admitted to the CSD PhD program without a suitable advisor in their main area of specialization. Thus, anyone interested in PhD education is encouraged to contact individual faculty members whose research interests mesh most closely with theirs.

PhD applications are due by January 15th. Applicants will be interviewed by faculty members as part of the admissions process. A final admission decision depends on the availability of a suitable research adviser and a review and recommendation by the PhD Admissions Committee.

International applicants must provide English Language Proficiency scores (Duolingo, IELTS or TOEFL) and an academic credential evaluation from Educational Credential Evaluators Inc. or World Education Services (WES).

Submission of GRE scores to institution code 2927 is optional.

It is the responsibility of the applicant to complete all admission requirements prior to enrollment.

Financial Aid

Prospective applicants who are interested in financial support should indicate this on their application for admission.

Doctoral

Communication Science and Disorders, PhD

Doctor of Philosophy in Communication Science and Disorders (CSD)

The Department of Communication Science and Disorders (CSD) research doctoral program is oriented toward scientific inquiry in the discipline of communication science and disorders with an emphasis on basic and applied research training. Much of the CSD PhD program is individually tailored and designed to meet a variety of academic and professional goals.

Program Requirements

A minimum of 72 credits beyond the bachelor's degree level is needed for the PhD degree in communication science and disorders at the University of Pittsburgh. For further detail on allowable credits, see Credit Requirements under Regulations Pertaining to Doctoral Study.

All CSD PhD students are required to take CSD 3048 - *Intro to PhD Studies,* CSD 3049 - *PH.D. Seminar in Audiology, and* CSD 3479 - *Research Seminar in Speech and Language Pathology.*

CSD PhD students also take a minimum of 9 credits of coursework in statistics and experimental design and 6 credits of PhD research practicum. In each semester, until they enter full-time dissertation status, PhD students are required to attend the departmental *PHD Proseminar* (CSD 3060 or CSD 3061), to participate in professional development sessions, attend invited colloquium

talks, and present their own research. Students also have the opportunity to take elective courses outside of CSD, such as courses in teaching and grant preparation, and to complete teaching practica.

Four formal degree requirements must be satisfied before a student initiates PhD dissertation work:

1. In the first semester of study, students, with the help of their major advisers, develop a proposed Plan of Study and detailed Individual Development Plan (IDP) that specifies their background, goals, and tentative plans for their program of study. Students schedule a Plan of Study meeting with a faculty committee, to review this document and their plans (see *Major Adviser and Advising Committees,* below).
2. Annually, after the initial plan of study meeting, the student must convene an annual review meeting, in which their Plan of Study and progress will be reviewed.
3. The student must complete a pre-dissertation research project during the first year, culminating in a manuscript resulting from a research practicum experience. This project must be completed prior to initiating the comprehensive examination.
4. The student must pass a comprehensive examination, to be conpleted within one semester. It will consist of a substantive written deliverable and an open-ended oral examination. Students on provisional or special status, or on probation, are not eligible to take the comprehensive exam.

Students must then successfully complete both the written dissertation overview (prospectus document) and oral examination of their prospectus. After the prospectus is passed, students file an application for admission to candidacy for the Doctor of Philosophy degree. See below and also *Admission to Candidacy for the Doctor of Philosophy Degree* in this bulletin for details.

Major Advisor and Advising Committees

Students admitted to the PhD program are assigned a major adviser in their main area of specialization. The adviser is primarily responsible for providing assistance and advice to the student throughout all facets of the PhD program, and typically serves as the chair of the Plan of Study, Comprehensive Examination, and Dissertation Committees. Either PhD students or their advisers may initiate a change of adviser, but no student may remain in the program without an adviser.

The student, upon consultation with the major adviser, secures the agreement of at least two other departmental faculty members with graduate faculty status to serve with the adviser on the student's Plan of Study Committee. This committee initially convenes to review and make recommendations about the student's Plan of Study. Thereafter, the committee meets annually with the student to review and make recommendations about the student's progress in the PhD program. Note: The plan of study committee may, but need not be, the student's comprehensive examination or dissertation committee.

See *Doctoral Committee* under Regulations Pertaining to Doctoral Degrees for an overview of the dissertation committee's makeup and responsibilities.

Overview or Prospectus Meeting

See *Overview or Prospectus Meeting* under Regulations Pertaining to Doctoral Study for the regulations pertaining to this meeting and then read the following information that is specific to the PhD program in Communication Science and Disorders. After securing the adviser's approval, each PhD student must submit a written dissertation proposal to the dissertation committee at least two weeks prior to a formal overview meeting with that committee. (See *Dissertation and Abstract* section for details on the characteristics of an appropriate dissertation.)

Final Oral Examination

See *Final Oral Examination* under Regulations Pertaining to Doctoral Study and then note the following additional program-specific information. After securing the adviser's approval, the student submits copies of the complete document to the dissertation committee at least two weeks prior to the final oral examination in defense of the dissertation.

PhD Curriculum

For the CSD PhD degree, a minimum of 72 credits beyond the bachelor's degree is needed.

All CSD PhD students are required to take CSD 3048 *Intro to PhD Studies, and* 3 (or more) credits of CSD 3479 *PhD Seminar in Speech-Language Pathology* and/or CSD 3049 *PhD Seminar in Audiology.* CSD 3050/3480 *Translational Challenges in CSD* will be offered every two years and can also serve to meet this requirement. CSD PhD students are required to take a minimum of 8 credits of coursework in statistics, methods, and experimental design. Three-6 credits of CSD 3971 *Research Practicum* are also required, and this registration takes place while the student is working on their first-year project. In each semester, until they enter full-time dissertation status, PhD students are required to attend the departmental CSD 3060 *Proseminar* (1 credit per semester, 4 credits total) to participate in professional development sessions, attend invited colloquium talks, and present their own research. All PhD students are required to perform two, 3-credit lab rotations with mentors other than their major advisor. These rotations can take place in or outside the CSD department. A 3-credit grant writing course administered by SHRS is also required. The grant writing course must be taken for 2 credits in the fall semester and 1 credit in the spring semester for a total of 3 credits (both parts of the grant writing course are required for a final grade). Six to 9 credits of elective courses will be selected by the student and their major advisor. Elective courses can focus on the major area of study or in professional development, such as teaching practica. Comprehensive exams and prospectus preparation are also required 3-credit registrations.

Otherwise, coursework and other experiences are individually tailored for each student, in consultation with the student's adviser and the adviser-chaired Plan of Study committee.

- CSD 3048 - INTRODUCTION TO PHD STUDIES
- CSD 3049 - PH.D. SEMINAR IN AUDIOLOGY
- CSD 3479 - RESEARCH SEMINAR IN SPEECH AND LANGUAGE PATHOLOGY
- CSD 3060 - PHD PROSEMINAR
- CSD 3050 - TRANSLATION CHALLENGES IN CSD
- CSD 3971 - RESEARCH PRACTICUM FOR PHD STUDENTS
- CSD 2972 - EXAMINATION
- CSD 3000 - DISSERTATION RESEARCH PHD DEGREE

Doctor of Audiology, AuD

Degree Requirements

Students applying to the AuD program with a completed bachelor's degree will require four years of study with a minimum of 75 credits (typically about 100 credits) to satisfy academic and clinical requirements for the degree. Other requirements include the successful completion of two comprehensive examinations, a mentored research project, and a full-time clinical externship. Practicing audiologists who seek to move from a master's degree to Doctor of Audiology should seek departmental advisement.

Comprehensive Examinations

Students in the AuD program are required to successfully complete two comprehensive examinations before the Doctor of Audiology degree can be awarded. The Comprehensive Exam I is a formative examination that will identify strengths and/or weaknesses in the student's knowledge base. An ad hoc committee of reviewers administers this comprehensive examination.

In addition, students pursuing the AuD are required to successfully complete Comprehensive Exam II. During this examination, the student will demonstrate an ability to apply theoretical knowledge to a real clinical case with which the student has been extensively involved during clinical training. Comprehensive Exam II will have both written and oral portions. Typically, the student will identify a case from the student's own clinical experience in which they have been primarily responsible for case management. This case will be thoroughly presented in conjunction with in-depth background information, including relevant clinical research on all aspects of the case. A panel of reviewers will be constituted to evaluate each individual student's examination performance.

All audiology students in good academic standing are expected to pass their comprehensive examination(s). However, regardless of academic standing, failure to pass either of the above examinations within three examination cycles will result in the student's dismissal from the audiology program.

AuD Curriculum

- CSD 2010 - AUDIOLOGY CLINIC 1 - MEDICAL
  CSD 2012 - AUD SCREENING AND PREVENTION PRACTICUM
- CSD 2021 - CLINICAL PROCEDURES LAB 1-1
- CSD 2022 - CLINICAL PROCEDURES LAB 2-2
- CSD 2029 - IMPLANTABLES IN CLINICAL PRACTICE
- CSD 2036 - EVALUATION AND TREATMENT OF TINNITUS AND SOUND INTOLERANCE
- CSD 2040 - AUDIOLOGICAL ASSESSMENT
- CSD 2041 - MANAGEMENT OF HEARING LOSS
- CSD 2042 - AUDIOLOGICAL ASSESSMENT LAB
- CSD 2043 - FUNDAMENTALS OF SPEECH-LANGUAGE PATHOLOGY FOR AUDIOLOGISTS
- CSD 2044 - DIFFERENTIAL DIAGNOSIS
- CSD 2045 - PHYSIOLOGICAL ASSESSMENT
- CSD 2046 - PEDIATRIC EVALUATION
- CSD 2047 - AMPLIFICATION 1
- CSD 2051 - CLINICAL PROCEDURES LAB 1-2
- CSD 2052 - CLINICAL PROCEDURES LAB 2-3
- CSD 2053 - CLINICAL PROCEDURES LAB 2-1
- CSD 2055 - PEDIATRIC AUDIOLOGIC REHABILITATION
- CSD 2057 - AUDIOLOGY CLINIC 2 (5 terms) - Variable credits
- CSD 2060 - PROSEMINAR - MA (6 terms)
- CSD 2078 - PHYSICS, PHYSIOLOGY AND PSYCHOLOGY OF SOUND
- CSD 2081 - RESEARCH STRATEGIES AND TACTICS
- CSD 2084 - SCIENCE OF IMPLANTABLES
- CSD 2087 - HEARING CONSERVATION AND RESTORATION
- CSD 2101 - DATA AND STATISTICAL LITERACY
- CSD 2103 - PROFESSIONAL WRITING FOR AUDIOLOGISTS
- CSD 2110 - NEUROSCIENCE OF COMMUNICATION
- CSD 2162 - COUNSELING STRATEGIES FOR AUD AND SLP
- CSD 2251 - VESTIBULAR ASSESSMENT AND REHABILATATION
- CSD 2252 - ADVANCED PHYSIOLOGICAL ASSESSMENT
- CSD 2451 - AUDIOLOGY MASTERS COMPREHENSIVE
- CSD 2454 - AMPLIFICATION 2
- CSD 2600 - INTER-PROFESSIONAL ROTATION
- CSD 2602 - EDUCATIONAL AUDIOLOGY
- CSD 2604 - PRINCIPLES OF CLINCAL INSTRUCTION AND PEER TEACHING
- CSD 2652 - ADVANCED CLINICAL SEMINAR 3-1
- CSD 2654 - PRACTICE MANAGEMENT
- CSD 2655 - ADVANCED CLINICAL SEMINAR 4-1
- CSD 2657 - ADVANCED CLINICAL SEMINAR 3-3
- CSD 2658 - ADVANCED CLINICAL SEMINAR 4-3
- CSD 2659 - AUDIOLOGY EXTERNSHIP (3 terms)
- CSD 2660 - ADVANCED CLINICAL SEMINAR 4-2
- CSD 2661 - ADVANCED CLINICAL SEMINAR 3-2
- CSD 2971 - RESEARCH PRACTICUM
- Comprehensive Examination II

Medical Speech-Language Pathology, CScD

The Clinical Doctorate in Speech-Language Pathology is being redesigned. While we are not currently accepting students into the program, announcements will be posted on our website when the new program is approved and open for applications.

Master's

Communication Science and Disorders - Audiology Concentration, MA/MS

Program Requirements

Clinical Practicum

Clinical practicum requirements are met through the Audiology Network and Outplacements clinical rotations. These experiences include varied settings such as hospitals, rehabilitation centers, specialty clinics, private practices, schools for the Deaf, and public schools.

Proseminar

All students must complete the proseminar requirement, which consists of attending a specified number of scientific and professional presentations that have relevance to communication science and disorders.

Comprehensive Exam for MA

All students in the Master of Arts program are required to pass an oral comprehensive examination in the spring of their second year. The comprehensive examination assesses students' ability to think critically, to communicate their thoughts in oral form, and to demonstrate their grasp of the major academic and clinical content provided in their graduate program. Requirements for passing the comprehensive examination are provided in the Academic Handbook.

Students seeking the Doctor of Audiology (AuD) degree must complete a second comprehensive examination which includes a written and oral component. Details about that comprehensive examination can be found in the section on the AuD degree.

Thesis Option for Master of Science (MS) degrees

Students pursuing the Master of Science degree in audiology must successfully complete a thesis project. Thesis students will have an examining committee of at least three University of Pittsburgh faculty members (including the research director, who serves as chair).

Additional requirements are outlined in the academic handbook, which is distributed to students at the beginning of their academic programs.

Concentration

This program is designed for those students who do not plan to provide clinical services, but would like to pursue a research track in audiology. Students pursuing the AuD degree (Clinical Doctorate) also may pursue a research track. The audiology concentration for the master's degree requires a minimum of 30 credits of coursework. All credits must be passed with a B grade or better in order to count towards graduation.

Audiology Curriculum

- CSD 2022 - CLINICAL PROCEDURES LAB 2-2
- CSD 2021 - CLINICAL PROCEDURES LAB 1-1
- CSD 2040 - AUDIOLOGICAL ASSESSMENT
- CSD 2041 - MANAGEMENT OF HEARING LOSS
- CSD 2042 - AUDIOLOGICAL ASSESSMENT LAB
- CSD 2044 - DIFFERENTIAL DIAGNOSIS
- CSD 2045 - PHYSIOLOGICAL ASSESSMENT
- CSD 2046 - PEDIATRIC EVALUATION
- CSD 2047 - AMPLIFICATION 1
- CSD 2051 - CLINICAL PROCEDURES LAB 1-2
- CSD 2052 - CLINICAL PROCEDURES LAB 2-3
- CSD 2053 - CLINICAL PROCEDURES LAB 2-1
- CSD 2055 - PEDIATRIC AUDIOLOGIC REHABILITATION
- CSD 2056 - AUDIOLOGY CLINIC 1
- CSD 2057 - AUDIOLOGY CLINIC 2
- CSD 2060 - PROSEMINAR - MA
- CSD 2078 - PHYSICS, PHYSIOLOGY AND PSYCHOLOGY OF SOUND
- CSD 2085 - AUD SCREENING AND PREVENTION PRACTICUM
- CSD 2451 - AUDIOLOGY MASTERS COMPREHENSIVE

Communication Science and Disorders - Speech-Language Pathology Concentration, MA/MS

Program Requirements

Students applying to the Master's in Speech-Language Pathology program with a completed bachelor's degree in Communication Science and Disorders will require a minimum of five semesters of full-time study and 60 credits to satisfy academic and clinical requirements for the degree. Other requirements include the successful completion of clinical practicum and culminating academic project.

Clinical Practicum

Clinical practicum requirements are met through Clinic Practicum 1: Foundation in Assessment and Treatment in Speech Language Pathology, Clinic Practicum 2: Speech Language Pathology in Healthcare, and Clinic Practicum 2: Speech Language Pathology in Education. Community-based clinical settings include hospitals, rehabilitation facilities, residential facilities, non-residential facilities, early intervention in naturalistic settings, private practice, and a variety of educational settings.

SLP Summative Assessment Project for Master of Arts (MA) degree

All students in the Master of Arts program are required to successfully complete a Summative Assessment Project. This project assesses students' ability to think critically, communicate their thoughts in written and oral form, and demonstrate their grasp of the major academic and clinical content provided in their graduate program. Students pursuing the Master of Arts (MA) degree in Speech Language Pathology must satisfactorily complete a one-credit course, typically taken during one of the final three semesters of the program. Requirements for passing the Summative Assessment Project are provided in the course syllabus.

Program Electives

Thesis Option for Master of Science (MS) degree

Students pursuing the Master of Science degree in speech-language pathology must successfully complete a thesis project. Students who complete a master's thesis are exempt from the Summative Assessment Project. Thesis students will have a committee of at least three University of Pittsburgh faculty members as outlined in the academic handbook. Additional requirements are outlined in the academic handbook, which is distributed to students at the beginning of their academic programs.

Educational Certification: Pennsylvania

Educational certification is valuable for students who are interested in working as a speech-language pathologist with children who have communication disorders in educational settings. Educational certification is required in Pennsylvania for professionals serving as speech-language pathologists in school settings.

The Department of Communication Sciences and Disorders Department (CSD) is an approved program provider for two options for educational certification: (a) *Instructional 1 Special Education: Speech/Language Impaired PK-12* and (b) *Educational Specialist Certificate for School Speech-Language Pathologist PK-12*.

All students complete the predefined curriculum of the master's degree including CSD 2067 Clinic Practicum 2 Speech Language Pathology in Education. For students interested in the Instructional 1 certification, additional courses must be completed. These courses include a 3-credit child or human development course and a 3-credit language development course. Both are typically completed at the undergraduate level. Students must meet current requirements at the time of application for educational certification. This may include completing additional Praxis examinations.

Curriculum

The program is designed to be completed within 5 terms, although some students will elect to complete the program in 6 terms. The program requires 60 credits typically distributed as follows: Required Coursework, Clinic Practicum (minimum of 10 credits), and additional/optional credits. Course work must be passed with a C- grade or better to count for graduation.

The progression of courses for the general clinical requirements are outlined in the student's plan of study, and includes the following Program Curriculum:

- CSD 2018 - CLINICAL SERVICE DELIVERY
- CSD 2028 - AUTISM
- CSD 2039 - MOTOR SPEECH DISORDERS
- CSD 2060 - PROSEMINAR - MA
- CSD 2064 - INTRO CLINICAL DECISION-MAKING
- CSD 2070 - SPEECH SOUND DISORDERS
- CSD 2071 - CHILD LANGUAGE DISORDERS 1
- CSD 2072 - STUTTERING
- CSD 2073 - VOICE DISORDERS
- CSD 2076 - DYSPHAGIA
- CSD 2077 - AUGMENTATIVE COMMUNICATION
- CSD 2079 - PEDIATRIC FEEDING AND SWALLOWING
- CSD 2081 - RESEARCH STRATEGIES AND TACTICS

- CSD 2082 - PROFESSIONAL ISSUES 1
- CSD 2083 - PROFESSIONAL ISSUES 2
- CSD 2121 - AURAL REHAB ACROSS THE LIFESPAN
- CSD 2130 - NEUROGENIC LANGUAGE AND COGNITIVE COMMUNICATION DISORDERS 1
- CSD 2162 - COUNSELING STRATEGIES FOR AUD AND SLP
- CSD 2230 - NEUROGENIC LANGUAGE AND COGNITIVE COMMUNICATION DISORDERS 2
- CSD 2250 - CHILD LANGUAGE DISORDERS 2
- CSD 2514 - EDUCATIONAL SERVICE DELIVERY
- CSD 2525 - INTEGRATED CASES 1
- CSD 2030 - CLINIC SKILLS SIMULATION LAB 1
- CSD 2031 - CLINIC SKILLS SIMULATION LAB 2

Clinical Practice

- CSD 2065 - CLINIC PRACTICUM 1 FOUNDATIONS IN ASSESSMENT AND TREATMENT IN SPEECH LANGUAGE PATHOLOGY
- CSD 2066 - CLINIC PRACTICUM 2 SPEECH LANGUAGE PATHOLOGY IN HEALTHCARE
- CSD 2067 - CLINIC PRACTICUM 2 SPEECH LANGUAGE PATHOLOGY IN EDUCATION

Other Requirements

- CSD 2069 - SLP SUMMATIVE ASSESSMENT PROJECT

Thesis Option

- CSD 2000 - RESEARCH & THESIS MASTER'S DEGR

Department of Counseling and Behavioral Health

Department of Counseling and Behavioral Health

The Department of Counseling and Behavioral Health is home to programs that deliver personalized educational experiences for future professional counselors. We prepare our students to address the complex challenges faced by clients of diverse backgrounds, including individuals across cultures, across the lifespan, and living with disabilities and behavioral health challenges. We emphasize experiential training in evidence-based practices while advancing the field through clinical research. We are committed to community engagement, advocacy, and promoting diversity, inclusion, and cultural humility.

Our award-winning educational programs, research projects, and other learning opportunities prepare students to excel in the counseling profession. Pitt graduates are highly successful as they enter this rewarding profession. We take a holistic, hands-on approach to training that provides a strong foundation of knowledge while offering ample opportunity to practice your skills and options for personalizing your education. Our world class faculty include renowned scholars, highly skilled clinicians, and passionate educators.

Website: https://www.shrs.pitt.edu/academics/cbh/#overview

Department Contact:

Eric Meyer, PhD

Professor and Chair

Department of Counseling and Behavioral Health

Director, Trauma, Resilience, and Recovery Lab

Pronouns: he/him/his

(412) 383-6589 (office)

ecm77@pitt.edu

Clinical Mental Health Counseling (MS)

Our counseling curriculum covers a wide range of themes including:

- Advanced counseling skills techniques- individual, group, family, substance abuse and crisis counseling
- Case conceptualization and treatment planning
- Assessment and diagnosis
- Evidence-based practice

Students complete 61 credits required for a master's degree in Clinical Mental Health Counseling in five terms. The degree requires a 100-hour practicum and 600-hour internship in a professional clinical rehabilitation or mental health counseling setting.

Program Contact:

Michelle L. Schein, PhD, LPC, CRC

Associate Professor | Program Director

Clinical Mental Health Counseling

412-383-6879 | michelle.schein@pitt.edu

Pronouns: she/her/hers

Master's

Clinical Mental Health Counseling, MS

The Clinical Mental Health Counseling program strives to be a world class educational program, delivering a personalized educational experience for future professional counselors. We prepare our students to address the complex challenges faced by clients of diverse backgrounds, including individuals across cultures, across the lifespan, and those with disabilities and mental and behavioral health challenges. Our program emphasizes experiential training in evidence-based practices while advancing the field through clinical research. We are committed to community engagement, advocacy, and promoting diversity, inclusion, and cultural humility.

This program prepares students to practice the profession of clinical mental health counseling and is accredited by the Council for Accreditation of Counseling and Related Education Programs (CACREP) through March 2032.

This in-person program utilizes various instructional methods, including hands-on skills practice and role-plays that complement didactic learning and experiential learning activities. The curriculum includes courses on theories of counseling, foundations of

professional counseling, ethics, multicultural counseling, individual and group counseling services, case conceptualization and treatment planning, case management, vocational and career development, assessment and diagnosis, evidence-based practice and research methods. Elective courses focus on trauma and grief counseling, child and adolescent counseling, and disability and assistive technology considerations. See curriculum for more information.

Program Contact:

Michelle L. Schein, PhD, LPC, CRC

Associate Professor | Program Director

Clinical Mental Health Counseling

412-383-6879 | michelle.schein@pitt.edu

Pronouns: she/her/hers

Requirements:

Prerequisites

- A bachelor's degree is required preferably in psychology, rehabilitation sciences, human services, social sciences or a related field. Students can submit an application while they are finishing their degree.
    - A minimum overall undergraduate GPA of 3.0 (based on 4.0) is suggested.
    - If the student's GPA falls below 3.0, the application may still be considered. Students will be considered if their GPA is below a 2.8 and they have taken graduate studies/courses.
- Verification of English Language Proficiency (ELP)
    - Submitting ELP scores are required for all international applicants, even if they attended an institution in the U.S. (unless citizen of a country whose official language is English).
    - Duolingo English Test: 140. **Duolingo sub-score of 140-145 conversation and 130-135 comprehension are required.**
    - International English Language Testing System (IELTS): 7.5. **IELTS sub-score of 8.0 speaking and 7.0 listening are required.**
    - Test of English as a Foreign Language (TOEFL) - 100. **TOEFL sub-score of 26 for speaking and 24 for listening are required.**
    - **New TOEFL scale as of January 2026: 5.0 with sub-scores of 4.0 or higher. Sub-scores for speaking and listening require a 5.0 or higher.**
- Applicants must:
    - Possess strong interpersonal and professional skills.
    - Be committed to developing clinical skills through clinical practice and supervision.
    - Be open to feedback, self-assessment and self-reflection.
    - Communicate in a clear, organized and logical fashion both verbally and in writing.

Transcripts

Applicants are required to provide transcripts from all U.S. universities, colleges or other higher education institutions attended.

Admitted students will need to submit official transcripts to the SHRS Admissions Office prior to enrolling in classes.

Personal Statement

- Upload a personal statement that demonstrates evidence of graduate-level writing skills and discusses career goals, strengths, skills and experiences that will contribute to success in the program and in the counseling profession. The essay should also include a brief statement discussing professional interest in the field of counseling and reasons for applying to the University of Pittsburgh Clinical Mental Health Counseling program (500 word limit).
- Answer two short essay prompts (500 word limit combined for the two essays).

Letters of Recommendation

Two (2) professional letters of recommendation are required for the application.

These letters should be from individuals who can describe your potential for graduate-level work and may include professors, supervisors or employers.

Application Review Process

- Applications are reviewed by the admissions committee after the deadline.
    - Application material received after this deadline will only be reviewed in the unlikely event that the program is unable to fill the slots for the incoming class.
    - While undergraduate GPAs are important, equally important are applicants' responses to essay questions and letters of recommendation. The admissions committee carefully considers all evidence supporting applicants' potential for being successful in a graduate program. Applicants from historically under-represented backgrounds in the counseling profession are particularly encouraged to apply.
- The program aims to notify students of their admissions decision in March at which time the program will also administer a waitlist.
- A selective group interview will be conducted via video conference. The program will reach out to students with additional instructions if they are invited for an interview.

Other Requirements

Resume or CV must be submitted through the GradCAS application.

Clinical Participation and Background Check

To participate in clinical education activities, students are required to obtain a variety of documents attesting to health and vaccination status, criminal background checks/Act 33/34 clearances, and training associated with the provision of health care services. Many of these documents and trainings must be renewed annually while in the program. Students who do not complete these requirements prior to designated deadlines will not receive clinical assignments as typically sequenced, potentially extending the program duration. Specific information on these clinical requirements and deadlines is provided shortly after acceptance. Additionally, in order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act associated with alcohol and/or substance abuse.

International Student Information

The following requirements are necessary for applicants from outside of the U.S.

For questions about the international student requirements, please reach out to the SHRS Admissions Office.

Academic Credential Evaluations

Students who have completed the equivalent of a baccalaureate degree or higher at an institution outside of the United States are required to provide an academic credential evaluation from Educational Credential Evaluators, Inc. or World Education Services (WES), Inc. with their application.

- A course-by-course evaluation with GPA conversion is required.
- Evaluations are not required for degrees earned in the United States. If you have attended an English Canadian institution, please contact the SHRS Admissions Office.
- Individual SHRS programs may have their own specific Academic Credential Evaluation requirements.

5 Term Plan of Study

Fall Term - Year 1

- COUN 2720 - FOUNDATIONS OF COUNSELING
- COUN 2721 - CULTURAL CONSIDERATIONS IN COUNSELING
- COUN 2734 - COUNSELING THEORIES AND TECHNIQUES

- COUN 2737 - CLINICAL, DIAGNOSTIC AND FUNCTIONAL ASSESSMENT IN COUNSELING
- COUN 2765 - CLINICAL COUNSELING MENTORSHIP

Spring Term - Year 1

- COUN 2732 - HUMAN DEVELOPMENT ACROSS THE LIFESPAN
- COUN 2733 - COUNSELING SKILLS & TECHNIQUES
- COUN 2738 - DIAGNOSIS & TREATMENT OF COGNITIVE AND MENTAL HEALTH DISORDERS
- COUN 2739 - GROUP COUNSELING
- COUN 2742 - LEGAL, ETHICAL & PROFESSIONAL ISSUES IN COUNSELING
- COUN 2765 - CLINICAL COUNSELING MENTORSHIP

Summer Term - Year 1

- COUN 2724 - CAREER COUNSELING & VOCATIONAL ISSUES
- COUN 2736 - CRISIS COUNSELING, RISK MANAGEMENT AND DISASTER PREPAREDNESS
- COUN 2740 - CLINICAL APPLICATIONS IN COUNSELING
- COUN 2746 - COUNSELING PRACTICUM

Fall Term - Year 2

- COUN 2726 - SUBSTANCE ABUSE AND ADDICTIONS COUNSELING
- COUN 2747 - CONCEPTUALIZATION, TREATMENT PLANNING, & CASE MANAGEMENT
- COUN 2748 - EVIDENCE BASED PRACTICE AND RESEARCH METHODS IN COUNSELING
- COUN 2749 - CLINICAL COUNSELING INTERNSHIP
- COUN 2751 - CLINICAL COUNSELING CAPSTONE EXAM

Spring Term - Year 2

- COUN 2743 - FAMILY AND COUPLES COUNSELING
- COUN 2749 - CLINICAL COUNSELING INTERNSHIP

  One of the following:
- COUN 2766 - INTRODUCTION TO ASSESSMENT AND TREATMENT FOR CHILDREN AND ADOLESCENTS
- COUN 2767 - TRAUMA AND GRIEF COUNSELING

6 Term Plan of Study

Fall Term - Year 1

- COUN 2720 - FOUNDATIONS OF COUNSELING
- COUN 2721 - CULTURAL CONSIDERATIONS IN COUNSELING
- COUN 2734 - COUNSELING THEORIES AND TECHNIQUES
- COUN 2737 - CLINICAL, DIAGNOSTIC AND FUNCTIONAL ASSESSMENT IN COUNSELING
- COUN 2765 - CLINICAL COUNSELING MENTORSHIP

Spring Term - Year 1

- COUN 2732 - HUMAN DEVELOPMENT ACROSS THE LIFESPAN

- COUN 2733 - COUNSELING SKILLS & TECHNIQUES
- COUN 2738 - DIAGNOSIS & TREATMENT OF COGNITIVE AND MENTAL HEALTH DISORDERS
- COUN 2742 - LEGAL, ETHICAL & PROFESSIONAL ISSUES IN COUNSELING
- COUN 2765 - CLINICAL COUNSELING MENTORSHIP

Summer Term - Year 1

- COUN 2724 - CAREER COUNSELING & VOCATIONAL ISSUES
- COUN 2736 - CRISIS COUNSELING, RISK MANAGEMENT AND DISASTER PREPAREDNESS
- COUN 2739 - GROUP COUNSELING
- COUN 2740 - CLINICAL APPLICATIONS IN COUNSELING

Fall Term - Year 2

- COUN 2746 - COUNSELING PRACTICUM
- COUN 2747 - CONCEPTUALIZATION, TREATMENT PLANNING, & CASE MANAGEMENT
- COUN 2748 - EVIDENCE BASED PRACTICE AND RESEARCH METHODS IN COUNSELING

Spring Term - Year 2

- COUN 2726 - SUBSTANCE ABUSE AND ADDICTIONS COUNSELING
- COUN 2743 - FAMILY AND COUPLES COUNSELING
- COUN 2749 - CLINICAL COUNSELING INTERNSHIP
- COUN 2751 - CLINICAL COUNSELING CAPSTONE EXAM

Summer Term - Year 2

- COUN 2749 - CLINICAL COUNSELING INTERNSHIP
  One of the following:
- COUN 2766 - INTRODUCTION TO ASSESSMENT AND TREATMENT FOR CHILDREN AND ADOLESCENTS
- COUN 2767 - TRAUMA AND GRIEF COUNSELING

Clinical Competency Examination

All Counseling students are required to pass a clinical competency examination. To assess student competency, students are required to take and pass the Counselor Preparation Comprehensive Examination (CPCE)

Total Credits: 60

Department of Health Information Management

Master of Science Degree in Health Informatics

The Master of Science in Health Informatics (MSHI) Program is a STEM Designated Program. It is offered in the Department of Health Information Management (HIM).

Contact Information:

Bambang Parmanto, PhD, Chair
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412-383-6649
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Leming Zhou, PhD, DSc, Graduate Program Director and Professor

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Admission Requirements

- A baccalaureate degree from an accredited institution. Applicants may apply while completing their undergraduate degree, but must provide proof of degree completion before enrolling in the program.
- A minimum grade point average (GPA) of 3.0 (on a 4.0 scale) is required. Admission may be considered for applicants with a GPA of less than 3.0 if other supporting evidence of their ability to complete the graduate program is provided.

Application Process

- Complete the application for admission
    - Applications to attend the program are submitted through GradCAS
- Application fee of $50
- One Letter of Recommendation is required. The recommendation should be from college-level instructors or employers/professionals who have supervised your work in a paid or volunteer capacity. These individuals should be able to comment on your academic, professional and interpersonal abilities. People submitting recommendation letters on your behalf should send their letters to our admissions office electronically through our application system.
- Statement of Purpose/Essay
- Transcripts from all institutions attended
- International applicants must provide English Language Proficiency scores (Duolingo, IELTS, or TOEFL) and an Academic Credential Evaluation from Educational Credential Evaluators, Inc. or World Education Services (WES), Inc.

Financial Aid

There are scholarships and loan opportunities available to graduate students from the American Health Information Management Association (AHIMA). Further information can be obtained from the AHIMA web site at www.ahima.org under the career and student center tab. Additionally, the Pennsylvania Health Information Management Association (PHIMA) awards scholarships to qualified students in Pennsylvania. Further information can be obtained from PHIMA's web site at http://www.phima.org/members/scholarships/.

In addition, HIM provides endowment scholarships for both undergraduate and graduate studies.

Certificate

Applied AI in Healthcare, Certificate, Online

Certificate in AI in Healthcare

Students are required to take four courses (12 credits) to obtain the Certificate in Applied AI in Healthcare. Three of those courses are required coruse and one is an elective. The three required courses are: HI 2251, HI 2458, and HI 2310. All the rest are electives.

- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2252 - APPLIED AI IN HEALTHCARE: TOOLS, CONCEPTS, AND IMPACT
- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS
- HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE
- HI 2459 - ARTIFICIAL INTELLIGENCE FOR MEDICAL IMAGING INFORMATICS
- HI 2461 - NATURAL LANGUAGE PROCESSING AND LARGE LANGUAGE MODELS IN HEALTHCARE
- HI 2462 - ETHICAL, LEGAL, AND SOCIAL ISSUES (ELSI) OF AI IN HEALTHCARE

Applied AI in Healthcare, Certificate, Residential

Course Curriculum

Students are required to take four courses (12 credits) to obtain the Certificate in Applied AI in Healthcare. Three of those courses are required coruse and one is an elective. The three required courses are: HI 2251, HI 2458, and HI 2310. All the rest are electives.

- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS
- HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE
- HI 2459 - ARTIFICIAL INTELLIGENCE FOR MEDICAL IMAGING INFORMATICS
- HI 2461 - NATURAL LANGUAGE PROCESSING AND LARGE LANGUAGE MODELS IN HEALTHCARE

Health Data Analytics Certificate

In the Department of Health Information Management, we offer a Certificate in Health Data Analytics. This certificate program can help students open doors in new fields.

There are online and on-campus versions of this certificate. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before enrollment. International students are required to attend the on-campus version of the certificate. On-campus students are permitted to take up to 3 credits online in the certificate program.

Program Requirements

The admission requirements for the certificate program are identical to our graduate programs. All students enrolled in a certificate program are required to complete 12 credits, or four 3-credit courses. For students who pursue an MS degree in our graduate programs, the credits obtained from the certificate program can be counted toward the MS programs. The required courses for the Health Data Analytics Certificate are listed below.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Required Health Informatics Courses (12 Credits)

Students must complete the following 4 courses for the Health Data Analytics Certificate:

- HI 2022 - INTRODUCTION TO PYTHON FOR HEALTH INFORMATICS
- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS
- HI 2460 - DATA SCIENCE AND MACHINE LEARNING IN HEALTH SCIENCES

Total Credits: 12

Leadership in Health Informatics Certificate

In the Department of Health Information Management, we offer a Certificate in Leadership in Health Informatics. This certificate program can help students open doors in new fields.

There are online and on-campus versions of this certificate. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before enrollment. International students are required to attend the on-campus version of the certificate. On-campus students are permitted to take up to 3 credits online in the certificate program.

Program Requirements

The admission requirements for the certificate program are identical to our graduate programs. All students enrolled in a certificate program are required to complete 12 credits, or four 3-credit courses. For students who pursue an MS degree in our graduate programs, the credits obtained from the certificate program can be counted toward the MS programs. The required courses for the Leadership in Health Informatics Certificate are listed below.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Required Health Informatics Courses (12 Credits)

Students must complete the following 4 courses for the Leadership in Health Informatics Certificate:

- HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM
- HI 2230 - FINANCIAL MANAGEMENT AND HEALTH CARE REIMBURSEMENT
- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT

Total Credits: 12

Master's

AI in Healthcare, MS, online

The new online Master of Science in AI in Healthcare (OMSAIH) requires a total of 36 credits, comprising 21 credits from seven required courses (3 credits each) and 15 credits from five elective courses (3 credits each).

Required Courses

- HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE
- HI 2462 - ETHICAL, LEGAL, AND SOCIAL ISSUES (ELSI) OF AI IN HEALTHCARE
- HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS
- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS
- HI 2452 - DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE
- HI 2252 - APPLIED AI IN HEALTHCARE: TOOLS, CONCEPTS, AND IMPACT

Elective Courses

Students will choose five elective courses (15 credits total) from the list below.

- HI 2021 - PRACTICAL STATISTICS AND PROGRAMMING USING R
- HI 2022 - INTRODUCTION TO PYTHON FOR HEALTH INFORMATICS
- HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM
- HI 2230 - FINANCIAL MANAGEMENT AND HEALTH CARE REIMBURSEMENT
- HI 2231 - TALENT MANAGEMENT AND HUMAN RESOURCES
- HI 2411 - REVENUE CYCLE ANALYTICS
- HI 2450 - SECURITY, PRIVACY, LEGAL, AND ETHICAL ISSUES IN HEALTH INFORMATION SYSTEMS
- HI 2457 - APPLIED AI & DESIGN THINKING FOR HEALTH INFORMATICS
- HI 2670 - INTERNSHIP
- HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT
- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2460 - DATA SCIENCE AND MACHINE LEARNING IN HEALTH SCIENCES
- HI 2461 - NATURAL LANGUAGE PROCESSING AND LARGE LANGUAGE MODELS IN HEALTHCARE

AI in Healthcare, MS, Residential

The new Master of Science in AI in Healthcare (MSAIH) requires a total of 36 credits, comprising 21 credits from seven required courses (3 credits each) and 15 credits from five elective courses (3 credits each).

Required Courses

- HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS
- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS
- HI 2452 - DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE
- HI 2252 - APPLIED AI IN HEALTHCARE: TOOLS, CONCEPTS, AND IMPACT
- HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE
- HI 2462 - ETHICAL, LEGAL, AND SOCIAL ISSUES (ELSI) OF AI IN HEALTHCARE

Elective Courses

Students will choose five elective courses (15 credits total) from the list below.

- HI 2021 - PRACTICAL STATISTICS AND PROGRAMMING USING R
- HI 2022 - INTRODUCTION TO PYTHON FOR HEALTH INFORMATICS
- HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM
- HI 2230 - FINANCIAL MANAGEMENT AND HEALTH CARE REIMBURSEMENT

- HI 2231 - TALENT MANAGEMENT AND HUMAN RESOURCES
- HI 2450 - SECURITY, PRIVACY, LEGAL, AND ETHICAL ISSUES IN HEALTH INFORMATION SYSTEMS
- HI 2457 - APPLIED AI & DESIGN THINKING FOR HEALTH INFORMATICS
- HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT
- HI 2670 - INTERNSHIP
- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2460 - DATA SCIENCE AND MACHINE LEARNING IN HEALTH SCIENCES
- HI 2461 - NATURAL LANGUAGE PROCESSING AND LARGE LANGUAGE MODELS IN HEALTHCARE

Health Informatics, MS

The Master of Science in Health Informatics (MSHI) program is housed in the Department of Health Information Management, School of Health and Rehabilitation Sciences (SHRS).

There are online and on-campus versions of the Master of Science in Health Informatics (MSHI) program. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before enrollment. International students are required to attend the on-campus version of the concentration.

On-campus students are permitted to take up to 15 credits online.

Required Courses (24 Credits)

Students must complete the following 8 courses:

- HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM
- HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS
- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2450 - SECURITY, PRIVACY, LEGAL, AND ETHICAL ISSUES IN HEALTH INFORMATION SYSTEMS
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS
- HI 2452 - DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE
- HI 2457 - APPLIED AI & DESIGN THINKING FOR HEALTH INFORMATICS

Elective Courses (12 Credits)

Students can choose 4 electives from the following list of courses:

- HI 2021 - PRACTICAL STATISTICS AND PROGRAMMING USING R - last offered Fall 2026
- HI 2022 - INTRODUCTION TO PYTHON FOR HEALTH INFORMATICS
- HI 2230 - FINANCIAL MANAGEMENT AND HEALTH CARE REIMBURSEMENT
- HI 2231 - TALENT MANAGEMENT AND HUMAN RESOURCES - last offered Spring 2027
- HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE
- HI 2459 - ARTIFICIAL INTELLIGENCE FOR MEDICAL IMAGING INFORMATICS
- HI 2460 - DATA SCIENCE AND MACHINE LEARNING IN HEALTH SCIENCES
- HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT
- HI 2670 - INTERNSHIP

Total Credits: 36

Curricula for Students Enrolled Before Spring 2026 with Specific Tracks

There are four tracks (or areas of concentration) in the MSHI program before Spring 2026. Students admitted before Spring 2026 can choose to be in one of the four tracks. Below are the details of the curricula for the four tracks.

Data Science Concentration

Data Science (DS), a concentration in the Master of Science in Health Informatics program, is housed in the Department of Health Information Management, School of Health and Rehabilitation Sciences (SHRS).

The Data Science (DS) concentration prepares students to be responsible for the development, evaluation, and management of health information technologies and systems. Graduates of this concentration analyze, design, implement, and evaluate health information systems. They will also have the ability to conduct in-depth data analytics projects to improve the quality of health care and reduce the cost of health care services. Students enrolled full-time can complete the program in 3-4 consecutive semesters.

There are online and on-campus versions of this concentration. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before their enrollment. International students are required to attend the on-campus version of the concentration.

Program Requirements - DS

All students enrolled in the Data Science concentration are required to complete 36 credits. Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to have an in-depth study of Data Science considering the student's previous academic preparation and experience.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

DS Curriculum

The Data Science curriculum allows students to choose from required courses and elective courses. Up to 6 credits of elective courses can be chosen from other departments in the SHRS or other academic programs within the University.

Please note: All students are required to finish one course in medical terminology if they do not have that course in their previous study or clinical background. Pitt offers a Coursera course in medical terminology that can meet this program requirement and can be found at this link https://www.coursera.org/learn/clinical-terminology**. Students can choose an equivalent medical terminology course from somewhere else as well.**

Required Courses (21 Credits)

Students must complete the following 7 courses:

- HI 2021 - PRACTICAL STATISTICS AND PROGRAMMING USING R - last offered Fall 2026
- HI 2022 - INTRODUCTION TO PYTHON FOR HEALTH INFORMATICS
- HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM
- HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS
- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS
- HI 2460 - DATA SCIENCE AND MACHINE LEARNING IN HEALTH SCIENCES

Elective Courses (15 Credits)

Students can choose 5 electives from the following list of courses:

- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2230 - FINANCIAL MANAGEMENT AND HEALTH CARE REIMBURSEMENT
- HI 2231 - TALENT MANAGEMENT AND HUMAN RESOURCES
  - last offered Spring 2027
- HI 2450 - SECURITY, PRIVACY, LEGAL, AND ETHICAL ISSUES IN HEALTH INFORMATION SYSTEMS
- HI 2452 - DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE
- HI 2457 - APPLIED AI & DESIGN THINKING FOR HEALTH INFORMATICS
- HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE
- HI 2459 - ARTIFICIAL INTELLIGENCE FOR MEDICAL IMAGING INFORMATICS
- HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT
- HI 2670 - INTERNSHIP

Health Services Analytics Concentration

The Health Services Analytics (HSA) concentration leading to a Master of Science degree in Health Informatics prepares students to be responsible for the development and management of health information systems consistent with the clinical, fiscal, administrative, ethical, and legal requirements of healthcare institutions. Graduates of this program analyze and evaluate health information systems. As members of the healthcare team, they interact with other healthcare professionals and administrators, and provide healthcare data for patient care, research, quality improvement, strategic planning, reimbursement, and related analytics and managerial functions.

HSA graduates work in a variety of settings, such as hospitals, health planning agencies, computer companies, consulting firms, information systems vendors, ambulatory care centers, research centers, rehabilitation facilities, and insurance companies.

There are online and on-campus versions of this concentration. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before enrollment. International students are required to attend the on-campus version of the concentration.

Program Requirements - HSA

All students enrolled in the Health Services Analytics concentration are required to complete 36 credits. Students enrolled full-time normally complete the program in 3-4 consecutive semesters. Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to have an in-depth study of Health Informatics considering the student's previous academic preparation and experience.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

HSA Curriculum

The Health Services Analytics curriculum allows students to choose from required courses and elective courses. Up to 6 credits of elective courses can be chosen from other departments in the SHRS or other academic programs within the University.

Please note: All students are required to finish one course in medical terminology if they do not have that course in their previous study or clinical background. Pitt offers a Coursera course in medical terminology that can meet this program requirement and can be found at this link https://www.coursera.org/learn/clinical-terminology**. Students can choose an equivalent medical terminology course from somewhere else as well.**

Required Courses (18 credits)

Students must complete the following 6 courses:

- HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM
- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2230 - FINANCIAL MANAGEMENT AND HEALTH CARE REIMBURSEMENT
- HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS
- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS

Elective Courses (18 Credits)

Students can choose 6 electives from the following list of courses:

- HI 2021 - PRACTICAL STATISTICS AND PROGRAMMING USING R - last offered Fall 2026
- HI 2022 - INTRODUCTION TO PYTHON FOR HEALTH INFORMATICS
- HI 2231 - TALENT MANAGEMENT AND HUMAN RESOURCES
  - last offered Spring 2027
- HI 2450 - SECURITY, PRIVACY, LEGAL, AND ETHICAL ISSUES IN HEALTH INFORMATION SYSTEMS
- HI 2452 - DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE
- HI 2457 - APPLIED AI & DESIGN THINKING FOR HEALTH INFORMATICS
- HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE
- HI 2459 - ARTIFICIAL INTELLIGENCE FOR MEDICAL IMAGING INFORMATICS
- HI 2460 - DATA SCIENCE AND MACHINE LEARNING IN HEALTH SCIENCES
- HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT
- HI 2670 - INTERNSHIP

Healthcare Supervision and Management Concentration

Health Care Supervision and Management (HSAM), a concentration in the Master of Science in Health Informatics program, is housed in the Department of Health Information Management, School of Health and Rehabilitation Sciences (SHRS).

The Health Care Supervision and Management (HSAM) concentration provides students an opportunity for knowledge, skills, and career advancement. Qualified students with interests in administration and supervisory management in health care, long-term care, and rehabilitation may pursue this 36-credit concentration in HSAM. Students enrolled full- time normally complete the program in 3-4 consecutive semesters.

This program is designed for students who wish to attain knowledge and skills at the graduate level to prepare for a supervisory management position or to upgrade competencies developed earlier in his/her career.

There are online and on-campus versions of this concentration. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before enrollment. International students are required to attend the on-campus version of the concentration.

Program Requirements - HSAM

All students enrolled in the Health Care Supervision and Management concentration are required to complete 36 credits. Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to have an in-depth study of Health Care Supervision and Management considering the student's previous academic preparation and experience.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

HSAM Curriculum

The Health Care Supervision and Management curriculum allows students to choose from required courses and elective courses. Up to 6 credits of elective courses can be chosen from other departments in the SHRS or other academic programs within the University.

Please note: All students are required to finish one course in medical terminology if they do not have that course in their previous study or clinical background. Pitt offers a Coursera course in medical terminology that can meet this program requirement and can be found at this link https://www.coursera.org/learn/clinical-terminology**. Students can choose an equivalent medical terminology course from somewhere else as well.**

Required Courses (18 Credits)

Students must complete the following 6 courses:

- HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM
- HI 2231 - TALENT MANAGEMENT AND HUMAN RESOURCES
  - last offered Spring 2027
- HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS
- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS
- HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT

Electives (18 Credits)

Students can choose 6 electives from the following list of courses:

- HI 2021 - PRACTICAL STATISTICS AND PROGRAMMING USING R - last offered Fall 2026
- HI 2022 - INTRODUCTION TO PYTHON FOR HEALTH INFORMATICS
- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2230 - FINANCIAL MANAGEMENT AND HEALTH CARE REIMBURSEMENT
- HI 2450 - SECURITY, PRIVACY, LEGAL, AND ETHICAL ISSUES IN HEALTH INFORMATION SYSTEMS
- HI 2452 - DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE
- HI 2457 - APPLIED AI & DESIGN THINKING FOR HEALTH INFORMATICS
- HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE
- HI 2459 - ARTIFICIAL INTELLIGENCE FOR MEDICAL IMAGING INFORMATICS
- HI 2460 - DATA SCIENCE AND MACHINE LEARNING IN HEALTH SCIENCES
- HI 2670 - INTERNSHIP

Health Informatics Concentration

Health Informatics (HI), a concentration in the Master of Science in Health Informatics program, is housed in the Department of Health Information Management, School of Health and Rehabilitation Sciences (SHRS).

The Health Informatics (HI) concentration prepares students to be responsible for the evaluation and management of health information technologies and systems. Graduates of this track analyze, design, and evaluate health information systems. They may also perform data analytics projects to improve the quality of health care and reduce the cost of health care services. Students enrolled full-time can complete the program in 3-4 consecutive semesters.

There are online and on-campus versions of this concentration. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before enrollment. International students are required to attend the on-campus version of the concentration.

Program Requirements - HI

All students enrolled in the Health Informatics concentration are required to complete 36 credits. Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to design an in-depth study of Health Care Supervision and Management considering the student's previous academic preparation and experience.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

HI Curriculum

The Health Informatics curriculum allows students to choose from required courses and elective courses. Up to 6 credits of elective courses can be chosen from other departments in the SHRS or other academic programs within the University.

Please note: All students are required to finish one course in medical terminology if they do not have that course or clinical background. Pitt offers a Coursera course in medical terminology that can meet this program requirement and can be found at this link https://www.coursera.org/learn/clinical-terminology**, however the student can choose another medical terminology course as well.**

Required Courses (12 Credits)

Students must complete the following 4 courses:

- HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM
- HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS
- HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS

Elective Courses (24 Credits)

Students can choose 8 electives from the following list of courses:

- HI 2021 - PRACTICAL STATISTICS AND PROGRAMMING USING R - last offered Fall 2026
- HI 2022 - INTRODUCTION TO PYTHON FOR HEALTH INFORMATICS
- HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION
- HI 2230 - FINANCIAL MANAGEMENT AND HEALTH CARE REIMBURSEMENT
- HI 2231 - TALENT MANAGEMENT AND HUMAN RESOURCES
  - last offered Spring 2027
- HI 2450 - SECURITY, PRIVACY, LEGAL, AND ETHICAL ISSUES IN HEALTH INFORMATION SYSTEMS
- HI 2452 - DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE
- HI 2457 - APPLIED AI & DESIGN THINKING FOR HEALTH INFORMATICS
- HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE
- HI 2459 - ARTIFICIAL INTELLIGENCE FOR MEDICAL IMAGING INFORMATICS
- HI 2460 - DATA SCIENCE AND MACHINE LEARNING IN HEALTH SCIENCES
- HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT
- HI 2670 - INTERNSHIP

Total Credits: 36

Prerequisites for Graduate Internships/Capstones

Health Informatics (HI) graduate students may participate in an internship or capstone project to facilitate a deeper understanding of the professional practice aspects in the field. This is usually undertaken towards the end of the student's graduate career.

Internship/Capstone placement is the responsibility of the student, and all interested students are expected to actively apply to opportunities that align with their interests and career goals. While the program provides support through shared opportunities and recruiter engagement, securing an internship/capstone ultimately depends on the student's initiative. Any placements facilitated by the Clinical Education Coordinator are unpaid and may take place during the summer, fall, or spring.

If a student chooses to complete their internship/capstone at a site that is under contract with the HIM department (or any other site where a contract is required), the items listed below are required. If a contract is not required, the student must sign a waiver. The student's advisor will provide detailed information and time guidelines for completion of the requirements once the student matriculates into the graduate program.

- Physical examination including proof of completion of specific immunizations
- TB test, 2-step
- Pennsylvania Criminal Record Check
- Pennsylvania Child Abuse Clearance
- Recognizing and Reporting Child Abuse Training
- FBI Background Check (includes fingerprinting)
- HIPAA Training and Certification
- Students must carry personal health insurance while participating in an internship

Students must carry professional student liability insurance coverage while participating in an internship. The University provides liability insurance for internships covered by clinical affiliation contracts.

Some sites may have additional requirements (i.e. drug screen, Covid-19 vaccine, influenza vaccine, or orientation programs specific to their organization).

Internship/capstone sites may not allow a student to participate in an internship at their site if the background check reports that they have been convicted of a misdemeanor; a felony; or a felonious or illegal act associated with alcohol and/or substance abuse.

For more information on Internship/Capstone, email Taylor Horne, HIM Clinical Education Coordinator: tah241@pitt.edu.

Additional Information Related to Internship/Capstone

Travel to internship/capstone sites is the responsibility of the student. Students are expected to have a car or to provide their own transportation to all remote sites; no exceptions will be made. Not all sites are accessible by public transportation.

All expenses for transportation, parking, meals, and costs of prerequisites associated with clinical education are the responsibility of the student.

For more information on internships, students are encouraged to contact their advisor or the clinical education coordinator.

The HIM department has affiliation agreements with approximately 145+ clinical sites for student internships. The following list provides a sample of these sites:

- 3M/M*Modal
- Adelphoi Village
- Allegheny Health Network
- Athena Health
- Central Ohio Trauma System
- CVS/Aetna
- Deloitte
- Geisinger Health System
- goShadow
- Grant Thornton Consulting
- Highmark
- HM Health Solutions
- Infinitus
- KPMG
- Mayo Clinic
- Merck
- Neighborhood Resilience Project
- Omnicell
- Pitt CTSI
- Southwest Veterans
- UPMC Health Plan
- UPMC Health System
- UPMC Hillman Cancer Center
- UPMC Physician Services Division
- Western PA Patient Registry

Department of Occupational Therapy

Doctoral

Doctor of Clinical Science (CScD) in Occupational Therapy

Program Requirements

The Doctor of Clinical Science (CScD) program in Occupational Therapy is offered 100% online on a part-time basis and requires completion of 72 credits. Students with an entry-level master's degree in occupational therapy or a baccalaureate degree in occupational therapy and an advanced level master's degree in occupational therapy or another field may be eligible to transfer up to 30 credits from their master's degree, leaving a remaining 42 credits. With a transfer of 30 credits, students will be able to complete the program in as little as 7 terms or 28 months.

This program also offers an Advanced Practice Certificate in Implementation of Evidence in Clinical Practice, which is earned upon completion of the CScD in Occupational Therapy degree or can be earned on a standalone basis.

Contact Information

Department of Occupational Therapy
School of Health and Rehabilitation Sciences
University of Pittsburgh
Bridgeside Point 1, 100 Technology Drive, Suite 350
Pittsburgh, PA 15219
412-383-6620
otpitt@shrs.pitt.edu

Admission Requirements

Admission Requirements and Application Process

Pitt SHRS is committed to fostering a diverse and inclusive academic environment to create a more equitable health care system by welcoming applicants of all abilities/disabilities, religions, marital statuses, familial statuses, sexes, ages, sexual orientations, veteran statuses, national origins, all ethnic and racial backgrounds, genetic information, and gender identities and expressions.

- Applicants who received their occupational therapy training within the United States **must have an entry-level master's degree in occupational therapy** (e.g., MOT) from an Accreditation Council for Occupational Therapy Education (ACOTE)-accredited program, or a **baccalaureate degree in occupational therapy from an ACOTE-accredited program** and a **master's degree in occupational therapy or another field of study**.

- Applicants who received their occupational therapy training outside of the United States **must have an entry-level master's degree in occupational therapy** from a World Federation of Occupational Therapy (WFOT)-approved program or a **baccalaureate degree in occupational therapy** from a World Federation of Occupational Therapy (WFOT)-approved program and a **master's degree in occupational therapy or another related field of study** and meet all necessary requirements for admission to the University of Pittsburgh.

- U.S. applicants are required to have initial NBCOT certification (or eligibility). International applicants must provide equivalent certification documentation from country of residence.

- Interview*

- Qualified applicants will be invited to a virtual interview with the CScD in Occupational Therapy program director.

- Verification of English Language Proficiency. Verification is required unless the following apply:

- the applicant is a citizen of a country whose official language is English

- the applicant has completed a degree program at a regionally accredited institution in the U.S., or

- the applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English.

Please note that the GRE is not required for admission to the program.

Occupational Therapists with Baccalaureate Degrees

Occupational therapists with a baccalaureate degree in occupational therapy, and no additional graduate degrees, should apply to the Master of Science (MS) in Occupational Therapy program.

Occupational Therapists with Master's Degrees

Occupational therapists with 1) an entry-level master's degree in occupational therapy, or 2) a baccalaureate degree in occupational therapy and an advanced master's degree in occupational therapy (or another field) may be able to transfer up to 30 credits from their master's degree, providing that these credits meet requirements in the CScD in Occupational Therapy curriculum.

Application Information

All Applicants

To apply to the online CScD in Occupational Therapy program, you must complete and submit the following:

- Complete the GradCAS application.
- $50 application fee (U.S.)
- Two (2) Professional Letters of Recommendation: Letters of recommendation should attest to your professional abilities and conduct, collegiality, oral and written communication skills and leadership.*
- Essay*
- Evidence of graduate-level writing skills in an essay that outlines:
- Why you are interested in pursuing the Doctor of Clinical Science in Occupational Therapy degree or Certificate in Implementation,
- Why you are interested in advancing your education through the University of Pittsburgh,
- What makes you a good fit for an advanced training education program that is delivered online
- How your identity, background, or experiences to date have contributed to your motivation and preparation for this program and will impact your progress in it, and
- The future professional goals that you hope to achieve as a result of this advanced training
- Resume: A professional resume indicating knowledge of rehabilitation through previous paid work experiences, internships or field experiences, or volunteer work experiences.
- Upload unofficial transcripts from all U.S. institutions attended in the Academic History section of CAS.
- Upload a course-by-course evaluation with GPA conversion for all higher institutions you have attended outside the U.S. in the Academic History section of CAS. The evaluation may be from World Education Services (WES), Inc. or Educational Credential Evaluators, Inc.
- **All admitted students will be required to provide official transcripts and, if applicable, credential evaluations to the SHRS Admissions Office prior to enrolling in classes.**

- If applicable, self-report unofficial English Language Proficiency (Duolingo, IELTS or TOEFL) test scores in the Academic History section of CAS and request official test scores be sent to the University of Pittsburgh. Minimum scores accepted and instructions for sending official test scores follow:
- Duolingo English Test: 140. Scores should be made available electronically to "University of Pittsburgh - School of Health and Rehabilitation Sciences"
- International English Language Testing System (IELTS): 7.5. Scores should be made available electronically to "University of Pittsburgh Health and Rehabilitation Sciences"
- Test of English as a Foreign Language (TOEFL): 100. New TOEFL scale as of January 2026: 5.0 with all sub-scores of 4.0 or higher. Scores should be submitted electronically through ETS to institution code "2927".

*Note: the personal essay, professional letters of recommendation and virtual interview are NOT required for Advanced Practice Certificate ONLY applicants.

Application Deadlines

Applications are accepted on a rolling basis for students intending to start the program in August of the same calendar year or January of the following calendar year.

For More Information

Contact the Department of Occupational Therapy at OTpitt@shrs.pitt.edu.

Curriculum and Course Descriptions

The program requires the completion of 72 credits (up to 30 credits may be transferred from a master's degree, potentially leaving a remaining 42 credits in the CScD in Occupational Therapy program). Each student will be paired with a faculty mentor who will oversee the development, implementation and grading of Preliminary and Comprehensive Examinations necessary to complete the program. Required courses are held in the fall, spring and summer terms.

Preliminary Examination

The preliminary examination is a requirement for doctoral studies at the University of Pittsburgh and is intended to assess the breadth of the student's knowledge of the discipline, the student's achievement following the first year of graduate study, and the potential to apply knowledge appropriately. In the CScD in Occupational Therapy program, the preliminary examination is a writing assignment in response to a writing prompt created by a preliminary examination committee composed of occupational therapy graduate faculty. Questions may address assessment concepts, intervention/education concepts, and/or implementation of evidence. The preliminary examination is typically administered following the student's first year of study and is graded by the preliminary examination committee. Students must successfully pass the preliminary examination at least six months before they graduate.

Capstone Doctoral Committee

Each student will be supervised by a doctoral committee that will be formed before or at the successful completion of the preliminary examination. The doctoral committee will be comprised of two to three members with the chair of this committee being the student's faculty mentor and at least one of the other members being faculty appointed in the Department of Occupational Therapy. Additional members will be determined collaboratively by the student and mentor and can include external stakeholders. This committee will oversee the development, implementation and grading of the capstone project.

Comprehensive Examination

The capstone project serves as the basis of the comprehensive examination and will be developed and implemented in collaboration with the doctoral committee. The comprehensive examination includes a written paper and a presentation of the capstone project, both of which

are graded by the student's doctoral committee. Students must successfully pass both the written and oral components of the comprehensive examination to complete the CScD in Occupational Therapy program. Students must be registered for at least one course credit during the semester in which they will graduate from the CScD in Occupational Therapy program.

Plan of Study

CScD in Occupational Therapy Degree Courses

All students will take the following courses:

- OT 3000 - ADVANCED ASSESSMENT
- OT 3010 - EVIDENCE INTERPRETATION FOR IMPLEMENTATION *
- OT 3020 - FOUNDATIONS IN IMPLEMENTATION *
- OT 3030 - THE BUSINESS OF IMPLEMENTATION *
- OT 3040 - ADVOCACY FOR IMPLEMENTATION *
- OT 3100 - EVIDENCE ANALYSIS AND SYNTHESIS
- OT 3200 - EVIDENCE-BASED PROTOCOLS AND PRACTICE GUIDELINES
- OT 3300 - CONCEPTUALIZING AND ASSESSING QUALITY IMPROVEMENT
- OT 3400 - THEORIES OF CHANGE
- OT 3500 - IMPLEMENTATION EVIDENCE

  Following completion of the 34 credits of online courses, CScD in Occupational Therapy students will culminate their matriculation through the program with an eight-credit capstone project. With the support of a faculty mentor, students will individually design and complete a capstone project that demonstrates their advanced knowledge for implementing evidence into practice.

- OT 3600 - CAPSTONE PHASE 1
- OT 3700 - CAPSTONE PHASE 2

  *Required courses for the Advanced Practice Certificate in Implementation of Evidence in Clinical Practice.

Academic Standards

In addition to following University-wide academic rules and regulations as detailed in the General Academic Regulations section of this Catalog, the CScD in Occupational Therapy program is regulated by the School of Health and Rehabilitation Sciences Academic Standards, as well as the policies and procedures in the SHRS Graduate Student Handbook and the CScD in Occupational Therapy Student Manual.

Doctor of Occupational Therapy (OTD)

Program Requirements

The Doctor of Occupational Therapy (OTD) program at Pitt is an entry-level educational program that offers an innovative, hands-on curriculum that prepares students to lead in occupational therapy with cutting-edge research, clinical experiences and community impact. The OTD program is a 32 month (8 terms, including 2 summer terms) on-campus professional course of study requiring 99 credits, including fieldwork education and a doctoral capstone. Students in the OTD program must successfully complete all didactic coursework, Level II fieldwork, and a comprehensive exam prior to the commencement of the doctoral capstone. Level II fieldwork and the doctoral capstone must be completed within 24 months following completion of the didactic portions of the program. Admission to the OTD program is only available on a full-time basis and begins at the end of August (fall term).

The OTD program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 7501 Wisconsin Avenue, Suite 510E, Bethesda, MD 20814. ACOTE's telephone number, c/o AOTA, is 301-652-6611and its web address is www.acoteonline.org. Graduates of the OTD program are eligible to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy (NBCOT). After successful completion of this exam, the individual will be an Occupational Therapist, Registered (OTR). In addition, all states require licensure to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination.

NOTE: A felony conviction may affect a graduate's ability to sit for the NBCOT certification examination or attain state licensure. Additionally, certification and licensure requirements include inquiries as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act, including those associated with alcohol and/or substance abuse.

Contact Information

Department of Occupational Therapy
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University of Pittsburgh
Bridgeside Point 1, 100 Technology Drive, Suite 350
Pittsburgh, PA 15219
412-383-6620
otpitt@shrs.pitt.edu
https://www.shrs.pitt.edu/academics/ot/otd/

Admissions

Prerequisites

A bachelor's degree with a minimum cumulative GPA of 3.00 (based on a 4.00 scale).

Completion of the following courses within the past five (5) years with a minimum grade of B and a minimum GPA of 3.00 (based on a 4.00 scale). Courses must be completed by June 1 prior to the start of the program.

- Human Anatomy and Physiology (with a laboratory component), 8 credits
    - Separate Anatomy and Physiology courses are acceptable.
    - The program does not recommend online coursework for this requirement.
- Lifespan Human Development, 3 credits
- Psychopathology/Abnormal Psychology, 3 credits
- Statistics, 3 credits

NOTE: All prerequisites must be taken for a letter grade. AP courses do not satisfy the prerequisite requirements.

Transcripts

Applicants are required to provide transcripts from all U.S. universities, colleges or other higher education institutions attended. Admitted students will need to submit official transcripts to the School of Health and Rehabilitation Sciences (SHRS) Admissions Office prior to enrolling in classes.

Experience

Applicants must complete a minimum of 12 hours through volunteer, shadowing, observation, or paid work. These experiences can occur in one or more occupational therapy practice areas (e.g., children and youth/pediatrics, health and wellness, productive aging/geriatrics, rehabilitation, mental health, work/industry, home care).

Personal Statement

Applicants complete a personal statement via the Occupational Therapist Centralized Application Service (OTCAS) that reflects graduate level writing skills and explains why they selected occupational therapy as a career and how this degree relates to their immediate and long-term professional goals. Applicants are strongly encouraged to include how their lived experiences (e.g., personal, professional, etc.) have

influenced their interest in pursuing occupational therapy and how their strengths and skills will contribute to their success in the OTD program.

Letters of Recommendation

Submission of three (3) letters of recommendation (evaluations) attesting to the applicant's academic and professional abilities. Letters of recommendation are submitted through OTCAS and must include a letter from:

1. A licensed occupational therapist who was involved in the applicant's experience in occupational therapy hours.
2. A college-level instructor who instructed the applicant in one or more courses.
3. An individual who can attest to the skills, abilities and professionalism of the applicant.

NOTE: OTCAS does not accept paper recommendations. All recommendations must be submitted electronically via OTCAS.

Technical Standards and Skills

Applicants admitted to the program must review the Technical Standards and Essential Skills and submit a signed form at the time of matriculation.

Application Review Process

1. Applications must be e-submitted in OTCAS no later than **May 1, 2027 for international applicants (F-1) and July 7, 2027 for domestic applicants** to be considered for admission.
2. Applications are reviewed when all materials, including transcripts and letters of recommendation, have been received and verified by OTCAS.
3. OTCAS uses a verification process that can take several weeks.
4. OTCAS will verify your documents before releasing them to the University of Pittsburgh.
5. Applicants should confirm their status as verified with OTCAS.
6. The Department of Occupational Therapy begins reviewing complete and verified applications and offering admission in November for the program starting the following August.
    - While cumulative and prerequisite GPAs are important, the applicant's response to essay questions and letters of recommendation are equally important.
    - Interviews are not part of the application process.

For questions about the receipt, processing, and verification of applications, please contact OTCAS Customer Service at 617-612-2860, otcasinfo@otcas.org.

International Applicant Information

The following requirements are necessary for applicants from outside of the U.S.

For questions about the international student requirements, please reach out to the SHRS Admissions Office.

Academic Credential Evaluations

Applicants who have completed the equivalent of a baccalaureate degree or higher at an institution outside of the United States are required to provide an academic credential evaluation from Educational Credential Evaluators, Inc. or World Education Services (WES), Inc. with their application.

- A course-by-course evaluation with GPA conversion is required.
- Evaluations are not required for degrees earned in the United States. If you have attended an English Canadian institution, please contact the SHRS Admissions Office.
- Individual SHRS programs may have their own specific Academic Credential Evaluation requirements.

Verification of English Language Proficiency

The University of Pittsburgh accepts the official results of the Duolingo English Test, the International English Language Testing System (IELTS) or the Test of English as a Foreign Language (TOEFL) as a measure of English language proficiency.

Verification is required unless the following apply:

- The applicant is a citizen of a country whose official language is English.

- The applicant has completed a degree program at a regionally accredited institution in the U.S.
- The applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English.

Request official English Language Proficiency test scores be sent to the University of Pittsburgh from one of the following options. Minimum scores accepted and instructions for sending official test scores follow:

- Duolingo English Test: 140. Scores should be made available electronically to "University of Pittsburgh - School of Health and Rehabilitation Sciences"
- International English Language Testing System (IELTS): 7.5. Scores should be made available electronically to "University of Pittsburgh Health and Rehabilitation Sciences"
- Test of English as a Foreign Language (TOEFL): 100. New TOEFL scale as of January 2026: 5.0 with sub-scores of 4.0 or higher. Scores should be submitted electronically through ETS to institution code "2927".

PLEASE NOTE: Applicants who already have a baccalaureate degree in occupational therapy and are interested in obtaining a master's degree should apply to the Master of Science (MS) program in Occupational Therapy. .

Curriculum and Course Descriptions

Plan of Study*

Year 1 - Fall Term - 15 Credits

- OT 2200 - FOUNDATIONS OF OCCUPATION
- OT 2201 - BODY FUNCTIONS AND STRUCTURES: ANATOMY **
- OT 2202 - THERAPEUTIC APPROACHES 1 **
- OT 2203 - CLINICAL SEMINAR 1
- OT 2207 - PRINCIPLES OF ASSESSMENT **
- OT 2208 - CRITICAL APPRAISAL OF EVIDENCE
- OT 2234 - HUMAN PERFORMANCE ANALYSIS **

Year 1 - Spring Term - 15 Credits

- OT 2205 - NEUROBEHAVORIAL SCIENCE **
- OT 2209 - CLINICAL SEMINAR 2
- OT 2210 - PSYCHOSOCIAL/COGNITIVE THEORY AND PRACTICE **
- OT 2213 - OCCUPATIONAL THERAPY AND THE HEALTH SYSTEM
- OT 2214 - THERAPEUTIC APPROACHES 2 **
- OT 2215 - FIELDWORK EDUCATION A (FW I)**
- OT 2235 - CLINICAL CONDITIONS 1
- OT 2236 - ACTIVITY/CONTEXT THEORY AND PRACTICE **

Year 1 - Summer Term - 11 Credits

- OT 2216 - CLINICAL SEMINAR 3
- OT 2217 - NEUROREHABILITATION THEORY AND PRACTICE **
- OT 2218 - BIOMECHANICAL THEORY AND PRACTICE **
- OT 2219 - FIELDWORK EDUCATION B **
- OT 2237 - CLINICAL CONDITIONS 2
- OT 2238 - ADAPTATION/TECHNOLOGY THEORY AND PRACTICE **

Year 2 - Fall Term - 13 Credits

- OT 2220 - CLINICAL SEMINAR 4
- OT 2221 - DEVELOPMENTAL THEORY AND PRACTICE **
- OT 2222 - PRODUCTIVE AGING THEORY AND PRACTICE **
- OT 2224 - MANAGEMENT OF OCCUPATIONAL THERAPY PRACTICE
- OT 2226 - FIELDWORK EDUCATION C (FW I)**
- OT 2239 - PROJECT DEVELOPMENT 1
- OT 2244 - CLINICAL CONDITIONS 3

Year 2 - Spring Term - 13 Credits

- OT 2228 - FIELDWORK EDUCATION D (FW II)**
- OT 2229 - FIELDWORK EDUCATION E (FW II)**

Year 2 - Summer Term - 7 Credits

OT 2229 - FIELDWORK EDUCATION E (FW II)**

Year 3 - Fall Term - 12 Credits

- OT 3206 - ADVANCED THEORY AND PRACTICE **
- OT 3207 - PROJECT DEVELOPMENT 2
- OT 3210 - ADVANCED CONCEPTS IN PROFESSIONAL AND CLINICAL REASONING
- OT 3211 - ADVANCED CONCEPTS IN HEALTH POLICY AND ADVOCACY
- OT 3212 - LEADERSHIP DEVELOPMENT

Year 3 - Spring Term - 13 Credits

- OT 3208 - EXPERIENTIAL PRECEPTORSHIP **
- OT 3213 - PROFESSIONAL DEVELOPMENT SEMINAR

*Curriculum is subject to change.
**Course includes laboratory, fieldwork, or experiential component.

- Admission to the OTD program is only available on a full-time basis. Term 1 begins at the end of August (fall term).
- A GPA of at least 3.00 is required in the OTD program.

Fieldwork Education and Doctoral Capstone

Fieldwork education and the **doctoral capstone** are essential components of professional doctoral preparation and are integrated in the curriculum design. They are an extension of the OTD program within the clinical and community settings. Fieldwork education includes Level I and Level II experiences, which provide the OTD student with the opportunity to learn professional responsibilities by having them modeled by qualified and experienced personnel and to practice these responsibilities in a supervised setting. The doctoral capstone provides an in-depth capstone experience and includes the completion of capstone projects. The focus of the doctoral capstone is on the development of skills for increased autonomy as a contributor in advancing occupational therapy practice. Fieldwork education and the doctoral capstone are only conducted in sites that have a written agreement with SHRS. This agreement formally identifies the responsibilities of the University and the site.

PLEASE NOTE: The OTD program requires students to complete fieldwork education experiences and a doctoral capstone experience at facilities external to the University of Pittsburgh. All OTD students are responsible for securing required resources and completing required documents to participate in fieldwork and the doctoral capstone experience including but not limited to transportation, health examinations and associated testing (i.e., drug screen, vaccinations), health insurance, background clearances, CPR/AED training, education modules, parking, housing, food, and clothing.

Academic Standards

In addition to following University-wide academic rules and regulations as detailed in the General Academic Regulations section of this Catalog, the OTD program is regulated by the SHRS Academic Standards, as well as the policies and procedures in the SHRS Graduate Student Handbook and the Doctor of Occupational Therapy Student Handbook.

Graduate Certificate

Advanced Practice Certificate in Implementation of Evidence in Clinical Practice

Certificate Requirements

The Advanced Practice Certificate in Implementation of Evidence in Clinical Practice is offered 100% online on a part-time basis and requires completion of 12 credits. Students with an entry-level doctoral degree in occupational therapy, a post-professional doctoral degree in occupational therapy, a master's degree in occupational therapy or a baccalaureate degree in occupational therapy and an advanced level master's degree in occupational therapy or another field are eligible to apply. View admission requirements here. Students who complete the Advanced Practice Certificate may choose to apply and transition into the Doctor of Clinical Science (CScD) in Occupational Therapy degree program and the 12 certificate credits will be applied toward the degree.

Curriculum and Course Descriptions

The Advanced Practice Certificate in Implementation of Evidence in Clinical Practice requires completion the following four 3-credit courses:

- OT 3010 - EVIDENCE INTERPRETATION FOR IMPLEMENTATION
- OT 3020 - FOUNDATIONS IN IMPLEMENTATION
- OT 3030 - THE BUSINESS OF IMPLEMENTATION
- OT 3040 - ADVOCACY FOR IMPLEMENTATION

Academic Standards

In addition to following University-wide academic rules and regulations as detailed in the General Academic Regulations section of this Catalog, the CScD in Occupational Therapy program is regulated by the School of Health and Rehabilitation Sciences Academic Standards, as well as the policies and procedures in the SHRS Graduate Student Handbook and the CScD in Occupational Therapy Student Manual.

Master's

Master of Science (MS) in Occupational Therapy

Program Requirements

The Master of Science (MS) in Occupational Therapy program begins in the fall term (August). The MS in Occupational Therapy program offers Clinical and Research plans of study, which provide exposure to a wide variety of occupational therapy practice and research. The Clinical and Research plans include 30 credits/2 terms (Fall and Spring). Additionally, the MS in Occupational Therapy program also offers a Research with Scholarly Project plan of study, which provides an opportunity to complete a scholarly project under the guidance of a faculty mentor. The Research with Scholarly Project is 30 credits/3 terms (Fall, Spring, and Summer).

Comprehensive Examination
Each student must successfully complete a Comprehensive Examination at the end of the program. This examination is used to determine mastery of the core content in the curriculum.

Contact Information

Department of Occupational Therapy
School of Health and Rehabilitation Sciences
University of Pittsburgh
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Pittsburgh, PA 15219
412-383-6620
otpitt@shrs.pitt.edu

Admission Requirements

Admission Requirements and Application Process

Pitt SHRS is committed to fostering a diverse and inclusive academic environment to create a more equitable health care system by welcoming applicants of all abilities/disabilities, religions, marital statuses, familial statuses, sexes, ages, sexual orientations, veteran statuses, national origins, all ethnic and racial backgrounds, genetic information, and gender identities and expressions.

Qualified applicants for the Master of Science (MS) Program in Occupational Therapy must meet the following admission requirements:

- Bachelor's degree in occupational therapy. For international students, a bachelor's degree or diploma must be from a school/university approved by the World Federation of Occupational Therapists (WFOT) in the year that the applicant graduated and/or national governmental institutions that approve/accredit occupational therapy programs to grant a degree in occupational therapy (e.g., Ministry of Health).
- For International applicants, a bachelor's degree must be completed by June 15 of the year the applicant would enter the program.
- Minimum cumulative grade point average of 3.00 (based on a 4.00 scale).
- Verification of English Language Proficiency is required unless the following apply:
    - the applicant is a citizen of a country whose official language is English
    - the applicant has completed a degree program at a regionally accredited institution in the U.S., or
    - the applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English.
- Interview (personal or virtual) with the MS Program Director

Application Requirements

- Complete the GradCAS application
- Submit the application fee of $50 (U.S.).
- Evidence of graduate level writing skills in a self-evaluation essay that discusses goals, strengths, skills, and experiences that will contribute to success in the program and in the profession. The essay should also include a brief statement discussing interest in the field of study and reasons for applying to the University of Pittsburgh.
- Documented evidence of knowledge of rehabilitation through previous paid work experiences, internships or field experiences, or volunteer work experiences.
- Two letters of recommendation, preferably from individuals who have taught the applicant in an academic setting and/or supervised clinical activities. Letters of recommendation should address academic, professional and personal attributes, and potential for successful graduate education.
- Transcripts from all U.S. institutions attended.
- A course-by-course evaluation with GPA conversation for all higher-level institutions attended outside the US. The evaluation may be from World Education Services (WES), Inc. or Educational Credential Evaluators, Inc. (ECE).
- **Admitted students will be required to provide official transcripts and/or credential evaluations from all higher institutions attended to the SHRS Admissions Office prior to enrolling in classes.**

If applicable:

- Request official English Language Proficiency test scores be sent to the University of Pittsburgh from one of the following options. Minimum scores accepted and instructions for sending official test scores follow:
    - Duolingo English Test: 120. Scores should be sent to "University of Pittsburgh School of Health and Rehabilitation Sciences"
    - International English Language Testing System (IELTS): 6.5. Scores should be sent to "University of Pittsburgh School of Health and Rehabilitation Sciences"
    - Test of English as a Foreign Language (TOEFL): 80. New TOEFL scale as of January 2026: 4.0 with all sub-scores 4.0 or higher. Scores should be sent to institution code "2927".
    - Unofficial scores may be provided via GradCAS (in addition to the official scores required).

Admitted students who may need supplemental English language support should talk with their advisors. For additional information please click here.

Your application will be reviewed once it is complete.

Application Deadlines

May 1st. Applications are accepted for enrollment beginning in the Fall term only (August).

For questions about GradCAS, the application process and needed materials please email admissions@shrs.pitt.edu.

For information about our program, please contact the Department of Occupational Therapy at OTpitt@shrs.pitt.edu.

Curriculum and Course Descriptions

Plan of Study: Clinical (30 credits / 2 terms)*

Term 1 - Fall Term - 15 Credits

- OT 2207 - PRINCIPLES OF ASSESSMENT **
- OT 2221 - DEVELOPMENTAL THEORY AND PRACTICE **OR** OT 2222 - PRODUCTIVE AGING THEORY AND PRACTICE**
- OT 2224 - MANAGEMENT OF OCCUPATIONAL THERAPY PRACTICE
- OT 2241 - CLINICAL PRECEPTORSHIP 1 **
- OT 3010 - EVIDENCE INTERPRETATION FOR IMPLEMENTATION
- OT 3206 - ADVANCED THEORY AND PRACTICE **

Term 2 - Spring Term - 15 Credits

- OT 2210 - PSYCHOSOCIAL/COGNITIVE THEORY AND PRACTICE **
- OT 2213 - OCCUPATIONAL THERAPY AND THE HEALTH SYSTEM
- OT 2242 - CLINICAL PRECEPTORSHIP 2 **
- OT 2248 - PROFESSIONAL REASONING IN OCCUPATIONAL THERAPY
- OT 2249 - SPECIAL TOPICS IN OCCUPATIONAL THERAPY: CLINICAL
- OT 3200 - EVIDENCE-BASED PROTOCOLS AND PRACTICE GUIDELINES

Plan of Study: Research (30 credits / 2 terms)*

Term 1 - Fall Term - 15 Credits

- HRS 2927 - STATISTICAL METHODS FOR HEALTH SCIENCE RESEARCH 1
- OT 2221 - DEVELOPMENTAL THEORY AND PRACTICE **OR** OT 2222 - PRODUCTIVE AGING THEORY AND PRACTICE**
- OT 2245 - SPECIAL TOPICS IN OCCUPATIONAL THERAPY: RESEARCH
- OT 2246 - RESEARCH PRECEPTORSHIP 1

- OT 3010 - EVIDENCE INTERPRETATION FOR IMPLEMENTATION
- OT 3206 - ADVANCED THEORY AND PRACTICE **

Term 2 - Spring Term - 15 Credits

- OT 2210 - PSYCHOSOCIAL/COGNITIVE THEORY AND PRACTICE **
- OT 2213 - OCCUPATIONAL THERAPY AND THE HEALTH SYSTEM
- OT 2247 - RESEARCH PRECEPTORSHIP 2
- OT 3100 - EVIDENCE ANALYSIS AND SYNTHESIS
- OT 3200 - EVIDENCE-BASED PROTOCOLS AND PRACTICE GUIDELINES

Plan of Study: Research with Scholarly Project - (30 credits / 3 terms)*

Term 1 - Fall Term - 12 Credits

- HRS 2927 - STATISTICAL METHODS FOR HEALTH SCIENCE RESEARCH 1
- OT 2221 - DEVELOPMENTAL THEORY AND PRACTICE **OR** OT 2222 - PRODUCTIVE AGING THEORY AND PRACTICE **OR** OT 3206 - ADVANCED THEORY AND PRACTICE **
- OT 2245 - SPECIAL TOPICS IN OCCUPATIONAL THERAPY: RESEARCH
- OT 2246 - RESEARCH PRECEPTORSHIP 1
- OT 3010 - EVIDENCE INTERPRETATION FOR IMPLEMENTATION

Term 2 - Spring Term - 15 credits

- OT 2210 - PSYCHOSOCIAL/COGNITIVE THEORY AND PRACTICE **
- OT 2213 - OCCUPATIONAL THERAPY AND THE HEALTH SYSTEM
- OT 2251 - SCHOLARLY PROJECT
- OT 3100 - EVIDENCE ANALYSIS AND SYNTHESIS
- OT 3200 - EVIDENCE-BASED PROTOCOLS AND PRACTICE GUIDELINES

Term 3 - Summer Term - 3 Credits
OT 2251 - SCHOLARLY PROJECT

*Curriculum is subject to change.
**Course includes laboratory or preceptorship component.

Preceptorship

The MS in Occupational Therapy program offers clinical and research preceptorships.

Clinical preceptorship provides structured exposure to the U.S. health care system. Students are exposed to occupational therapy practice in various health care settings (e.g., acute and inpatient rehabilitation hospitals, and outpatient clinics) under the supervision of a licensed occupational therapist.

Research preceptorships provide exposure to clinical research in the field of occupational therapy. Students are exposed to occupational therapy research in a variety of areas (e.g., pediatrics, neurology, geriatrics, health systems).

Students find the preceptorships to be rewarding experiences that advance their clinical or research skills and career development.

PLEASE NOTE: The MS in OT program requires students to complete preceptorship experience at facilities external to the University of Pittsburgh. All MS in OT students are responsible for securing required resources and completing required documents to participate in preceptorships including but not limited to transportation, health examinations and associated testing (i.e., drug screen, vaccinations), health insurance, background clearances, CPR/AED training, education modules, parking, housing, food, and clothing.

Academic Standards

In addition to following University-wide academic rules and regulations as detailed in the General Academic Regulations section of this Catalog, the MS in Occupational Therapy program is regulated by the School of Health and Rehabilitation Sciences Academic Standards, as well as the policies and procedures in the SHRS Graduate Student Handbook and the Master of Science in Occupational Therapy Student Handbook.

Department of Physical Therapy

The Department of Physical Therapy offers three academic programs of study:

- Doctor of Physical Therapy (DPT) Program
- Joint DPT/PhD program leading to a DPT degree and a PhD in Bioengineering
- M.S. in Neuromuscular Physical Therapy

Doctoral

Physical Therapy, DPT - Hybrid Program

Program Requirements

The Doctor of Physical Therapy (DPT) program is the entry-level professional degree designed to prepare students for a career as a licensed physical therapist in the United States. The program is a 2.3 year (7-semester) course of study that includes both didactic education and clinical internships. The program is built to develop self-directed and accountable practitioners who can deliver cost-effective, evidence-based care across a wide range of settings and patient populations. Graduates are equipped to enhance human movement and function using evidence-based practice principles and are prepared with a strong foundation for continued growth in specialized areas, as well as for contributing to the advancement of the physical therapy profession.

The curriculum is structured around four key areas: basic science, clinical science, leadership and professional development, and critical inquiry. Through an integrated plan of study, students connect foundational sciences with clinical application while engaging in comprehensive coursework across major areas of practice, including musculoskeletal, neuromuscular, integumentary, cardiopulmonary, geriatric, and pediatric physical therapy. To ensure graduates are fully prepared for entry into professional practice, the program combines rigorous didactic instruction with extensive clinical education. Students complete 42 weeks of full-time clinical internships, beginning with early clinical exposure in the second semester and culminating in two 15-week terminal clinical experiences. This emphasis on early and continuous clinical integration supports the development of confident, competent practitioners ready to enter the workforce. Upon successful completion of the curriculum, graduates are eligible to sit for the National Physical Therapy Examination (NPTE), a requirement for licensure and clinical practice. Students are responsible for understanding and meeting licensure requirements for the state or country in which they intend to practice. Because these requirements may vary and are subject to change, it is strongly recommended that students regularly review the applicable regulations to ensure compliance.

NOTE: In order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act and if you have a criminal record you **may** not be able to become licensed to practice as a physical therapist after graduation. Should you have concerns regarding your eligibility, we recommend you contact your state licensing board for further clarification. Additonally, many clinical sites will require a Child Abuse clearance (Act 33), Criminal Background check (Act 34), and a drug screen prior to participation in a clinical education experience. **If you do not** have a clean background check for either Act 33/34 clearance, or a clean drug screen you may not be able to participate in Clinical Education and therefore will not be able to meet the DPT requirements for graduation.

Contact Information

Will Pitt, PT, DPT, PhD
Director of Hybrid DPT Education
Associate Professor
Director of Musculoskeletal Physical Therapy Curriculum

Department of Physical Therapy
Bridgeside Point 1
100 Technology Drive, Suite 210
Pittsburgh, PA 15219-3130
412-383-3263
Fax: 412-648-5970
E-mail: ptinfo@shrs.pitt.edu
Website: Doctor of Physical Therapy (DPT) | Pitt SHRS

Admissions Requirements

Admission requirements and procedures listed below are for the DPT Residential and Hybrid program formats.

Prerequisites

A bachelor's degree from an accredited institution with a minimum GPA of 3.0 (based on a 4.0 scale)

Completion of the following courses, while not required, it is preferable that courses be completed within the past 5 years with a minimum of a C grade or higher. At the time of the application no more than 4 courses can be outstanding or in progress. Any offer of admission will be contingent upon the successful completion of any remaining prerequisites by July 1 prior to the start of the DPT Program. Academic performance on outstanding coursework should not deviate from the performance reflected in the application materials.

- Chemistry I and II sequence with labs, 8 credit hours.
- Physics I and II sequence with labs, 8 credit hours.
- Biology I and II sequence with labs, 8 credit hours.
- Anatomy (human, vertebrate, comparative or anatomical kinesiology), 3 credit hours.
- Physiology (human physiology preferred), 3 credit hours.
  *A two course sequence of anatomy/physiology may meet the anatomy and physiology requirements as long as there is a total of 6 credit hours.
  **Science courses must be for science majors or pre-med majors. Introductory or remedial courses are not accepted as prerequisites.
- Two courses in Psychology that should include a general psychology course and a specialized psychology course such as developmental psychology, abnormal psychology, psychology of disability, sports psychology - 6 credit hours.
- Statistics, 3 credit hours.
- English Writing (English composition or an upper-division writing course), 3 credit hours.

NOTE: While not required, faculty have found taking an undergraduate course in Exercise Physiology benefits students during their first term in the DPT program. **GRE not required.**

Transcripts

Applicants are required to provide official transcripts from every U.S. college and university attended.Admitted students will need to submit official transcripts to the SHRS Admissions Office prior to enrolling in classes.

Letters of Recomendation

Submission of three (3) letters of recomendation attesting the applicant's academic and professional abilities.

1. One (1) letter **MUST** be from academic reference - a professor/instructor from a course(s) for which the applicant was enrolled. The academic course must either be a pre-requisite for the DPT program OR a course associated with student's major area of study. The letter should include insights regarding the applicant's potential for successful navigation through a graduate-level professional degree program and provide specific examples of observed characteristics that support such insights.

2. One (1) letter must be from a physical therapist that the applicant has shadowed.

3. One (1) letter of recommendation may be completed by any of the following: physical therapist, professor/instructor, academic advisor, minister, employer/supervisor, life coach/mentor, research faculty, internship supervisor/faculty, or athletic coach. While it is preferred that the letters of recommendation be completed by individuals from a variety of settings, it is permissible to submit Two (2) letters from a similar source (two different physical therapists, or two different employers/supervisors, two different professors, etc.).

Experience

Applicants must have demonstrated evidence of adequate exposure to the field of physical therapy and an appreciation of the breadth, depth, and scope of practice. This can be accomplished through either volunteer or paid work experience in a physical therapy setting; 50 hours of exposure required. It is preferable for applicants to show evidence of the willingness to work with a variety of patients in different physical therapy settings; we prefer to see the 50 hours completed in at least two (2) different clinical settings.

Technical Standards

The Department faculty have outlined the Technical Standards deemed essential for successful completion of the DPT curriculum. Students admitted to the DPT program must review the Technical Standards and submit a signed form indicating that they meet the Technical Standards at the time of matriculation into the program.

Application Process

Admission to the Doctor of Physical Therapy (DPT) program is offered on a full-time basis only. The program begins annually in the Fall Term. The application cycle opens in mid-June and closes on October 1 each year. All applicants must apply through the Physical Therapist Centralized Application Service (PTCAS). Applicants can access the application through the Department website.

Within the PTCAS application, applicants must select the University of Pittsburgh Doctor of Physical Therapy program in the application portal. Applicants will also be required to indicate their preferred program format (Residential, Hybrid, or Either) within the system.

A complete application includes the following components:

1. Completed PTCAS application
2. Application fee
3. PTCAS personal statement
4. University of Pittsburgh essay question (included within the PTCAS application)

Applicants who are interested in the dual degree Doctor of Physical Therapy/PhD in Bioengineering program must apply directly to that program in the PTCAS application portal.

NOTE: There is a specific designation for the Pitt DPT/PhD dual degree program and at this time, the dual degree DPT/PhD program is only available to students participating in the DPT Residential option.

If applicable:

1. Enter all international (non-United States/foreign) institutions you have attended on your PTCAS application. Order a WES ICAP Course-by-Course evaluation from World Education Services (WES) through the PTCAS application.

2. Verification of English Language Proficiency is required unless the following apply:
    - the applicant is a citizen of a country whose official language is English
    - the applicant has completed a degree program at a regionally accredited institution in the U.S., or
    - the applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English.
3. If required, provide Test of English as a Foreign Language (TOEFL) scores in your PTCAS application, and request an official TOEFL scores report be sent to TOEFL code "5312" by the application deadline.

Community Engagement & IPE Requirement

Prior to graduation, students in the DPT Program are required to complete 2 Community Engagement activities and 3 Interprofessional Education (IPE) experiences, totaling 5 unique activities across the 7-term program. Additional details regarding this requirement can be found in the Student Handbook.

DPT Curriculum

Plan of Study*

Fall - Term 1:

- PT 2030 - HUMAN ANATOMY
- PT 2229 - KINESIOLOGY AND INTRODUCTION TO THERAPEUTIC EXERCISE
- PT 2201 - CARDIOPULMONARY PHYSICAL THERAPY 1
- PT 2241 - PATIENT MANAGEMENT 1

Spring - Term 2:

- PT 2060 - NEUROSCIENCE
- PT 2231 - MUSCULOSKELETAL PHYSICAL THERAPY 1
- PT 2202 - CARDIOPULMONARY PHYSICAL THERAPY 2
- PT 2040 - SURVEY OF HUMAN DISEASE 1
- PT 2281 - PROFESSIONAL DEVELOPMENT & LEADERSHIP 1
- PT 2141 - CLINICAL EDUCATION 1

Summer - Term 3:

- PT 2045 - SURVEY OF HUMAN DISEASE 2
- PT 2232 - MUSCULOSKELETAL PHYSICAL THERAPY 2
- PT 2261 - NEUROMUSCULAR PHYSICAL THERAPY 1
- PT 2242 - PATIENT MANAGEMENT 2
- PT 2282 - PROFESSIONAL DEVELOPMENT & LEADERSHIP 2
- PT 2291 - EVIDENCE BASED PRACTICE PHYSICAL THERAPY 1
- PT 2142 - CLINICAL EDUCATION 2

Fall - Term 4:

- PT 2059 - GERIATRIC PHYSICAL THERAPY
- PT 2243 - PATIENT MANAGEMENT 3
- PT 2262 - NEUROMUSCULAR PHYISCAL THERAPY 2
- PT 2255 - GROWTH & DEVELOPMENT
- PT 2028 - HEALTH AND WELLNESS
- PT 2283 - PROFESSIONAL DEVELOPMENT & LEADERSHIP 3
- PT 2292 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 2

Spring - Term 5:

- PT 2263 - NEUROMUSCULAR PHYSICAL THERAPY 3
- PT 2079 - MANAGEMENT OF THE MEDICALLY COMPLEX PATIENT
- PT 2233 - MUSCULOSKELETAL PHYSICAL THERAPY 3
- PT 2102 - PHARMACOLOGY
- PT 2293 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 3

Summer - Term 6:

- PT 2294 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 4

- PT 2143 - CLINICAL EDUCATION 3

  Fall - Term 7:
- PT 2295 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 5
- PT 2144 - CLINICAL EDUCATION 4

  Pitt DPT 7-Term Outline
  *Curriculum is subject to change. A GPA of at least 3.00 is required in the DPT program.

Statute of Limitations

All requirements of the DPT must be completed within three years. Extension of the statute of limitations may be granted if there are extenuating circumstances. Such requests, listing reasons for the extension and the amount of additional time needed, must be approved by the department chair.

Academic Standards

In addition to the University-wide academic rules and regulations as detailed in the *General Academic Regulations* section of this catalog, the DPT program is regulated by the *SHRS Academic Standards, as well as the policies and procedures in the SHRS Graduate Student Hanbook and the Doctor of Physical Therapy Student Handbook.*

Physical Therapy, DPT - Residential Program

Program Requirements

The Doctor of Physical Therapy (DPT) program is the entry-level professional degree designed to prepare students for a career as a licensed physical therapist in the United States. The program is a 2.3 year (7-semester) course of study that includes both didactic education and clinical internships. The program is built to develop self-directed and accountable practitioners who can deliver cost-effective, evidence-based care across a wide range of settings and patient populations. Graduates are equipped to enhance human movement and function using evidence-based practice principles and are prepared with a strong foundation for continued growth in specialized areas, as well as for contributing to the advancement of the physical therapy profession.

The curriculum is structured around four key areas: basic science, clinical science, leadership and professional development, and critical inquiry. Through an integrated plan of study, students connect foundational sciences with clinical application while engaging in comprehensive coursework across major areas of practice, including musculoskeletal, neuromuscular, integumentary, cardiopulmonary, geriatric, and pediatric physical therapy. To ensure graduates are fully prepared for entry into professional practice, the program combines rigorous didactic instruction with extensive clinical education. Students complete 42 weeks of full-time clinical internships, beginning with early clinical exposure in the second semester and culminating in two 15-week terminal clinical experiences. This emphasis on early and continuous clinical integration supports the development of confident, competent practitioners ready to enter the workforce. Upon successful completion of the curriculum, graduates are eligible to sit for the National Physical Therapy Examination (NPTE), a requirement for licensure and clinical practice. Students are responsible for understanding and meeting licensure requirements for the state or country in which they intend to practice. Because these requirements may vary and are subject to change, it is strongly recommended that students regularly review the applicable regulations to ensure compliance.

NOTE: In order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act and if you have a criminal record you **may** not be able to become licensed to practice as a physical therapist after graduation. Should you have concerns regarding your eligibility, we recommend you contact your state licensing board for further clarification. Additonally, many clinical sites will require a Child Abuse clearance (Act 33), Criminal Background check (Act 34), and a drug screen prior to participation in a clinical education experience. **If you do not** have a clean background check for either Act 33/34 clearance, or a clean drug screen you may not be able to participate in Clinical Education and therefore will not be able to meet the DPT requirements for graduation.

Contact Information

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E-mail: ptinfo@shrs.pitt.edu
Website: Doctor of Physical Therapy (DPT) | Pitt SHRS

Admissions Requirements

Admission requirements and procedures listed below are for the DPT Residential and Hybrid program formats.

Prerequisites

A bachelor's degree from an accredited institution with a minimum GPA of 3.0 (based on a 4.0 scale)

Completion of the following courses, while not required, it is preferable that courses be completed within the past 5 years with a minimum of a C grade or higher. At the time of the application no more than 4 courses can be outstanding or in progress. Any offer of admission will be contingent upon the successful completion of any remaining prerequisites by July 1 prior to the start of the DPT Program. Academic performance on outstanding coursework should not deviate from the performance reflected in the application materials.

- Chemistry I and II sequence with labs, 8 credit hours.
- Physics I and II sequence with labs, 8 credit hours.
- Biology I and II sequence with labs, 8 credit hours.
- Anatomy (human, vertebrate, comparative or anatomical kinesiology), 3 credit hours.
- Physiology (human physiology preferred), 3 credit hours.
  *A two course sequence of anatomy/physiology may meet the anatomy and physiology requirements as long as there is a total of 6 credit hours.
  **Science courses must be for science majors or pre-med majors. Introductory or remedial courses are not accepted as prerequisites.
- Two courses in Psychology that should include a general psychology course and a specialized psychology course such as developmental psychology, abnormal psychology, psychology of disability, sports psychology - 6 credit hours.
- Statistics, 3 credit hours.
- English Writing (English composition or an upper-division writing course), 3 credit hours.

NOTE: While not required, faculty have found taking an undergraduate course in Exercise Physiology benefits students during their first term in the DPT program. **GRE not required.**

Transcripts

Applicants are required to provide official transcripts from every U.S. college and university attended.Admitted students will need to submit official transcripts to the SHRS Admissions Office prior to enrolling in classes.

Letters of Recomendation

Submission of three (3) letters of recomendation attesting the applicant's academic and professional abilities.

1. One (1) letter **MUST** be from academic reference - a professor/instructor from a course(s) for which the applicant was enrolled. The academic course must either be a pre-requisite for the DPT program OR a course associated with student's major area of study. The letter should include insights regarding the applicant's potential for successful navigation through a graduate-

level professional degree program and provide specific examples of observed characteristics that support such insights.

2. One (1) letter must be from a physical therapist that the applicant has shadowed.

3. One (1) letter of recommendation may be completed by any of the following: physical therapist, professor/instructor, academic advisor, minister, employer/supervisor, life coach/mentor, research faculty, internship supervisor/faculty, or athletic coach. While it is preferred that the letters of recommendation be completed by individuals from a variety of settings, it is permissible to submit Two (2) letters from a similar source (two different physical therapists, or two different employers/supervisors, two different professors, etc.).

Experience

Applicants must have demonstrated evidence of adequate exposure to the field of physical therapy and an appreciation of the breadth, depth, and scope of practice. This can be accomplished through either volunteer or paid work experience in a physical therapy setting; 50 hours of exposure required. It is preferable for applicants to show evidence of the willingness to work with a variety of patients in different physical therapy settings; we prefer to see the 50 hours completed in at least two (2) different clinical settings.

Technical Standards

The Department faculty have outlined the Technical Standards deemed essential for successful completion of the DPT curriculum. Students admitted to the DPT program must review the Technical Standards and submit a signed form indicating that they meet the Technical Standards at the time of matriculation into the program.

Application Process

Admission to the Doctor of Physical Therapy (DPT) program is offered on a full-time basis only. The program begins annually in the Fall Term. The application cycle opens in mid-June and closes on October 1 each year. All applicants must apply through the Physical Therapist Centralized Application Service (PTCAS). Applicants can access the application through the Department website.

Within the PTCAS application, applicants must select the University of Pittsburgh Doctor of Physical Therapy program in the application portal. Applicants will also be required to indicate their preferred program format (Residential, Hybrid, or Either) within the system.

A complete application includes the following components:

1. Completed PTCAS application
2. Application fee
3. PTCAS personal statement
4. University of Pittsburgh essay question (included within the PTCAS application)

Applicants who are interested in the dual degree Doctor of Physical Therapy/PhD in Bioengineering program must apply directly to that program in the PTCAS application portal.

NOTE: There is a specific designation for the Pitt DPT/PhD dual degree program and at this time, the dual degree DPT/PhD program is only available to students participating in the DPT Residential option.

If applicable:

1. Enter all international (non-United States/foreign) institutions you have attended on your PTCAS application. Order a WES ICAP Course-by-Course evaluation from World Education Services (WES) through the PTCAS application.

2. Verification of English Language Proficiency is required unless the following apply:
    - the applicant is a citizen of a country whose official language is English
    - the applicant has completed a degree program at a regionally accredited institution in the U.S., or
    - the applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English.

3. If required, provide Test of English as a Foreign Language (TOEFL) scores in your PTCAS application, and request an official TOEFL scores report be sent to TOEFL code "5312" by the application deadline.

Community Engagement & IPE Requirement

Prior to graduation, students in the DPT Program are required to complete 2 Community Engagement activities and 3 Interprofessional Education (IPE) experiences, totaling 5 unique activities across the 7-term program. Additional details regarding this requirement can be found in the Student Handbook.

DPT Curriculum

Plan of Study*

Fall - Term 1:

- PT 2030 - HUMAN ANATOMY
- PT 2229 - KINESIOLOGY AND INTRODUCTION TO THERAPEUTIC EXERCISE
- PT 2201 - CARDIOPULMONARY PHYSICAL THERAPY 1
- PT 2241 - PATIENT MANAGEMENT 1

Spring - Term 2:

- PT 2060 - NEUROSCIENCE
- PT 2231 - MUSCULOSKELETAL PHYSICAL THERAPY 1
- PT 2202 - CARDIOPULMONARY PHYSICAL THERAPY 2
- PT 2040 - SURVEY OF HUMAN DISEASE 1
- PT 2281 - PROFESSIONAL DEVELOPMENT & LEADERSHIP 1
- PT 2141 - CLINICAL EDUCATION 1

Summer - Term 3:

- PT 2045 - SURVEY OF HUMAN DISEASE 2
- PT 2232 - MUSCULOSKELETAL PHYSICAL THERAPY 2
- PT 2261 - NEUROMUSCULAR PHYSICAL THERAPY 1
- PT 2242 - PATIENT MANAGEMENT 2
- PT 2282 - PROFESSIONAL DEVELOPMENT & LEADERSHIP 2
- PT 2291 - EVIDENCE BASED PRACTICE PHYSICAL THERAPY 1
- PT 2142 - CLINICAL EDUCATION 2

Fall - Term 4:

- PT 2059 - GERIATRIC PHYSICAL THERAPY
- PT 2243 - PATIENT MANAGEMENT 3
- PT 2262 - NEUROMUSCULAR PHYISCAL THERAPY 2
- PT 2255 - GROWTH & DEVELOPMENT
- PT 2028 - HEALTH AND WELLNESS
- PT 2283 - PROFESSIONAL DEVELOPMENT & LEADERSHIP 3
- PT 2292 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 2

Spring - Term 5:

- PT 2263 - NEUROMUSCULAR PHYSICAL THERAPY 3
- PT 2079 - MANAGEMENT OF THE MEDICALLY COMPLEX PATIENT

- PT 2233 - MUSCULOSKELETAL PHYSICAL THERAPY 3
- PT 2102 - PHARMACOLOGY
- PT 2293 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 3

Summer - Term 6:

- PT 2294 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 4
- PT 2143 - CLINICAL EDUCATION 3

Fall - Term 7:

- PT 2295 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 5
- PT 2144 - CLINICAL EDUCATION 4

Pitt DPT 7-Term Outline
*Curriculum is subject to change. A GPA of at least 3.00 is required in the DPT program.

Statute of Limitations

All requirements of the DPT must be completed within three years. Extension of the statute of limitations may be granted if there are extenuating circumstances. Such requests, listing reasons for the extension and the amount of additional time needed, must be approved by the department chair.

Academic Standards

In addition to the University-wide academic rules and regulations as detailed in the *General Academic Regulations* section of this catalog, the DPT program is regulated by the *SHRS Academic Standards, as well as the policies and procedures in the SHRS Graduate Student Hanbook and the Doctor of Physical Therapy Student Handbook.*

Joint Degree

Physical Therapy/Bioengineering, DPT/PhD

Program Overview

The Doctor of Physical Therapy (DPT) - PhD in Bioengineering program combines the entry-level DPT leading to licensure as a physical therapist, with a PhD in Bioengineering that will prepare the student to become an independent researcher.

Contact Information

Patrick Sparto, PhD, PT
Co-Director, DPT-PhD Program
Department of Physical Therapy
Bridgeside Point 1, Suite 210
Pittsburgh, PA 15219-3130
Phone: 412-383-6732
E-mail: psparto@pitt.edu

Application Process

The application opens in mid-June and will need to be submitted through the PT Centralized Application Service (PTCAS) by December 1 for admission to the program the following August. The application is reviewed by faculty in both departments.

Admission Requirements

Students will need to meet the admission requirements of both programs.

Prerequisite Coursework (minimum credit hours listed is based on a semester system equivalent)

Students will need to meet the prerequisite requirements of both programs.

Academic Standards

In addition to the University-wide academic rules and regulations as detailed in the *General Academic Regulations* section of this catalog, the DPT program is regulated by the *SHRS Academic Standards, as well as the policies and procedures in the SHRS Graduate Student Hanbook and the Doctor of Physical Therapy Student Handbook.*

Curriculum Overview

Students will follow the typical plan of study for DPT residential students for the initial seven terms (i.e., 2.3 years) of the program. Then students will follow the plan of study for PhD students in Bioengineering. Clinical internships and research experiences will be performed throughout the program. At a minimum, the program will take 6 years to complete. After completing the didactic and clinical requirements of the DPT program, the student will be allowed to take the licensing exam. Students are required to write and orally defend a dissertation to complete their PhD degree.

DPT Curriculum

Our rigorous curriculum is built around 4 key areas: basic science, clinical science, leadership & professional development,and critical inquiry. The DPT plan of study integrates the basic sciences and clinical practice, emphasizes evidence basedpractice and includes a comprehensive array of course off erings in musculoskeletal, neuromuscular, integumentary,cardiopulmonary, geriatric, and pediatric physical therapy, as well as course content related to leadership & professional development. The first 5 terms are comprised of both didactic instruction as well as two full-time clinical education experiences that are a duration of 6 weeks. The curriculum concludes with two 15-week terminal clinical educational experiences (Summer-Fall). The curriculum is designed to emphasize early and intensive integration of our students into the clinical environment throughout their educational program.

PhD Requirements

The Department of Bioengineering follows university guidelines on students working toward joint degrees like the DPT-PhD in Bioengineering. Typically, we have waived the life science requirement (6 credits) as comparable coursework is covered in the physical therapy curriculum. The remaining course requirements closely follow requirements for the PhD in Bioengineering.

- Bioengineering Track Courses - 9 credits*
- Life Sciences (successfully completing the lecture and lab components of Human Anatomy coursework fulfills this requirement) - 6 credits
- Graduate Electives (successfully completing Musculoskeletal I & II fulfills this requirement) - 6 credits*
- Graduate Engineering Mathematics - 3 credits
- Statistics for Bioengineers - 3 credits
- Societal, Political, and Ethical Issues in Bioengineering (or equivalent bioethics course) - 3 credits
- Seminar - 6 credits total, 4 credits must be BIOENG 2023 - BIOENGINEERING SEMINAR SERIES. One of the four seminars can be substituted with a Preparation for STEM academic career course, when combined with appropriate certification. The other 2 credits may be from BIOENG 2023 or any other seminars deemed appropriate by the Graduate Program Director. Please see list of Approved Seminar Courses for suggestions.
- BIOENG 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP (grant writing) - 1 credit
- Students should refer to SSOE policy regarding the minimum number of dissertation credits (BIOENG 3997 and BIOENG 3999) required for graduation.

*The standard policy for PhD students is 9 credits of track courses and 6 credits of electives. There is an exception for the Bioimaging and Signals track, for which the requirement is 12 credits of track courses and 3 credits of electives. DPT-PhD students in this track must take all four track courses, in which case only 3 elective credits are waived.

Total number of credit hours: 72 credits minimum, which includes 6 credits to fulfill life science requirement but does not include credits from foundational courses if applicable.

DPT/PhD students are also required to complete two teaching practicums before presenting their PhD proposal (comprehensive examination). No more than one practicum can be undertaken in a semester. There is no course registration for this educational experience, and fulfillment is monitored by the department.

Please see the Department of Bioengineering's PhD Requirements page for more details.

Department of Physician Assistant Studies

Award-winning and internationally recognized faculty and staff prepare you to become a highly qualified physician assistant ready to serve as a future leader in the delivery of health care, patient education and professional service. Pitt's Department of Physician Assistant Studies is deeply committed to graduating a workforce of diverse and inclusive certified PAs to serve our communities here in our city, across the nation and around the world.

By instilling a lifelong desire for continued learning and scholarly productivity, our alumni contribute to advances and advocacy in the profession long after graduation. Together, our faculty, staff, students and alumni help shape PA professional research that informs the science, delivery and administration of health care reaching patients everywhere.

Contact Information

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Physician Assistant Studies
School of Health and Rehabilitation Sciences
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Pittsburgh, PA 15260
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Webpage: https://www.shrs.pitt.edu/pas

Doctoral

Doctor of Medical Science

The Doctor of Medical Science (DMSc) Program meets the following requirements for professional doctoral degrees as stipulated in the *Regulations Governing Graduate Study at the University of Pittsburgh* through:

- Matriculation through a coherent program designed to assure the mastery of a substantial and complex body of knowledge that will serve as preparation for leadership and excellence in the practice of the profession
- A research component to achieve the goal of research competence including a report demonstrating mastery of the subject matter and a high level of communication skills,
- Minimum admission requirements that will align with all graduate programs at the University of Pittsburgh,
- Completion of a defined set of prerequisites so that all students will enter with required basic knowledge, and
- Maintenance of a 3.00 GPA to remain in good standing and be graduated.

Program Duration

The program is designed to be completed in three terms, but flexible plans of study are available.

Program Characteristics, Type of Instruction, & Level of Instruction

The Doctor of Medical Science Program graduate-level coursework will consist of online courses and will culminate in a Scholarly Practice Capstone Project. The core curricular concepts will be presented primarily asynchronously, similar to an in-class lecture, but using interactive online educational activities to promote knowledge acquisition. This knowledge will be reinforced with synchronous, instructor-led, online activities to facilitate application and synthesis of the knowledge acquired through the asynchronous online activities. Additionally, each matriculant will work closely with an assigned faculty advisor who will help guide their studies and mentor them in their Scholarly Practice Capstone Project. This individualized and learner-centered approach will allow matriculants to engage in scholarly activity that will have a direct and positive impact in their daily work.

Assessments

Assessments will be competency- based and scaffolded to support completion of the Scholarly Practice Capstone. Such assessments will include:

- Reflective writing assignments,
- Scholarly writing assignments,
- Written evidence of literature review,
- Interested party assessments,
- Oral presentations, and
- Written defense of the Scholarly Practice Capstone.

Plan of Studies

Courses will be offered in consecutive semesters in the Spring, Fall, and Summer Terms. It is recommended that students proceed sequentially, as a cohort, through the program. This program is intended to be a post-professional degree program for full-time practicing PAs. The advantage of this design is to allow learners to remain in their clinical practice full-time, while earning their degree part-time, so that they can apply their classroom learning to their clinical practice in a meaningful and impactful way. The curriculum is designed to help students be informed by, and to inform, their current practice as they learn. This design allows for a balanced curriculum that helps working professionals stay on track. Individualized plans of study will be considered for students who experience extenuating circumstances that require individualized or personalized plans to meet their academic goals. Per the *Regulations Governing Graduate Study at the University of Pittsburgh*, this professional doctoral degree program, the statute of limitations for students for completion of all DMSc degree requirements will be set at 8 years and will not be extended beyond the expectation for a Doctor of Philosophy student. Courses and their sequencing are presented in Table 1.

Table 1. DMSc Program Plan of Studies

COURSE NUMBER	TITLE OF COURSE	CREDIT HOURS
PAS 3001	Core Concepts of Scholarly Practice	4
PAS 3002	Examining Supporting Evidence	4
PAS 3003	Developing the PA Leader: Internship Experience 1	6
PAS 3004	Personalized Elective (Academic, Administrative, or Digital Health)	4
PAS 3005	Scholarly Practice Capstone Phase 1	4
PAS 3006	Developing the PA Leader: Internship Experience 2	6
PAS 3007	Scholarly Practice Capstone Phase 2	8
PAS 3008	Developing the PA Leader: Internship Experience 3	6

DMSc credits	42
Graduate transfer credits	30
Total credits for DMSc degree	**72**

Requirements

- PAS 3001 - CORE CONCEPTS OF SCHOLARLY PRACTICE
- PAS 3002 - EXAMINING SUPPORTING EVIDENCE
- PAS 3003 - DEVELOPING THE HEALTHCARE LEADER: INTERNSHIP EXPERIENCE 1
- PAS 3004 - PERSONALIZED ELECTIVE
- PAS 3005 - SCHOLARLY PRACTICE CAPSTONE PHASE 1
- PAS 3006 - DEVELOPING THE HEALTHCARE LEADER: INTERNSHIP EXPERIENCE 2
- PAS 3007 - SCHOLARLY PRACTICE CAPSTONE PHASE 2
- PAS 3008 - DEVELOPING THE HEALTHCARE LEADER: INTERNSHIP EXPERIENCE 3

Master's

Physician Assistant Studies Residential Program, MS

Program Requirements

Application

Application Opens

April 30, 2026

Application Closes

August 1, 2026

Application System

Apply through the Centralized Application System for Physician Assistants (CASPA)

The application fee is set by CASPA.

Academic Standards and Prerequisites

- Qualified applicants must hold a bachelor's degree from an accredited institution.

- Applicants should have an overall GPA of 3.0 (based on 4.0) in all college level coursework and a minimum GPA of 3.0 (based on 4.0) in the prerequisite science courses designated below with an asterisk (*).
    - See the Centralized Application Service for Physician Assistants (CASPA) site for definitions of these GPAs.
    - Exceptions may be made (but are not guaranteed) for applicants who present compelling evidence of success in graduate coursework. This means that if an applicant has an overall GPA of <3.0, their application may still be reviewed/considered if they have completed an entire master's or doctorate level program.
    - Completion of graduate level courses without a diploma from said programs will not be considered, nor will graduate-level certificate programs.
- All admissions requirements must be completed by the application deadline to start classes in the following spring term (January).

Prerequisite Coursework

A 'C' grade or higher in all required prerequisite coursework listed below:

- Biology with lab designed for science majors, two semesters*
- Chemistry with lab designed for science majors, two semesters*
- Microbiology with lab, one semester*
- Anatomy with lab and Physiology*
    - This requirement may be met by taking either one semester of Anatomy with lab and one semester of Physiology or two semesters of Anatomy with lab and Physiology combined.
- Statistics, one semester
- Medical Terminology, one semester for at least 1 college credit
- English Composition/writing, two semesters
- Psychology, one semester
- There is no expiration date for prerequisite courses. Please review this detailed prerequisite rubric to ensure your courses satisfy our prerequisite requirements. If applicants still have questions after the self-assessment, they may request an unofficial prerequisite evaluation. To request an unofficial evaluation, please complete and email the following items:

- Completed PAS Prerequisite Rubrichttps://live-shrs23wp-pitt.pantheonsite.io/wp-content/uploads/PA-MS-Prereq-Sheet-Fillable-February
- Refer to page 3 to provide detailed course description for the course in question
- Send the completed rubric to: PittPA@shrs.pitt.edu
- Official transcripts from all colleges and universities attended will be required.

NOTE: The GRE General Test is not required for admission to the program.

Transcripts

Official transcripts from all U.S. universities, colleges or other higher education institutions attended are required at the time of application.

Experience

A minimum of 500 hours of direct, hands-on patient care experience is required by the admissions requirement deadline. Direct patient care involves active participation in the care, evaluation, or treatment of patients. Examples of eligible experiences include registered nurse (RN), licensed practical nurse (LPN), paramedic, emergency medical technician (EMT), emergency room technician, military medical roles (e.g., medic or corpsman), athletic trainer, dietician, medical assistant, nursing assistant, patient care technician, surgical technician, pharmacy technician, dental assistant, physical or occupational therapy assistant, and phlebotomist.

Contact the PA enrollment specialist if you are unsure if your experience will satisfy this requirement.

Personal Statement

Applicants must provide one personal statement in CASPA focusing on why the applicant wants to become a physician assistant/associate (PA).

The program encourages applicants to reflect on how their experiences, values and career goals align with the mission and goals of the University of Pittsburgh PA Studies program.

Letters of Recommendation

Three (3) professional letters of recommendation are required, including:

- **One (1) Patient Care Experience (PCE) Supervisor** - A supervisor the applicant has worked with or currently works with in a patient care role.
    - Examples: manager, assistant manager, department director or military supervisor.
- **One (1) Character Reference** - Someone who can speak to the applicant's personal qualities, reliability and professionalism.
    - Examples: peer, coworker, mentor, volunteer group leader or religious and/or spiritual leader.
- **One (1) Prior Instructor** - An individual who has taught or formally trained the applicant.
    - Examples: college or university instructor/professor, certification or skills instructor, a supervisor who provided on-the-job skills training or a military instructor.

Recommendations should not be provided by friends or family members. This information will be collected with the CASPA application.

Technical Standards and Skills

Students admitted to the program must review the Technical Standards for admission and graduation and submit a signed form at the time of matriculation verifying satisfactory performance of the essential skills.

Application Review Process

Application Review

The entire application (including prerequisite courses, letters of recommendations and personal statement) must be received and verified by CASPA no later than 11:59 p.m. (EST) on the deadline. Applications not verified, or any required application materials not submitted by the deadline, will not be considered and will disqualify the application.

The admissions committee will then rate and review all completed applications. The most qualified applicants will be invited for a virtual interview in September.

Interview Process

Applicants invited for a virtual interview will participate in several individual mini-interviews and one group interview exercise with other applicants. Each interview will be conducted by one faculty or community member and one current Pitt PA student. Following completion of all interviews, a class of up to 67 students will be selected. The number of seats available through the regular admissions cycle may vary based on the number of students accepted through the Guaranteed Admission Program. Applicants will be notified of a decision (offer of admission, waitlist, or denial) in October after all interviews are completed

What We Look For In an Applicant

The University of Pittsburgh Physician Assistant Program uses a holistic admissions process. We evaluate academic preparation, clinical experience, service, leadership, and the context in which achievements occurred. Our review is applied consistently to all applicants. The most competitive applicants strongly align with our program mission and goals, as well as our core values of reliability, accountability, humility, integrity, curiosity, and generosity.

We evaluate the following objective measures:

- Overall GPA
- Prerequisite science GPA
- Completion of prerequisite coursework
- Duration and level of patient care experience
- Graduate degree attainment, if applicable

We give preference to those who demonstrate a strong match to our mission, and to applicants with the following non-academic attributes and/or experiences:

- Significant service in community organizations and/or free medical clinics
- Experience serving systematically disadvantaged communities or populations
- Firsthand upbringing in resource-limited environments, including a health professional shortage area or an economically/educationally disadvantaged setting
- Perseverance through adverse life events
- Serving a key role in providing care and support to another person, including non-traditional roles (e.g., sibling, parent, or extended family caregiving)
- First generation college student
- Active military service or Veteran status
- Multilingual or English not primary language

Understanding of the healthcare system and the PA role within it, along with demonstrated leadership, teamwork, ethical reasoning, personal insight and maturity, motivation, conflict resolution, and active listening, will also weigh strongly in the admissions decision.

Admissions Notifications

- Applicants from all backgrounds and life experiences are encouraged to apply.
- Advanced placement is not offered in this program. Required PA curriculum courses and components cannot be waived or transferred, and all students must complete the full curriculum at the University of Pittsburgh.
- Background checks and screening are required for admission and enrollment. This includes a criminal background check, health assessment, and drug screen. Admission and continued enrollment are contingent upon satisfactory results and timely completion of required documentation. Additional screenings may be required for supervised clinical practice experiences.

International Student Information

The following requirements are necessary for applicants from outside of the U.S.

For questions about the international student requirements, please reach out to the SHRS Admissions Office.

Verification of English Language Proficiency

The University of Pittsburgh accepts the official results of the Duolingo English Test, the International English Language Testing System (IELTS) or the Test of English as a Foreign Language (TOEFL) as a measure of English language proficiency.

Verification is required unless the following apply:

- The applicant is a citizen of a country whose official language is English.
- The applicant has completed a degree program at a regionally accredited institution in the U.S.
- The applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English.

Minimum Scores by Program

How to Submit Scores

- Duolingo English Test: Scores should be made available electronically to "University of Pittsburgh - School of Health and Rehabilitation Sciences"
- International English Language Testing System (IELTS): Scores should be made available electronically to "University of Pittsburgh Health and Rehabilitation Sciences"
- Test of English as a Foreign Language (TOEFL): Scores should be submitted electronically through ETS to institution code "2927".

Academic Credential Evaluations

Students who have completed the equivalent of a baccalaureate degree or higher at an institution outside of the United States are required to provide an academic credential evaluation from Educational Credential Evaluators, Inc. or World Education Services (WES), Inc. with their application.

- A course-by-course evaluation with GPA conversion is required.
- Evaluations are not required for degrees earned in the United States. If you have attended an English Canadian institution, please contact the SHRS Admissions Office.
- Individual SHRS programs may have their own specific Academic Credential Evaluation requirements.

Accreditation

The Accreditation Review Commission on Education for the Physician Assistant (ARC-PA) has granted Accreditation-Continued status to the Physician Assistant Studies program sponsored by the University of Pittsburgh. Accreditation-Continued is an accreditation status granted when a currently accredited program is in compliance with the ARC-PA Standards. Accreditation remains in effect until the program closes or withdraws from the accreditation process or until accreditation is withdrawn for failure to comply with the Standards. The date for the next validation review of the program by the ARC-PA will be September 9-10, 2027. The review date is contingent upon continued compliance with the Accreditation Standards and ARC-PA policy.

The program's accreditation history can be viewed here: https://www.arc-pa.org/wp-content/uploads/2026/03/Accreditation-History-Univ-of-Pittsburgh-113.pdf

Questions?

If you have questions, reach out to pittpa@shrs.pitt.edu at any time.

Plan of Study

The Physician Assistant curriculum is comprised of a rigorous 24 month Master of Science Program. The goals and objectives of our program are guided by the criteria set forth in the Standards and Guidelines for an Accredited Educational Program for the Physician Assistant as established by ARC-PA. The first three semesters (12 months) are made up of primarily classroom instruction. Course content is presented through traditional lecture, integrated instruction, case based and hands on skills labs. The clinical year is comprised of rotations in inpatient medicine, primary care, emergency medicine, general surgery, OB/GYN, pediatrics, and behavioral health. The curriculum is presented by practicing physician assistants, medical and surgical physicians, and other health care providers who have expertise in their respective specialties.

Each course in the program is offered only once during the academic year, therefore, any departure from completing a course in its planned sequence (e.g. failure to receive a passing grade of 'C' or better; leave of absence from program) will result in the delay of completion of program requirements and graduation from the program.

Didactic Year 1:

Semester 1:

Course Credits

- PAS 2101 - INTRODUCTION TO THE PHYSICIAN ASSISTANT PROFESSION
- PAS 2102 - HUMAN ANATOMY
- PAS 2105 - HEALTH POLICY
- PAS 2106 - INTERPRETING AND EVALUATING THE MEDICAL LITERATURE
- PAS 2108 - INTRODUCTION TO CLINICAL MEDICINE WITH LAB
- PAS 2109 - MEDICAL PHYSIOLOGY AND PATHOPHYSIOLOGY

Semester Total Credits: 15

Semester 2:

Course Credits

- PAS 2104 - GENETIC AND MOLECULAR MECHANISMS OF HEALTH AND DISEASE
- PAS 2107 - PATIENT EDUCATION AND COUNSELING
- PAS 2201 - HISTORY TAKING AND PHYSICAL EXAMINATION 1
- PAS 2202 - CLINICAL MEDICINE 1
- PAS 2203 - DIAGNOSTIC & THERAPEUTIC PROCEDURES IN MEDICINE 1
- PAS 2204 - PHARMACOLOGY 1

Semester Total Credits: 15

Semester 3:

Course Credits

- PAS 2301 - HISTORY TAKING AND PHYSICAL EXAMINATION 2
- PAS 2302 - CLINICAL MEDICINE 2
- PAS 2303 - DIAGNOSTIC AND THERAPEUTIC PROCEDURES IN MEDICINE 2
- PAS 2304 - PHARMACOLOGY 2
- PAS 2305 - HEALTH ISSUES ACROSS THE LIFESPAN
- PAS 2306 - FUNDAMENTALS OF SURGERY

Semester Total Credits: 15

Year 1 Total Credits: 45

Clinical Year 2:

Semester 4:

Course Credits

- PAS 2701 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 1
- PAS 2702 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 2
- PAS 2703 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 3

Semester Total Credits: 12

Semester 5:

Course Credits

- PAS 2704 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 4
- PAS 2705 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 5
- PAS 2706 - SUPERVISED CLNICAL PRACTICE EXPERIENCE 6

Semester Total Credits: 12

Semester 6:

Course Credits

- PAS 2707 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 7
- PAS 2713 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 8
- PAS 2714 - TRANSITION TO PROFESSIONAL PRACTICE

Semester Total Credits: 13

Year 2 Total Credits: 37

Program Credits Total: 82

Certification

Graduates of the professional program are eligible to sit for the Physician Assistant National Certification Exam (PANCE) administered by the National Commission on Certification of the Physician Assistant (NCCPA). All States and the District of Columbia have legislation governing the qualifications or practice of physician assistants. All jurisdictions require physician assistants to pass the Physician Assistant National Certifying Examination. Only those successfully completing the examination may use the credential "Physician Assistant-Certified." To remain certified, PAs must complete 100 hours of continuing medical education every 2 years. Every 10 years, they must pass a recertification examination.

Physician Assistant Studies, MS - Hybrid Program

Program Requirements

PAS-Hybrid applicants need to have completed the following prerequisites:

- Biology with lab designed for science majors, two semesters*

- Microbiology with lab, one semester*
- Chemistry with lab designed for science majors, two semesters*
- Anatomy with lab and Physiology* (This requirement may be met by taking either one semester of Anatomy with lab and one semester of Physiology or two semesters of Anatomy with lab & Physiology combined.)
- Statistics, one semester
- Medical Terminology, one semester for at least 1 college credit
- English Composition/writing, two semesters
- Psychology, one semester

*Both prerequisite science courses and cumulative GPA of 3.0 or higher is required

There is no expiration date for prerequisite courses.

Other Admission Criteria

Successful completion of an undergraduate degree (BS or BA) at an accredited institution

- **Online Application:** Upload all application materials through Centralized Application Service for Physician Assistants (CASPA).
- **Patient Care Experience:** A minimum of 500 hours of direct, "hands-on," patient care experience is required by the application deadline. Examples of eligible experiences may include work as an RN, EMT, paramedic, medical assistant, physical therapy or occupational therapy assistant.
- **Personal Statements:** Students must provide two personal statements in CASPA. Your first essay should be a personal statement focusing on why you want to become a PA. The second essay should reflect the mission of the PA Studies Hybrid program and commitment to Diversity, Equity and Inclusion.
- **Letters of Recommendation:** Submit three letters of recommendation including one (1) character reference, one (1) from a supervisor of the required patient care experience and one (1) insrtuctor.

All coursework, requirements, and degree must be completed by August 31st of the application year in order to be considered for a seat in the class that will begin the following January.

Virtual Interview Process

Interviews for seats in our program are performed and scored by the program director, faculty, and practicing PAs. They include the following parts and scoring:

- **Individual interview:** Higher scores are awarded based on the strength of demonstration of the following qualities: adaptability/stress management, conflict resolution, and technical and professional knowledge/ability to learn
- **Group interview:** Higher scores are awarded based on the strength of demonstration of the following qualities: active listening, conflict management, probing the group to maximize performance, leadership skills, clarification of group responses, encouraging and harmonizing with fellow group members, articulation, drawing others into the conversation, offering ideas, and summarizing

Program and Admission Notes

- The program is two full years (six consecutive semesters) and classes start each January (spring semester)
- Students are highly encouraged to apply early
- The program does not offer advanced standing
- All courses within the curriculum are required
- No credit is granted for pre-admission experiential learning
- Only full-time students are admitted
- All applicants need to identify as U.S. citizens, have documentation of permanent residency or have dual citizenship status

Accreditation

The ARC-PA has granted **Accreditation-Provisional** status to the **University of Pittsburgh Physician Assistant Studies Hybrid Program** sponsored by **University of Pittsburgh**.

Accreditation-Provisional is an accreditation status granted when the plans and resource allocation, if fully implemented as planned, of a proposed program that has not yet enrolled students appear to demonstrate the program's ability to meet the ARC-PA Standards or when a program holding Accreditation- Provisional status appears to demonstrate continued progress in complying with the Standards as it prepares for the graduation of the first class (cohort) of students.

Accreditation-Provisional does not ensure any subsequent accreditation status. It is limited to no more than five years from matriculation of the first class.

The program's accreditation history can be viewed on the ARC-PA website at http://www.arc-pa.org/accreditation-history-university-of-pittsburgh- hybrid/.

Plan of Study

The University of Pittsburgh PA Studies Hybrid Program is a 24-month program that awards a Master of Science degree upon successful completion. The goals and objectives of the program are guided by the criteria set forth in the Standards and Guidelines for an Accredited Educational Program for the Physician Assistant as established by ARC-PA.

The first three semesters (12 months) are made up of didactic instruction. This didactic component will consist of asynchronous and synchronous online didactic courses. The didactic content will be presented using interactive online educational activities to promote knowledge acquisition. Synchronous, instructor-led, online activities will facilitate application and synthesis of the knowledge acquired through the asynchronous online activities. The onsite intense immersion laboratory experiences will be utilized to master the development of clinical skills necessary for examination, evaluation, diagnosis, prognosis, intervention, and assessment of outcome. The curriculum is presented by practicing physician assistants, medical and surgical physicians, and other health care providers who have expertise in their respective specialties. All didactic component courses are sequential and must be successfully completed in order to progress to the next term of the curriculum.

The last three semesters (12 months) are made up of a clinical component and will consist of Supervised Clinical Practice Experiences (SCPE) in Internal Medicine, Family Medicine, Emergency Medicine, Pediatrics, Surgery, Behavioral Health, Obstetrical and Gynecological Medicine, and an Elective. There is also a Transition to Professional Practice course at the end of the clinical curriculum.

Since each course in the program is offered only once during each academic year, any departure from completing a course in its planned sequence (e.g. failure to receive a passing grade of 'C' or better, leave of absence from the program) will result in a delay by retaking the course the following year, as well as delays in completing the program and graduating with the Master of Science degree.

Didactic Year 1:

Semester 1:

Course Credits

- PAS 2401 - INTRODUCTION TO THE PA PROFESSION
- PAS 2402 - HUMAN ANATOMY AND LAB
- PAS 2403 - HEALTH POLICY
- PAS 2404 - INTERPRETING AND EVALUATING THE MEDICAL LITERATURE
- PAS 2405 - INTRODUCTION TO CLINICAL MEDICINE
- PAS 2406 - MEDICAL PHYSIOLOGY AND PATHOPHYSIOLOGY

Semester Total Credits: 15

Semester 2:

Course Credits

- PAS 2407 - GENETIC AND MOLECULAR MECHANISMS OF HEALTH AND DISEASE
- PAS 2408 - PATIENT EDUCATION AND COUNSELING
- PAS 2409 - HISTORY TAKING AND PHYSICAL EXAMINATION 1 AND LAB
- PAS 2410 - CLINICAL MEDICINE 1 AND LAB
- PAS 2411 - DIAGNOSTIC & THERAPEUTIC PROCEDURES IN MEDICINE 1 AND LAB
- PAS 2412 - PHARMACOLOGY 1

Semester Total Credits: 15

Semester 3:

Course Credits

- PAS 2413 - HISTORY TAKING AND PHYSICAL EXAMINATION 2 AND LAB
- PAS 2414 - CLINICAL MEDICINE 2 AND LAB
- PAS 2415 - DIAGNOSTIC AND THERAPEUTIC PROCEDURES IN MEDICINE 2 AND LAB
- PAS 2416 - PHARMACOLOGY 2
- PAS 2417 - HEALTH ISSUES ACROSS THE LIFESPAN
- PAS 2418 - FUNDAMENTALS OF SURGERY

Semester Total Credits: 15

Year 1 Total Credits: 45

Clinical Year 2:

Semester 4:

Course Credits

- PAS 2421 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 1
- PAS 2422 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 2
- PAS 2423 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 3

Semester Total Credits: 12

Semester 5:

Course Credits

- PAS 2424 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 4
- PAS 2425 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 5
- PAS 2426 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 6

Semester Total Credits: 12

Semester 6:

Course Credits

- PAS 2427 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 7
- PAS 2428 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 8
- PAS 2429 - TRANSITION TO PROFESSIONAL PRACTICE

Semester Total Credits: 13

Year 2 Total Credits: 37

Program Credits Total: 82

Certification

Graduates of the professional program are eligible to sit for the Physician Assistant National Certification Exam (PANCE) administered by the National Commission on Certification of the Physician Assistant (NCCPA). All States and the District of Columbia have legislation governing the qualifications or practice of physician assistants. All jurisdictions require physician assistants to pass the Physician Assistant National Certifying Examination. Only those successfully completing the examination may use the credential "Physician Assistant-Certified." To remain certified, PAs must complete 100 hours of continuing medical education every 2 years. Every 10 years, they must pass a recertification examination.

Department of Rehabilitation Science and Technology

Master of Rehabilitation Technology

Program Overview

The hybrid Master's in Rehabilitation Technology prepares you to evaluate and apply assistive devices across clinical settings. The program combines online coursework with in-person workshops and internships, grounding technical knowledge in direct client work. Specialized coursework also reduces the work hours required to sit for the RESNA Assistive Technology Professional (ATP) credential.

Contact Information

RST Admin
University of Pittsburgh
6425 Penn Avenue, Suite 401
Pittsburgh, PA 15206
412-383-1150
E-mail: rstinfo@shrs.pitt.edu
http://www.shrs.pitt.edu/RST/

Application Requirements

All applicants must:

- Complete the GradCAS application;
- Submit the application fee of $50 (U.S.).
- Submit an essay -- a description of educational and long-term professional goals;
- Submit two letters of reference, preferably from individuals who have instructed you in academic settings. These letters should address the applicant's academic, professional, and personal attributes and potential for meaningful graduate study;
- Submit official transcripts from all colleges and universities you have attended;
- Additional requirements for international applicants

Note: Application can be submitted while course requirements are in progress.

Please note this program requires that you complete clinical internships at facilities that may be external to the University, and such facilities will or may require a criminal background check, an Act 33/34 clearance, and perhaps a drug screen to determine whether you are qualified to participate in the clinical internships.

Tuition and Fees

Tuition and Fee rates for the MRT program can be found at the following website:

- https://www.tuition.pitt.edu/

Master of Science in Prosthetics and Orthotics

Program Overview

Clinical orthotics and prosthetics includes the evaluation, design, fabrication and custom fitting of orthoses (orthopedic braces) and prostheses (artificial limbs). Artificial limbs, or prostheses, are used to replace missing limbs or portions of limbs, and to improve function of the upper or lower extremities. Orthopedic braces, or orthoses, are used to stabilize or unload joints, improve motion and reduce stresses on tissue, substitute for muscle weakness or paralysis, and assist in normal growth, development and function. Orthoses can be applied to the head, neck, trunk, or limbs. Orthotists and Prosthetists work in a variety of settings, including private practice, hospitals, rehabilitation facilities, nursing homes, and home health settings. Orthotists and Prosthetists are currently in high demand, and the demand is expected to increase in the future.

Orthotists and Prosthetists are part of the health care team, and as such, work with physicians, therapists, and other health care professionals to provide the orthotic and prosthetic services to users. Orthotists and prosthetists are responsible for:

1. Performing comprehensive assessment of the orthotic/prosthetic users needs,
2. Creating a comprehensive orthotic/prosthetic treatment plan to meet the needs and goals of the user,
3. Performing the necessary procedures to deliver the appropriate orthotic/prosthetic services, which may include fabrication of the orthosis/prosthesis,
4. Providing continuing patient care and periodic evaluation to assure/maintain/ document optimal fit and function of the orthosis/prosthesis,
5. Participating in personal and professional development through continuing education, training, research and organizational affiliations, and
6. Developing, implementing and/or monitoring policies and procedures regarding human, business, and organizational management.

The MSPO Program is five consecutive terms in length, including one summer term, and requires a total of 65 credits. It is designed to meet all standards for accreditation by the National Commission on Orthotic and Prosthetic Education (NCOPE) and for preparing students to complete residencies and take the American Board for Certification in Orthotics and Prosthetics examinations.

During the last term of the program, students complete a clinical internship, typically where they gain exposure to a real- world clinical settings. Most students will relocate out of the Pittsburgh area during this term. The MSPO program currently has agreements with clinical sites across the country and we can work with the student to establish new sites for internship for this final term if necessary.

Contact Information

RST Admin
University of Pittsburgh
6425 Penn Avenue, Suite 401
Pittsburgh, PA 15206
412-383-1150
E-mail: rstinfo@shrs.pitt.edu
http://www.shrs.pitt.edu/po/

Accreditation Status

The Master of Science Program in Prosthetics and Orthotics has been granted accreditation by the National Commission on Orthotic and Prosthetic Education (NCOPE). Our graduates are eligible for NCOPE residencies, and, upon successful completion of an NCOPE residency, they are eligible to take the certification examinations of the American Board for Certification in Orthotics, Prosthetics & Pedorthics (ABC).

Admission Requirements and Application Process

Admissions Application Deadline

Prerequisite courses

1. Baccalaureate Degree. No specific major is mandated; however, the degree should include a well-rounded general education with a distribution of courses in the sciences, mathematics, psychology, social sciences, and humanities.
2. Prerequisite coursework includes foundation courses in the following areas:

Physics with lab	4 credits
Biology with lab	4 credits
Chemistry with lab	4 credits
General Psychology	3 credits
Mathematics (algebra or higher)	3 credits
Human Anatomy	3 credits
Human Physiology	3 credits
Statistics	3 credits

3. Recommended minimum overall grade point is a 3.0 grade-point average in all college-level courses and a 3.0 average in prerequisite courses. Applicants with less than a 3.0 but with other outstanding qualifications will be considered.
4. Applicants applying to the Prosthetics and Orthotics (MS) program will apply online using the Orthotics & Prosthetics Centralized Application Service, known as OPCAS, https://portal.opcas.org/ submit one copy of their official transcript, letters of recommendation, and other required information directly to OPCAS.

To be assured inclusion in the review process, applications should be completed by the date posted on the MSPO website (http://www.shrs.pitt.edu/po.) Application information which must be submitted includes:

- Completed application form
- Official transcriptions of all college-level courses
- Letters of recommendation (three)
    - At least one from a college instructor
    - At least two from a health care professional (preferably a certified orthotist or prosthetist)

- Essay describing background leading to your choice of this profession and your long-term goals.
- Record of work, shadowing, or volunteer experience related to the profession of orthotics and prosthetics. 250 hour minimum of shadowing time.
- Additional requirements for international applicants

Please note that the University of Pittsburgh's program requires that you complete clinical internships at facilities external to the University, and such facilities will or may require a criminal background check, blood titers, an Act 33/34 clearance, and a drug screen to determine whether you are qualified to participate in the clinical internships. Prior to the start of the program, the student will utilize Exxat to submit the requirements and have them maintained on file during their time at the University. To become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act associated with alcohol and/or substance abuse.

Admissions process, application deadline and prerequisites requirements are available on the Prosthetics and Orthotics webpage.

The School of Health and Rehabilitation Sciences does not require a supplemental application. It is the responsibility of the applicant to complete all admission requirements prior to enrollment.

Tuition and Fees

Tuition and Fee rates for the MSPO program can be found at the following websites:

https://www.tuition.pitt.edu/

In addition to University Fees, some of the MSPO courses have lab fees associated with them. Current Fees are available on the Prosthetics and Orthotics webpage.

Master's

Prosthetics & Orthotics, MS

Program Requirements/Minimum Credits

Students enrolled in the MSPO Program are required to complete 65 credits to meet degree requirements. The curriculum meets all requirements for students to participate in NCOPE residencies and take the American Board of Certification in Prosthetics, Orthotics, and Pedorthics certification examinations. Specific courses include:

Fall term, year one

- PO 2101 - FUNCTIONAL ANATOMY AND KINESIOLOGY
- PO 2102 - PATHOLOGY IN ORTHOTICS AND PROSTHETICS
- PO 2103 - INTRODUCTION TO MATERIALS, EQUIPMENT, AND FABRICATION
- PO 2104 - REHABILITATION BIOMECHANICS FOR THE HEALTH CARE PROFESSIONS
- PO 2105 - PROFESSIONAL ISSUES IN PROSTHETICS AND ORTHOTICS
- PO 2106 - PATIENT MANAGEMENT IN ORTHOTICS AND PROSTHETICS
- RT 2105 - INTRODUCTION TO EVIDENCE-BASED PRACTICE & RESEARCH METHODOLOGIES

Spring term, year one

- PO 2201 - ORTHOTICS 1
- PO 2202 - PROSTHETICS 1
- PO 2203 - CAPSTONE FOR PROSTHETICS AND ORTHOTICS

- PO 2204 - INTRODUCTION TO EVIDENCE - BASED PRACTICE IN ORTHOTICS AND PROSTHETICS
- RT 2208 - ETHICAL ISSUES IN HEALTHCARE

Summer term, year one

- PO 2301 - ORTHOTICS 2
- PO 2302 - PROSTHETICS 2
- PO 2303 - SPINAL ORTHOTICS

Fall term, year two

- PO 2401 - ORTHOTICS 3
- PO 2402 - PROSTHETICS 3
- PO 2403 - ISSUES IN THE HEALTH SYSTEM
- RT 2101 - FUNDAMENTALS OF REHABILITATION & ASSISTIVE TECHNOLOGY APPLICATIONS
- RT 2103 - INDIVIDUAL & SOCIAL EXPERIENCE OF DISABILITY

Spring term, year two

- PO 2501 - MASTER OF PROSTHETICS AND ORTHOTICS CLINICAL INTERNSHIP
- PO 2502 - SCHOLARLY PAPER
- PO 2503 - PRACTICE MANAGEMENT IN PROSTHETICS AND ORTHOTICS

Program Total = 65 credits

*Each course is offered only once during the academic year, therefore, any departure from completing a course in its planned sequence (for example: failure for any reason, to satisfactorily complete a required course; an unresolved "G" or "Incomplete" grade) will result in a one-year delay in completing the course, the remaining program requirements, and the year of graduation.

Comprehensive Exam

A comprehensive examination will be given, covering all aspects of the Program. All students are required to pass this examination prior to graduation.

Thesis/Non-thesis Options

All MSPO students are required to complete at least a Capstone Project, under the direction of a faculty advisor and an additional faculty reader. However, as a substitute for the Capstone Project, the student may elect to complete a master's thesis, under the direction of a faculty advisor and thesis committee. Students electing to pursue the thesis option will complete 3 credits of Graduate Research Proposal (PO 2924) in place of the 1 credit Capstone (PO 2203) and 2 credits Scholarly Paper (PO 2502). They will also complete 3 credits of Graduate Research (PO 2925). This will change the total amount of completed credits from 65 to 68.

Rehabilitation Technology, MRT

The 35-credit Master of Rehabilitation Technology program can be completed in 1 year (3 semesters), or 2 years. Some students opt for a longer part-time timeframe.

Fall Courses

- RT 2101 - FUNDAMENTALS OF REHABILITATION & ASSISTIVE TECHNOLOGY APPLICATIONS
- RT 2102 - FUNDAMENTALS OF REHABILITATION & ASSISTIVE TECHNOLOGY DESIGN
- RT 2103 - INDIVIDUAL & SOCIAL EXPERIENCE OF DISABILITY
- RT 2104 - FUNCTIONAL & MEDICAL ASPECTS OF DISABILITY RELATED TO ASSISTIVE TECHNOLOGY
- RT 2105 - INTRODUCTION TO EVIDENCE-BASED PRACTICE & RESEARCH METHODOLOGIES

Spring Courses

- RT 2206 - REHABILITATION & ASSISTIVE TECHNOLOGY PRACTICES
- RT 2207 - CLIENT CENTERED REHABILITATION & ASSISTIVE TECHNOLOGY DESIGN
- RT 2208 - ETHICAL ISSUES IN HEALTHCARE
- RT 2209 - CLINICAL APPLICATIONS OF SEATING AND MOBILITY
- RT 2210 - ASSISTIVE TECHNOLOGY FUNDING, POLICY, & MANAGEMENT

Fall, Spring, Summer Courses*

*Most students choose to complete during the Summer term

- RT 2311 - CLINICAL INTERNSHIP
- RT 2312 - SCHOLARLY PAPER

Elective Options

Students completing the 1-year, 35-credit program are not required to take electives in order to graduate. However, students pursuing the 2 year option may be recommended to take elective courses. Below are some recommended options. If there is another course you wish to take, please seek approval from your advisor prior to registration.

- RT 2415 - SOFT TISSUE BIOMECHANICS
- RT 2416 - WHEELCHAIR BIOMECHANICS
- RT 2999 - INDEPENDENT STUDY
- RT 2922 - TEACHING INTERNSHIP
- PO 2104 - REHABILITATION BIOMECHANICS FOR THE HEALTH CARE PROFESSIONS
- LAW 5339 - LAW OF DISABILITY DISCRIMINATION
- HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM
- HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS
- HI 2452 - DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE

Department of Sports Medicine and Nutrition

In Pitt's Department of Sports Medicine and Nutrition (SMN), there's a vision for the future. It's a place where scientists, using contemporary, state-of-the-art practices have the potential to extend the careers of elite athletes and weekend warriors alike, where human performance optimization translates to injury prevention and military operational success, where exercise and diet help to prevent and manage disease and nutrition information impacts the well-being of the community and informs public policy.

It's a place where innovative and multidisciplinary research makes an immediate connection to real-world practices. Proof lies in the Department's growing number of regional, national and international partners as well as the quantity and quality of funding from prestigious organizations such as the National Institutes of Health, U.S. Department of Defense, NASA and others.

Through the use of technology and collaborative science, the Department of Sports Medicine and Nutrition is improving the quality of life and resiliency of people from all walks of life and abilities today, and championing health and wellness for life.

The department aims to meet these objectives by:

- developing cognitive skills, psychomotor mastery and affective values in students through the delivery of a proven formula of sound classroom education, combined with invaluable clinical education experiences, for the promotion of competent entry-level clinicians and enhancing the health and well-being of individuals and diverse populations
- becoming thoughtful leaders by advancing the state of the science through evidenced-based practice, rigorous curricula, interdisciplinary collaboration and innovative technology
- mitigating injury and disease and optimizing human performance by conducting innovative, multidisciplinary basic and applied research and contributing to the scientific community in order to enhance clinical decisions and education

Accelerated

Athletic Training, Accelerated BS-MS

The athletic training degree program earned initial accreditation in 1997 and continuing accreditation in 2004, 2012, and 2024 through the Commission on Accreditation of Athletic Training Education (CAATE). Prior to this, the curriculum had been National Athletic Trainers' Association approved since 1978. The athletic training curriculum is defined by the current Board of Certification, Inc. Role Delineation Study/Practice Analysis, which consists of five performance domains to include: (1) Risk Reduction, Wellness, and Health Literacy; (2) Assessment, Evaluation, and Diagnosis; (3) Critical Incident Management; (4) Therapeutic Intervention; (5) Healthcare Administration and Professional Responsibility. The curriculum is structured to provide both academic and clinical instruction. The academic curriculum includes such courses as anatomy, kinesiology, human and exercise physiology, injury evaluation, medical and pharmacological principles, administrative aspects, among others. The course work provides a foundation for hands-on clinical experiences provided in the clinical education setting. The students' clinical requirements include direct patient care with athletes and physically active patients and evaluation of skills by preceptors who supervise each student's clinical experience. Students rotate through four on-campus athletic training facilities and several off-site affiliated settings during the clinical education component acquiring valuable skills under the direct supervision of certified athletic training staff, team physicians and other allied health professionals. Upon successful completion of the program, students are eligible to sit for the BOC, Inc. certification examination. Successful completion of this exam affords the candidate a variety of employment opportunities including athletic training positions at the high school, college, or university level; sports medicine and rehabilitation clinics; professional athletic teams; performing arts; the military; industrial settings; and more. Additionally, many students pursue graduate education opportunities in a number of sports medicine-related professions.

For more information, please contact:

Amy E. Aggelou, PhD, LAT, ATC
Program Director, Athletic Training
School of Health and Rehabilitation Sciences
Department of Sports Medicine and Nutrition

3396 Fifth Avenue

6th Floor, Office 6178

Pittsburgh, PA 15213

412-383-9738
E-mail: aaggelou@pitt.edu

Admission Requirements

SHRS's General Education Requirements are included in our upper-level program prerequisites and curriculum requirements; therefore, changes will be reflected in prerequisites and curriculum requirements.

Prerequisite Courses

Basic Athletic Training, ATHLTR 1811	*Transfer credit not accepted*
Basic Athletic Training Lab, ATHLTR 1812	*Transfer credit not accepted*
Seminar in Composition*	1 course
Writing Intensive	1 course (*ENGCMP 0400 recommended*)
Oral Communication	1 course (COMMRC 0520 preferred; COMMRC 0500*, COMMRC 0510, COMMRC 0530 acceptable*)
College Algebra	1 course (MATH 0031 or higher math required. *Exemption accepted*)
Statistics	1 course (STAT 0200 or STAT 1000 required)
Foundations of Biology 1	BIOSC 0150
Foundations of Biology 1 Lab	BIOSC 0157, BIOSC 0050, BIOSC 0057 or BIOSC 0058
General Chemistry 1 and Lab	CHEM 0110
Introduction to Physics	PHYS 0110
Introduction to Psychology	PSY 0010
Developmental Psychology (PSY 0310) or other upper level Psychology	3 credits
Cross-Cultural Awareness*, Global Issues* or Specific Geographic Region*	1 course
Diversity*	1 course
Social Sciences*	1 course

* See the Dietrich School of Arts and Sciences General Education Course Catalog.

Additional Requirements

- Required credits for admission: 60 (Applications may be submitted while prerequisite coursework is in progress).
- Grades of C- or better (C for transfer) in all prerequisite coursework with the exception of ATHLTR 1811 and ATHLTR1812, where a grade of B or better must be earned.
- EMT certification is required either through a course for credit or another qualified course leading to NR-EMT credential.
- Minimum cumulative GPA of 3.0 GPA (based on 4.0)
- Submit admissions application including technical standards for admission document.
- Personal interview with athletic training faculty (as needed).

The Athletic Training Program at the University of Pittsburgh is a rigorous and intense program that places specific requirements and demands on the students enrolled in the program. An objective of this program is to prepare graduates to enter a variety of employment settings and to render care to a wide spectrum of individuals engaged in physical activity. The technical standards set forth by the Athletic Training Program establish the essential qualities considered necessary for students admitted to this program to achieve the knowledge, skills, and competencies of an entry-level athletic trainer, as well as meet the expectations of the program's accrediting agency (Commission on Accreditation of Athletic Training Education [CAATE]).

The following abilities and expectations must be met by all students admitted to the Athletic Training Program. Candidates for selection to the Athletic Training Program must demonstrate:

- The mental capacity to assimilate, analyze, synthesize, integrate concepts and problem solve to formulate assessment and therapeutic judgments and to be able to distinguish deviations from the norm.
- Sufficient postural and neuromuscular control, sensory function, and coordination to perform appropriate physical examinations using accepted techniques; and accurately, safely, and efficiently use equipment and materials during the assessment and treatment of patients.
- The ability to communicate effectively and sensitively with patients and colleagues, including individuals from different cultural and social backgrounds; this includes, but is not limited to, the ability to establish rapport with patients and communicate judgments and treatment information effectively. Students must be able to understand and speak the English language at a level consistent with competent professional practice.
- The ability to record the physical examination results and a treatment plan clearly and accurately.
- The capacity to maintain composure and continue to function well during periods of high stress.
- The perseverance, diligence, and commitment to complete the athletic training program as outlined and sequenced.
- Flexibility and the ability to adjust to changing situations and uncertainty in clinical situations.
- Affective skills and appropriate demeanor and rapport that relate to professional education and quality patient care.

Application Procedures

Application Deadline: March 1

Transfer Student Information

Transfer students must apply to the University of Pittsburgh by completing the Office of Admission and Financial Aid's Transfer Application and selecting Athletic Training as their intended field of study. International transfer students click here. Transfer students must also provide application materials directly to SHRS.

All admission criteria applies to transfer students in the same way as students enrolled at the Pittsburgh campus. Students with prior athletic training experience seeking to transfer to the University of Pittsburgh for admission to the Athletic Training Program must complete the same prerequisite requirements as all other candidates including the Basic Athletic Training (ATHLTR 1811) and Basic Athletic Training Lab (ATHLTR 1812) courses and all observation hours. If admitted to the program, all students must complete University of Pittsburgh core athletic training courses. In some instances, credit may be given for other coursework taken at another institution and will be evaluated on an individual case basis. International transfer students click here.

Curriculum

Coursework for the professional BS-MS in Athletic Training program is divided into two phases: Pre-Professional Phase and the Professional Phase. Students applying for the Accelerated BS-MS in Athletic Training program will complete prerequisite coursework during the first two years of their undergraduate degree. At the conclusion of their sophomore year, students will apply to the Accelerated BS-MS in Athletic Training program. Upon successful application and acceptance into the program, students will complete one year (two semesters) of pre-professional curriculum. During their last two years, students will complete the professional (graduate) curriculum.

Pre-professional Phase

During the pre-professional phase students complete prerequisite and general education courses along with specific Athletic Training-related prerequisites.

First Semester (Fall)

- REHSCI 1200 - HUMAN ANATOMY
- REHSCI 1201 - HUMAN ANATOMY LAB
- REHSCI 1205 - HUMAN PHYSIOLOGY
- REHSCI 1235 - MEDICAL TERMINOLOGY
- NUTR 1005 - INTRODUCTION SPORTS NUTRITION

- ATHLTR 1813 - INTRODUCTION TO CLINICAL ATHLETIC TRAINING 1
- ATHLTR 1815 - FOUNDATIONS IN EVALUATION AND TREATMENT
- ATHLTR 1816 - MEDICAL ETHICS
  16 Credits

Second Semester (Spring)

- REHSCI 1220 - KINESIOLOGY AND BIOMECHANICS
- REHSCI 1221 - KINESIOLOGY AND BIOMECHANICS LAB
- REHSCI 1265 - PHARMACOLOGY IN REHABILITATION
- ATHLTR 1800 - PRINCIPLES OF RESEARCH METHODOLOGY
- ATHLTR 1805 - EXERCISE PHYSIOLOGY
- ATHLTR 1806 - EXERCISE PHYSIOLOGY LAB
- ATHLTR 1814 - INTRODUCTION TO CLINICAL ATHLETIC TRAINING 2
- ATHLTR 1833 - STRENGTH AND CONDITIONING
  15 Credits

Professional Phase

The following courses are to be completed in four semesters and are graduate-level curriculum.

First Semester (Fall)

- ATHLTR 2801 - CLINICAL PRACTICUM 1
- ATHLTR 2805 - INJURY/EVAL 1 - LOWER EXTREMITY
- ATHLTR 2807 - THERAPEUTIC INTERVENTIONS 1
- ATHLTR 2809 - FUNCTIONAL HUMAN ANATOMY
- ATHLTR 2820 - PRIMARY CARE IN ATHLETIC TRAINING

Second Semester (Spring)

- ATHLTR 2802 - CLINICAL PRACTICUM 2
- ATHLTR 2806 - INJURY/EVAL 2 - UPPER EXTREMITY
- ATHLTR 2808 - THERAPEUTIC INTERVENTIONS 2
- ATHLTR 2813 - GENERAL MEDICAL AND PHARMACOLOGICAL CONDITIONS
  15 Credits

Third Semester (Fall)

- ATHLTR 2811 - GRADUATE RESEARCH 1
- ATHLTR 2814 - ADVANCED CLINICAL PROCEDURES
- ATHLTR 2816 - ADMINISTRATIVE ASPECTS OF ATHLETIC TRAINING
- ATHLTR 2823 - CLINICAL PRACTICUM 3- CLINICALLY IMMERSIVE SEMESTER
  15 credits

Fourth Semester (Spring)

- ATHLTR 2812 - GRADUATE RESEARCH 2
- ATHLTR 2815 - CURRENT CONCEPTS IN SPORTS MEDICINE

- ATHLTR 2817 - LEADERSHIP AND PROFESSIONAL DEVELOPMENT
- ATHLTR 2818 - BOARD OF CERTIFICATION (BOC) PREPARATION
- ATHLTR 2824 - CLINICAL PRACTICUM 4
  and an ATHLTR elective, 3 credits
  15 credits

Dietitian Nutritionist Program, Accelerated BS-MS

Students who choose to pursue Pitt's Dietitian Nutritionist Program degree are ahead of the game! All Registered Dietitian/Nutritionists (RDNs) entering the field will be required to have a masters level degree to enter the profession. The program is a competency-based educational program that integrates experiential learning with didactic coursework to enable students to demonstrate the higher level of competence that will be needed for future practice as a RDN.

Interested students will apply in the Spring Term of each year to begin the accelerated program as juniors.

For more information, please contact:

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3396 Fifth Avenue

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About

The Dietitian Nutritionist Program, housed within the Department of Sports Medicine and Nutrition, is an accelerated BS/MS graduate degree program accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) as a Coordinated Program (CP). The competency-based educational program that integrates experiential learning with didactic coursework affording graduates a strong foundation in medical nutrition therapy, public health nutrition and food service. Students may apply for a specialty rotation option that provides an immersive experience in a specialty practice area.

This program offers points of entry for:

- qualified undergraduates
- post-baccalaureate candidates
- graduates of Didactic Programs in Dietetics (DPD)

Undergraduate students will earn both Bachelor of Science and Master of Science degrees. Preparation for a career in dietetics as an RDN requires the following:

- completion of an ACEND accredited degree-granting program
- completion of an ACEND accredited supervised experiential learning meeting all required competencies*
- successful performance on the national Registration Examination for Dietitians**

No matter your professional goals in the Dietetics profession, this program offers an entry-level advanced degree option to provide a competitive edge for today's health care environment. Upon successful completion of the master's program graduates are eligible to take the national registration examination for Dietitians. Graduates passing the registration exam are eligible for licensure in Pennsylvania by the Board of Nursing. For licensing information please visit Instructions for Licensed Dietitian-Nutritionist (LDN) Applicants.

*This program provides supervised experiential learning required to become an RDN. The supervised experiential learning sites are randomly assigned and public transportation is not available to all sites. All students should anticipate the necessity of having access to their own transportation for Year 2 and Year 3 of the program. Please review the experiential learning information.

**The credentialing exam requirements are set by the Commission on Dietetic Registration (CDR).

For more information on becoming an RDN, visit www.eatright.org.

Program Requirements

Admission

There are three ways to enter the Dietitian Nutritionist Program. As an undergraduate, a post-baccalaureate, or as a graduate of a DPD. The application deadline for the DPD entry point is February 1. The application deadline for the undergraduate and post-baccelaureate entry points is March 1. Application review begins in January. Admission is for the fall term only. Applications can be submitted when course requirements are in progress.

Entry Point for Undergraduate Students to the Accelerated MS Program

Prerequisites must be completed for a letter grade, minimum grade of C- (C for transfer) unless otherwise noted; with the exception of AP/IB credits and/or exemptions awarded by the University of Pittsburgh. Courses listed below are offered at the Pittsburgh Campus, courses taken at the regional Pitt campuses or external institutions must be evaluated as equivalent to satisfy these requirements.

- General Chemistry 1 with lab, CHEM 0110
- General Chemistry 2 with lab, CHEM 0120
- Foundations of Biology 1, BIOSC 0150
- Foundations of Biology 2, BIOSC 0160
- Biology Lab, BIOSC 0157, BIOSC 0050, BIOSC 0057 or BIOSC 0058
- Organic Chemistry, CHEM 0350 or CHEM 0310
- Biochemistry, BIOSC 1000*
- Introduction to Microbiology, BIOSC 1850
- College Algebra, MATH 0031 or higher math required. Exemption accepted.
- Statistics, STAT 0200 or STAT 1000
- Seminar in Composition, ENGCMP 0200 or equivalent
- English Writing, any "W" or upper-level writing course
- Oral Communication, COMMRC 0520 preferred; COMMRC 0310, COMMRC 0500, COMMRC 0510, and COMMRC 0530 are also accepted.
- Social Science, any
- Psychology, PSY 0010
- Introduction to Nutrition, NUTR 1006*
- Introduction to Dietetics, NUTR 1600+
- Cultural Influences in Food and Nutrition, NUTR 1090+

*These courses need to have been completed within the past five years.
+These courses can be taken in the first year of the Dietitian Nutritionist Program.

Additional Requirements

- Minimum cumulative and prerequisite GPA of 3.0 (based on 4.0)
- 60 credits are required to begin the program

Application Requirements

- Complete the application for admission. Please visit the SHRS website to access information about applying.
- All applications require a personal statement.
    - This statement should reveal the applicant's personality, values, character and creativity, and describe how those experiences would promote empathy and a sense of belonging for future patients and colleagues in the Dietitian Nutritionist Program. Applicants may also include sharing how these experiences contribute to promoting compassion and wellness in healthcare. Please also discuss your professional goals as a registered dietitian. Maximum of 500 words
- Resume demonstrating evidence of adequate exposure to the field of dietetics and an appreciation of the breadth, depth, and scope of practice. This can be accomplished through either volunteer or paid work experience in a nutrition and dietetics related settings; there is no minimum number of hours required;
- Transcripts from all institutions attended. Pitt students do not have to provide transcripts they have already submitted to Pitt.

SHRS General Education Requirements are included in our upper-level program prerequisites and curriculum requirements.

Essential Standards

This information is provided to inform applicants of the non-academic technical performance and expectation standards required to complete the program successfully. Applicants should review the essential program standards to ensure that they are able to meet and maintain the standards program. The University fosters a culture of inclusiveness and is committed to providing an accessible environment for its faculty, staff and students. Please note, the Dietitian Nutritionist Program is committed to non-discrimination, including on the basis of disability. Individuals with disabilities are encouraged to apply and reasonable accomodations will be provided as appropriate. The following link provides detailed information on Essential Program Standards.

Please note that this program requires students to complete portions of their education (e.g., supervised experiential learning experiences) at facilities external to the University to meet requirements for graduation. Many of these external facilities require screening measures such as, but not limited to, criminal background check, child abuse clearance, health appraisal, fingerprint-based background check and/or drug test prior to placement at the facility. The results of these requirements may limit and potentially eliminate placement options for the student which can, in turn, result in an inability to meet graduation requirements. Additionally, a conviction of a misdemeanor, felony, or felonious or illegal act abuse may prevent the student from becoming credentialed and/or licensed to practice in the field.

The University of Pittsburgh, as an educational institution and as an employer, values equality of opportunity, human dignity, and racial/ethnic and cultural diversity. Accordingly, the University prohibits and will not engage in discrimination or harassment on the basis of race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, disability, or status as a disabled veteran or a veteran of the Vietnam era. Further, the University will continue to take affirmative steps to support and advance these values consistent with the University's mission. For information on University equal opportunity and affirmative action programs and complaint/grievance procedures, contact the Office of Affirmative Action, 901 William Pitt Union, University of Pittsburgh, Pittsburgh, PA 15260, 412-648-7860412-648-7860.

The Dietitian Nutritionist Program is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) the accrediting agency for the Academy of Nutrition and Dietetics (Academy), (ACEND@eatright.org), phone (1-800-877-1600 or 1-800-877-1600 x5400), or mail (120 South Riverside Plaza, Suite 2190, Chicago, IL 60606-6995).

Program Mission, Goals and Objectives

The mission of the Dietitian Nutritionist Program is the development of graduates with the competence and advanced skills to practice effectively as entry-level Registered Dietitian Nutritionists (RDNs) to enhance the health and wellbeing of individuals and diverse populations. Graduates become leaders in advancing the knowledge, skills and evidence-based practice of nutrition and dietetics.

Program Goal 1:

Graduates are competent to practice effectively as entry-level RDNs.

Objectives:

1. At least 80% of program students complete program requirements within 3 years (150% of the program length).
2. Eighty percent of program graduates take the CDR credentialing exam within 12 months of program completion.
3. The program's one-year pass rate (graduates who pass the registration exam within one year of first attempt) on the CDR credentialing exam for dietitian nutritionists is at least 80%.

Program Goal 2:

Graduates have advanced knowledge and skills to contribute to the evidence-based practice of nutrition and dietetics.

Objectives:

1. Of graduates who seek employment, at least 80% are employed in nutrition and dietetics or related fields within 12 months of graduation.
2. Ninety percent of employers of graduates will rate the performance of the graduates as being at or above that of other entry-level dietitians they have employed.
3. Employers will rate 100% of graduates as demonstrating culturally competent evidenced-based practice.

Program outcomes are available upon request.

Curriculum

Students entering as a junior will complete the program 156 credits.

First Year

Fall Term

- NUTR 1000 - INTRODUCTION TO RESEARCH
- NUTR 1020 - NUTRITION ASSESSMENT
- NUTR 1030 - NUTRIENT METABOLISM
- NUTR 1622 - LIFE CYCLE NUTRITION
- REHSCI 1205 - HUMAN PHYSIOLOGY
- NUTR 1600 - INTRODUCTION TO DIETETICS (if not taken previously)

Spring Term

- NUTR 1045 - FOOD APPLICATION LAB
- NUTR 1605 - PRINCIPLES OF NUTRITION EDUCATION
- NUTR 1604 - FOOD SERVICE MANAGEMENT WITH LAB
- NUTR 1614 - NUTRITION CRITICAL THINKING OR NUTR 1090 - CULTURAL INFLUENCES IN FOOD & NUTRITION (if not previously taken)
- NUTR 1610 - FOOD APPLICATION
- NUTR 1625 - NUTRITION THERAPY

*Students must maintain a 3.0 minimum GPA to matriculate from Year 1 to Year 2 of the program.

Second Year

Fall Term

- HRS 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- HRS 2623 - ADVANCED MEDICAL NUTRITION THERAPY 1
- HRS 2631 - NUTRITION FOCUSED PHYSICAL EXAMINATION
- HRS 2680 - EVIDENCE BASED PROFESSIONALISM IN DIETETICS
- Elective, 3 credits - Advisor approved

Spring Term

- HRS 2612 - ADVANCED MEDICAL NUTRITION THERAPY 2
- HRS 2625 - COUNSELING METHODS
- HRS 2655 - RESEARCH METHODOLOGY AND APPLIED STATISTICS
- Elective, 3 credits (Introduction to Functional Nutrition with Lab or Advanced Maternal and Pediatric Nutrition preferred)

Undergraduate students will receive a BS in Nutrition Science after successful completion of the Year 2.

Third Year

Fall Term

- HRS 2675 - PRACTICUM IN DIETETICS 1
- HRS 2676 - EXPERIENTIAL PRACTICE 1
- HRS 2658 - CAPSTONE PROJECT

Spring Term

- HRS 2659 - PRACTICUM IN DIETETICS 2
- HRS 2672 - EXPERIENTIAL PRACTICE 2
- HRS 2652 - EXPERIENTIAL PRACTICE 3
- HRS 2674 - CAPSTONE PROJECT
  Credits / Units: 15

Master's

Athletic Training, MS

The Accelerated BS-MS in Athletic Training was developed for students enrolled at the University of Pittsburgh and is designed as a 4+1 financial model. In addition to the Accelerated BS-MS in Athletic Training degree, a second point of entry for the MS degree in Athletic Training was developed for students who already have obtained a bachelors degree. This 2-year degree is called the MS in Athletic Training degree (Entry Point 2).

The athletic training degree program earned initial accreditation in 1997 and continuing accreditation in 2004, 2012, and 2024 through the Commission on Accreditation of Athletic Training Education (CAATE). Prior to this, the curriculum had been National Athletic Trainers' Association approved since 1978. The athletic training curriculum is defined by the current Board of Certification, Inc. Practice Analysis, which consists of five performance domains to include: (1) Risk Reduction, Wellness and Health Literacy; (2) Assessment, Evaluation and Diagnosis; (3) Critical Incident Management; (4) Therapeutic Intervention; (5) Healthcare Administration and Professional Responsibility. The curriculum is structured to provide both academic and clinical instruction. The professional academic curriculum includes such courses as Injury Evaluation, Therapeutic Interventions, Functional Anatomy, Evidence Based Practice in Athletic Training, General Medical and Pharmacological Principles, among others. The course work privides a foundation for hands-on clinical experiences provided in the clinical education setting. The students' clinical requirements include direct patient care with athletes and physically active patients and evaluation of skills by preceptors who supervise each student's clinical experience. Students rotate through four on-campus athletic training facilities and several off-site affiliated settings during the clinical education component acquiring valuable skills under the direct supervision of certified athletic training staff, team physicians and other allied health professionals. Upon successful completion of the professional program, students are eligible to sit for the BOC, Inc. certification examination. Successful completion of this exam affords the candidate a variety of employment opportunities including athletic training positions at the high school, college, or university level; sports medicine and rehabilitation clinics; professional athletic teams; performing arts; the military; industrial settings; and more. Additionally, many students pursue graduate education opportunities in a number of sports medicine-related professions.

For more information, please contact:

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School of Health and Rehabilitation Sciences
Department of Sports Medicine and Nutrition
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412-383-9738
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Admissions Requirements

Prerequisite Courses for MS in Athletic Training Degree (Entry Point 2)

- Successful completion of a Baccalaureate degree from a regionally accredited institution. Undergraduate coursework must have been completed no longer than 10 years prior to application. Applications may be submitted while baccalaureate degree is in progress.
- Minimum cumulative overall and prerequisite grade point average (GPA) of 3.0 (based on 4.0).
- EMT certification is required either through a course for credit or another qualified course leading to NR-EMT credential.
- At this time observation hours under the direct supervision of a certified athletic trainer are recommended but not required.
- Completion of Technical Standards for admissions document.
- Verification of English Language Proficiency is required unless the following apply:
    - the applicant is a citizen of a country whose official language is English
    - the applicant has completed a degree program at a regionally accredited institution in the U.S., or
    - the applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English.
- Successful completion of interview (virtual, phone or in-person).

Prerequisites must be completed for a letter grade, minimum grade of C. Applications may be submitted while prerequisite coursework is in progress. Prerequisites coursework for admission include:

- Human Anatomy, 4 credits minimum
- Human Physiology, 4 credits minimum
- Exercise Physiology, 3 credits minimum
- Introduction to Biology, 4 credits minimum
- Introduction to Physics, 3 credits minimum
- Introduction to Chemistry, 4 credits minimum
- Kinesiology or Biomechanics, 3 credits minimum
- Statistics, 3 credits minimum
- English Composition, 6 credits minimum
- Psychology, 6 credits minimum, must include Introduction to Psychology
- Public Speaking, 3 credits
- Humanities and Social Sciences Electives, 6 credits minimum
- Nutrition, 3 credits minimum

The Athletic Training Program at the University of Pittsburgh is a rigorous and intense program that places specific requirements and demands on the students enrolled in the program. An objective of this program is to prepare graduates to enter a variety of employment settings and to render care to a wide spectrum of individuals engaged in physical activity. The technical standards set forth by the Athletic Training Program establish the essential qualities considered necessary for students admitted to this program to achieve the knowledge, skills, and competencies of an entry-level athletic trainer, as well as meet the expectations of the program's accrediting agency (Commission on Accreditation of Athletic Training Education [CAATE]).

The following abilities and expectations must be met by all students admitted to the Athletic Training Program. Candidates for selection to the Athletic Training Program must demonstrate:

- The mental capacity to assimilate, analyze, synthesize, integrate concepts and problem solve to formulate assessment and therapeutic judgments and to be able to distinguish deviations from the norm.
- Sufficient postural and neuromuscular control, sensory function, and coordination to perform appropriate physical examinations using accepted techniques; and accurately, safely, and efficiently use equipment and materials during the assessment and treatment of patients.
- The ability to communicate effectively and sensitively with patients and colleagues, including individuals from different cultural and social backgrounds; this includes, but is not limited to, the ability to establish rapport with patients and communicate judgments and treatment information effectively. Students must be able to understand and speak the English language at a level consistent with competent professional practice.
- The ability to record the physical examination results and a treatment plan clearly and accurately.
- The capacity to maintain composure and continue to function well during periods of high stress.
- The perseverance, diligence, and commitment to complete the athletic training program as outlined and sequenced.
- Flexibility and the ability to adjust to changing situations and uncertainty in clinical situations.

- Effective skills and appropriate demeanor and rapport that relate to professional education and quality patient care.

Application Procedures

Application Deadline: May 1

Application Platform: Complete the ATCAS application which includes:

- Application fee
- An essay discussing when and how you became interested in the field and program to which you are applying, any work or volunteer experience you have that will demonstrate your awareness of the field and your long-term professional goals
- A current copy of your Curriculum Vitae or Resume;
- A letter of recommendation from a college instructor/professor, academic advisor, supervisor or employer, etc
- Official transcripts from all U.S. colleges/universities attended
- A course by course evaluation with GPA conversion for all higher level institutions attended outside the US. The evaluation may be from World Education Services, Inc. (WES) or Educational Credential Evaluators, Inc. (ECE).
- *Graduate Record Examination (GRE)* **not** *required*

If applicable:

- Request official English Language Proficiency test scores be sent to the University of Pittsburgh from one of the following options. Minimum scores accepted and instructions for sending official test scores follow:
    - Duolingo English Test: 120. Scores should be made available electronically to "University of Pittsburgh - School of Health and Rehabilitation Sciences"
    - International English Language Testing System (IELTS): 6.5. Scores should be made available electronically to "University of Pittsburgh Health and Rehabilitation Sciences"
    - Test of English as a Foreign Language (TOEFL): 80. New scale as of Janury 2026: 4.0 with all sub-scores of 4.0 or higher. Scores should be submitted electronically through ETS to institution code "2927".

Program Curriculum

Coursework for the professional MS in Athletic Training program is divided into two phases: Pre-Professional Phase and the Professional Phase.

Preprofessional Phase

In the summer, prior to the start of the professional phase, students enrolled in the MS in Athletic Training Degree Program (Entry Point 2) will be required to successfully complete a 1-credit course titled - ATHLTR 1815 Foundations in Evaluation and Treatment.

- ATHLTR 1815 - FOUNDATIONS IN EVALUATION AND TREATMENT

Professional Phase

The following courses are to be completed in four semesters and are graduate-level curriculum.

First Semester (Fall)

- ATHLTR 2801 - CLINICAL PRACTICUM 1
- ATHLTR 2805 - INJURY/EVAL 1 - LOWER EXTREMITY
- ATHLTR 2807 - THERAPEUTIC INTERVENTIONS 1
- ATHLTR 2809 - FUNCTIONAL HUMAN ANATOMY

Second Semester (Spring)

- ATHLTR 2802 - CLINICAL PRACTICUM 2
- ATHLTR 2806 - INJURY/EVAL 2 - UPPER EXTREMITY
- ATHLTR 2808 - THERAPEUTIC INTERVENTIONS 2
- ATHLTR 2813 - GENERAL MEDICAL AND PHARMACOLOGICAL CONDITIONS

Third Semester (Fall)

- ATHLTR 2811 - GRADUATE RESEARCH 1
- ATHLTR 2814 - ADVANCED CLINICAL PROCEDURES
- ATHLTR 2816 - ADMINISTRATIVE ASPECTS OF ATHLETIC TRAINING
- ATHLTR 2823 - CLINICAL PRACTICUM 3- CLINICALLY IMMERSIVE SEMESTER

Fourth Semester (Spring)

- ATHLTR 2812 - GRADUATE RESEARCH 2
- ATHLTR 2815 - CURRENT CONCEPTS IN SPORTS MEDICINE
- ATHLTR 2817 - LEADERSHIP AND PROFESSIONAL DEVELOPMENT
- ATHLTR 2818 - BOARD OF CERTIFICATION (BOC) PREPARATION
- ATHLTR 2824 - CLINICAL PRACTICUM 4
- ATHLTR Elective (3 Credits)

Total Credits: 61

Dietitian Nutritionist Program, MS

Students who choose to pursue Pitt's Dietitian Nutritionist Program degree are ahead of the game! All Registered Dietitian/Nutritionists (RDNs) entering the field will be required to have a masters level degree to enter the profession. The program is a competency-based educational program that integrates experiential learning with didactic coursework to enable students to demonstrate the higher level of competence that will be needed for future practice as a RDN.

Interested students will apply in the Spring Term of each year to begin the program as graduate students in Fall Term.

For more information, please contact:

Trisha A. Cousins, EdD, RDN, LDN
Program Director, Dietitian Nutritionist Program
3396 Fifth Avenue

Floor 6, Room 6177
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foundation in medical nutrition therapy, public health nutrition and food service. Students may apply for a specialty rotation option that provides an immersive experience in a specialty practice area.

This program offers points of entry for:

- post-baccalaureate candidates
- graduates of Didactic Programs in Dietetics (DPD)

Students will earn a Master of Science degrees. Preparation for a career in dietetics as an RDN requires the following:

- completion of an ACEND accredited degree-granting program
- completion of an ACEND accredited supervised experiential learning meeting all required competencies*
- successful performance on the national Registration Examination for Dietitians**

No matter your professional goals in the Dietetics profession, this program offers an entry-level advanced degree option to provide a competitive edge for today's health care environment. Upon successful completion of the master's program graduates are eligible to take the national registration examination for Dietitians. Graduates passing the registration exam are eligible for licensure in Pennsylvania by the Board of Nursing. For licensing information please visit Instructions for Licensed Dietitian-Nutritionist (LDN) Applicants.

*This program provides supervised experiential learning required to become an RDN. The supervised experiential learning sites are randomly assigned and public transportation is not available to all sites. All students should anticipate the necessity of having access to their own transportation for the program. Please review the experiential learning information.

**The credentialing exam requirements are set by the Commission on Dietetic Registration (CDR).

For more information on becoming an RDN, visit www.eatright.org.

Program Requirements

Admission

There are three ways to enter the Dietitian Nutritionist Program. As an undergraduate (accelerated BS/MS), a post-baccalaureate (MS), or as a graduate of a DPD (MS). The application deadline for the DPD entry point is February 15. The application deadline for the undergraduate and post-baccelaureate entry points is March 1. Application review begins in January. Admission is for the fall term only. Applications can be submitted when course requirements are in progress.

Entry Point for Post Baccalaureate Students to the MS Program

Prerequisites must be completed for a letter grade, minimum grade of C. Coursework will be evaluated at time of application for equivalency to Pitt courses.

- General Chemistry 1 with lab
- General Chemistry 2 with lab
- Foundations of Biology 1
- Biology Lab
- Biochemistry*
- Introduction to Microbiology
- Statistics or higher math
- Introduction to Nutrition
- Introduction to Dietetics+
- Cultural Influences in Food and Nutrition+

+These courses can be taken in the first year of the Dietitian Nutritionist Program.

Additional Requirements

- Baccalaureate degree from an accredited institution
- Minimum cumulative and prerequisite GPA of 3.0 (based on 4.0)
- Personal interview with nutrition faculty

Application Requirements

- Complete the GradCAS application;
- Submit a personal statement that reveals the applicant's personality, values, character and creativity, and describe how those experiences would promote empathy and a sense of belonging for future patients and colleagues in the Dietitian Nutritionist Program. Applicants may also include sharing how these experiences contribute to promoting compassion and wellness in healthcare. Please also discuss your professional goals as a registered dietitian. Maximum of 500 words
- Resume demonstrating evidence of adequate exposure to the field of dietetics and an appreciation of the breadth, depth, and scope of practice. This can be accomplished through either volunteer or paid work experience in a nutrition and dietetics related settings; there is no minimum number of hours required;
- Submit one letter of recommendation. This letter should address the academic, professional, and personal attributes and potential for graduate study;
- Transcripts from all institutions attended. Pitt students do not have to provide transcripts they have already submitted to Pitt.
- Additional requirements for international applicants
    - Academic Credential Evaluation from World Education Services (WES), Inc. or Educational Credential Evaluators, Inc. A course by course evaluation with GPA conversion is required for baccalaureate degree or higher completed at an institution outside of the United States.
    - English Language Proficiency scores. Minimum scores accepted:
        - TOEFL: 100. New scale as of January 2026: 5.0 with all sub-scores of 4.0 or higher. Submit electronically to institution code 2927.
        - IELTS: 7.5. Scores should be made available electronically to "University of Pittsburgh Health and Rehabilitation Sciences".
        - Duolingo: 140. Scores should be made available electronically to "University of Pittsburgh - Health and Rehabilitation Sciences".

Entry Point for DPD Graduates to the MS Program

The program is looking for a verification statement from an ACEND accredited undergraduate program. No other prerequisites are required.

Additional Requirements

- Baccalaureate degree from an accredited institution
- Verification Statement from accredited program
- Minimum cumulative and prerequisite GPA of 3.0 (based on 4.0)
- Personal interview with nutrition faculty

Application Requirements

- Complete the DICAS application;
- Submit a self-evaluation essay, discussing strengths, skills and experiences that will contribute to success in the program and your professional goals as a registered dietitian;
- Submit resume demonstrating evidence of adequate exposure to the field of dietetics and an appreciation of the breadth, depth and scope of practice. This can be accomplished through either volunteer or paid work experience in a nutrition and dietetics related settings; there is no minimum number of hours required;
- Submit one letter of recommendation. This letter should address the academic, professional, and personal attributes and potential for graduate study;
- Submit official transcripts from all colleges and universities attended;
- Additional requirements for international applicants
    - Academic Credential Evaluation from World Education Services (WES), Inc. or Educational Credential Evaluators, Inc. A course by course evaluation with GPA conversion is required for baccalaureate degree or higher completed at an institution outside of the United States.
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The program goals are:

Program Goal 1:

Graduates are competent to practice effectively as entry-level RDNs.

Objectives:

1. At least 80% of program students complete program requirements within 3 years (150% of the program length).
2. Eighty percent of program graduates take the CDR credentialing exam within 12 months of program completion.
3. The program's one-year pass rate (graduates who pass the registration exam within one year of first attempt) on the CDR credentialing exam for dietitian nutritionists is at least 80%.

Program Goal 2:

Graduates have advanced knowledge and skills to contribute to the evidence-based practice of nutrition and dietetics.

Objectives:

1. Of graduates who seek employment, at least 80% are employed in nutrition and dietetics or related fields within 12 months of graduation.
2. Ninety percent of employers of graduates will rate the performance of the graduates as being at or above that of other entry-level dietitians they have employed.
3. Employers will rate 100% of graduates as demonstrating culturally competent evidenced-based practice.

Program outcomes are available upon request.

Curriculum

Students entering with a baccalaureate degree that is not from a Didactic Program in Dietetics (DPD) will complete 93-95 credits during this three-year program. Didactic Program in Dietetics (DPD) graduates will complete Year 2 & Year 3 of the program fulfilling a 60-credit course of study.

First Year

Fall Term

- NUTR 1000 - INTRODUCTION TO RESEARCH
- NUTR 1020 - NUTRITION ASSESSMENT
- NUTR 1030 - NUTRIENT METABOLISM
- NUTR 1622 - LIFE CYCLE NUTRITION
- REHSCI 1205 - HUMAN PHYSIOLOGY
- NUTR 1600 - INTRODUCTION TO DIETETICS (if not taken previously)

Spring Term

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- NUTR 1605 - PRINCIPLES OF NUTRITION EDUCATION
- NUTR 1604 - FOOD SERVICE MANAGEMENT WITH LAB
- NUTR 1614 - NUTRITION CRITICAL THINKING OR NUTR 1090 - CULTURAL INFLUENCES IN FOOD & NUTRITION (if not previously taken)
- NUTR 1610 - FOOD APPLICATION
- NUTR 1625 - NUTRITION THERAPY

*Students must maintain a 3.0 minimum GPA to matriculate from Year 1 to Year 2 of the program.

Second Year

Fall Term

- HRS 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- HRS 2623 - ADVANCED MEDICAL NUTRITION THERAPY 1
- HRS 2631 - NUTRITION FOCUSED PHYSICAL EXAMINATION

Spring Term

- HRS 2612 - ADVANCED MEDICAL NUTRITION THERAPY 2
- HRS 2625 - COUNSELING METHODS

- HRS 2655 - RESEARCH METHODOLOGY AND APPLIED STATISTICS
- Elective, 3 credits (Introduction to Functional Nutrition with Lab or Advanced Maternal and Pediatric Nutrition preferred)

Third Year

Fall Term

- HRS 2675 - PRACTICUM IN DIETETICS 1
- HRS 2676 - EXPERIENTIAL PRACTICE 1
- HRS 2658 - CAPSTONE PROJECT

Spring Term

- HRS 2659 - PRACTICUM IN DIETETICS 2
- HRS 2672 - EXPERIENTIAL PRACTICE 2
- HRS 2652 - EXPERIENTIAL PRACTICE 3
- HRS 2674 - CAPSTONE PROJECT

Sports Science, MS

The Sports Science concentration in the Master of Science in Health and Rehabilitation Sciences program is designed for students seeking graduate training to advance their knowledge and skills related to understanding and improving sports performance.

Primary areas of focus pertaining to education and training in sports science, strength and conditioning, nutrition, sports medicine, and research. The curriculum integrates coursework, research, and practical application experiences pertaining to multiple aspects of athletic and human performance. All students will complete a 1-year sports science practical experience with a designated sports team or organization and will also have access to the Sports Medicine and Nutrition research facilities and faculty.

For more information, please contact:

Timothy Suchomel, PhD, CPSS, *D, CSCS,*D, RSCC,*D, FNSCA, mlSCP Program Director, MS in Sports Science

Department of Sports Medicine and Nutrition

Fifth and Halket, Room 6196

E-mail: TIS125@pitt.edu

https://www.shrs.pitt.edu/academics/smn/msss/

About

The Sports Science (SS) concentration leading to a Master of Science degree in Health and Rehabilitation Sciences is a one-year graduate program housed within the Department of Sports Medicine and Nutrition.

Program Summary

33 credits (Full or part-time)
1-3 years (varies)
Program starts fall term only

Admission Requirements

Prerequisites (satisfactory grades must be earned in all courses)

- Exercise Physiology (3 credits)
- Introduction to Nutrition (3 credits)
- Introduction to Statistics (3 credits)
- Human Anatomy and Physiology I (3 credits)

Applications may be submitted while prerequisite coursework is in progress.

Additional Requirements

Bachelor's degree from an accredited institution.

Minimum undergraduate GPA of 3.0 (out of 4.0). Admission may be considered for applicants with a GPA of less than 3.0 if other supporting evidence of their ability to complete the graduate program is provided.

An interview may be required.

Application Procedures

Application Deadline: July 15. If spots are available after the deadline applications will be considered on a rolling basis until the class is full.

All applicants must:

- Complete the GradCAS application
- Submit the application fee of $50 (U.S.)
- Submit an essay - a description of professional and educational goals that are realistically attainable during enrollment in the graduate program
- Submit two letters of reference, preferably from individuals who have instructed you in academic settings and/or supervised research activities. These letters should address the applicant's academic, professional, and personal attributes and potential for meaningful graduate study.
- Submit official transcripts from all colleges/universities you **have attended**
- Additional requirements for international applicants may be found on the SHRS website

Fall Term

- SPSCI 2110 - SPORTS SCIENCE PRACTICUM 1
- SPSCI 2151 - ADVANCED ASSESSMENT OF ATHLETIC PERFORMANCE
- SPSCI 2200 - ADVANCED STRENGTH & CONDITIONING I
- SPSCI 2650 - EXERCISE PHYSIOLOGY
- HRS 2655 - RESEARCH METHODOLOGY AND APPLIED STATISTICS

Spring Term

- SPSCI 2120 - SPORTS SCIENCE PRACTICUM 2
- SPSCI 2160 - SPORTS NUTRITION

Choose one

- SPSCI 2140 - SPORTS SCIENCE DATA ANALYTICS
- SPSCI 2210 - ADVANCED STRENGTH AND CONDITIONING 2

Choose one

- SPSCI 2170 - CURRENT TOPICS IN SPORTS SCIENCE AND DATA ANALYTICS RESEARCH
- SPSCI 2270 - CURRENT TOPICS IN STRENGTH AND CONDITIONING RESEARCH

Choose one
Advisor approved course

- SPSCI 2250 - COACHING THEORY AND PHILOSOPHY

Summer Term

- SPSCI 2130 - SPORTS SCIENCE PRACTICUM 3

Total Credits: 33

Rehabilitation Science Doctor of Philosophy (PhD)

Doctoral

Rehabilitation Science, PhD

The mission of the PhD program in Rehabilitation Science is to advance the frontiers of knowledge underlying the practice of rehabilitation disciplines and professions through research, teaching, and professional development.

This PhD is an interdisciplinary degree. Students enter the program through the following SHRS departments or programs: Counseling and Behavioral Health, Health Information Management, Occupational Therapy, Physical Therapy, Rehabilitation Science and Technology, and Sports Medicine and Nutrition. Upon degree completion, you will have mastered a specific area of expertise in rehabilitation science and carry an expansive core of related knowledge.

Contact Information:

Courtney Fleck
Assistant to the Associate Dean of Graduate Studies
3396 Fifth Avenue
Phone: 412-624-6538
Fax: 412-383-6535
Email: courtney.fleck@pitt.edu
www.shrs.pitt.edu

Program Summary

Program starts in the fall term.

- Statute of limitation is 8 years (with approved credit transfer) or 10 years (without credit transfer)
- Minimum of 72 credits required to graduate (some areas of focus may require more credits)

The Primary Goals of the PhD program in Rehabilitation Science are to:

1. Provide core content in theories and models of rehabilitation, disability and/or assistive technology that underpin rehabilitation science;
2. Provide in-depth, state of the science, content in basic, clinical, social, medical and/or engineering sciences that support the dissertation research;
3. Provide mentorship opportunities for immersion in rehabilitation science research laboratories, projects, and/or ongoing studies;
4. Prepare students to conduct and disseminate original research that will advance rehabilitation science;
5. Promote interdisciplinary research in preparation for becoming a research team member;
6. Promote knowledge, behaviors and skills consistent with the responsible conduct of research;
7. Provide opportunities to teach content in an area of expertise.

The doctoral degree in Rehabilitation Science is an interdisciplinary research degree offered by SHRS and not by individual departments within the school. Graduates of this program will have a specific area of expertise in rehabilitation science as well as a core of interdisciplinary knowledge related to this specific area. They will become the researchers, scholars, teachers, thinkers, and planners in the demanding and changing field of rehabilitation science.

Areas of Study

- Assistive technology
- Biomechanics
- Evidence-based practice and epidemiology of disability
- Functioning, disability and health
- Psychosocial, cultural, and behavioral aspects of rehabilitation and disability
- Health information systems and information technology related to health and rehabilitation sciences
- Neural basis of sensory and motor function and dysfunction
- Neuromuscular aspects of sports injuries
- Health Services Research in Rehabilitation

Admission Requirements/ Application Process

Applicants should have a strong interest in rehabilitation research as well as a master's degree in an area related to rehabilitation science. The exceptional student with a bachelor's degree, six or more credits of graduate course work, and compelling clinical/research experience in rehabilitation science will be considered.

Resources, including research mentors, must be available to enable the student to engage in a plan of study in the student's major area of interest in rehabilitation research. Therefore, it is important that there is a match between the research interests of an applicant and an SHRS graduate faculty member.

Admission Requirements

Successful applicants will have a minimum GPA of 3.0 (based on a 4.0 scale) in all college work. We do not require the GRE in our admissions applications. Students for whom English is a foreign language must have a minimum Duolingo English Test score of 140, IELTS score of 7.5 or TOEFL score of 100, new scale as of January 2026: 5.0 with all sub-scores 4.0 or higher.

Application Requirements

Applicants are required to submit the following:

- Completed GradCAS application
- An essay stating career goals, specific research interests and experience, and clinical interests and experience
- Three to five academics or work-related letters of recommendation (at least one academic reference must be included as well as a letter of support from the identified Research Mentor. The Research Mentor's letter should indicate how the student is known to

the Mentor, a description of the student's potential for success in the program and as a rehabilitation scientist, and how the Mentor will support the student's dissertation research project (funding/resources))

- A résumé, including work history, formal education, continuing education, licensing and certification, professional organizations, honors and awards, publications, presentations, and grants
- Transcripts from all U.S. institutions attended
- A course-by-course evaluation with GPA conversion for all higher institutions attended outside the U.S. The evaluation may be from World Education Services (WES), Inc. or Educational Credential Evaluators, Inc. (ECE)
- Verification of English language proficiency. (Duolingo English Test, TOEFL or IELTS scores (for candidates whose native language is not English)
- At least one example of written work (class project, course assignment, publication for which candidate is first author, etc.)

The application deadline for a fall enrollment start date is May 1.

Applicants are evaluated by the PhD Admissions Committee. Admission to the program requires (1) the applicant to meet the standards for a PhD student in SHRS, and (2) that a faculty member of the PhD program has an opening for an additional PhD student and agrees to be the Academic Advisor for that applicant.

For more information about admission to the PhD program contact:

Office of Admissions
School of Health and Rehabilitation Sciences
3396 Fifth Avenue
412-383-6558
Fax: 412-383-6535
E-mail: admissions@shrs.pitt.edu
Website: www.shrs.pitt.edu

Financial Aid

Applicants interested in financial support should indicate this on their applications for admission.

Transfer Credits

If a student wishes to transfer credits, the student and the student's Academic Advisor must submit a Credit Transfer Request Form to Student Services during the first year of study. Transcripts verifying the graduate courses and course descriptions must accompany the petition. The student and student's Academic Advisor will be informed by the Associate Dean of Graduate Studies which courses are acceptable as transfer credits, and this information will be placed in the student's file. Based on University guidelines, students who transfer any credits from a master's degree must complete the PhD within 8 years; students who do not transfer credits must complete the PhD within 10 years.

Academic Advisor

Students admitted to the PhD program are assigned an Academic Advisor who is a member of the Graduate Faculty in SHRS. He/she will have research interests similar to the student's interests and will have agreed to be the student's Research Mentor.

The Academic Advisor and student will determine the Plan of Study for the student. They will also plan course work or other experiences to enable the student to demonstrate competency in the proposed content supporting the dissertation, as well as statistics/research methodology content in preparation for the Comprehensive Examination and Dissertation Proposal Defense. It is the responsibility of the Academic Advisor to provide advice to the student during the PhD program, especially with the following steps.

1. Petitioning the Associate Dean of Graduate Studies for transfer of credits
2. Preparing a Plan of Study outlining course work and dissertation credits leading to the PhD Degree
3. Locating research opportunities
4. Revising the Plan of Study as needed as the dissertation topic is formulated
5. Finding a Primary Research Mentor

Plan of Study

The student and Academic Advisor will prepare a tentative Plan of Study within the first term of enrollment. If a Plan of Study has not been submitted by the end of the first term, the student will not be permitted to enroll in the subsequent term. The Plan of Study Form can be obtained on-line on the SHRS website. The Plan of Study should include transfer credits, course work to date, future course work, and dissertation credits leading to the PhD degree. A copy of the Plan of Study will be placed in the student's file. The Plan of Study should be reviewed each term at registration and updated as needed by the student and Academic Advisor. A final updated Plan of Study must be on file in the student's permanent file in Student Services in the term in which the student graduates, or the student cannot be certified by the Registrar for graduation.

More information regarding the following can be found in the PHD handbook on the SHRS website:

- SHRS Student Statistical Support
- Annual Review/Progress Reports
- Preliminary Examination
- Primary Research Mentor
- Comprehensive Examination
- Dissertation Proposal Defense
- Admission to Candidacy
- Dissertation
- Electronic thesis and Dissertation (ETD)
- Final Oral Defense of Dissertation
- Continued Use of Data After Leaving the University of Pittsburgh

Program Requirements

A minimum of 72 credits beyond the bachelor's degree level is needed for the PhD degree at the University of Pittsburgh. Some areas of focus within the PhD Program may require more than 72 credits. Up to 30 credits taken at the graduate level towards a master's degree may be accepted for transfer. In recognition of graduate study beyond the master's degree, no more than 12 additional credits may be accepted at the time of admission to meet the minimum credit requirement. Credit transfer requests are evaluated by the Associate Dean of Graduate Studies after matriculation.

In all cases, at least 36 credits must be completed as a PhD student at the University of Pittsburgh. No undergraduate credits (1000 level courses) may be applied towards the doctoral degree. Please note, credits transferred from another institution may not be used to substitute for credits of courses required in the degree study plan. For example, credits transferred for a statistics course taken at another institution will not count toward the 9 credits of statistics required in the PhD program here at the University of Pittsburgh. The student will still need to take 9 credits of statistics at the University of Pittsburgh.

The overall form and content of each student's program is the responsibility of the Graduate Faculty of SHRS. To carry out this responsibility, each student has an Academic Advisor who, in consultation with the student, plans a program of study and research in accordance with SHRS guidelines.

Course and Competency Requirements

The following requirements apply to all PhD in Rehabilitation Science students:

HRS 3000 - **Doctoral Seminar: 4 credits**

Core Areas

There are two Core Areas which are required for all students in the PhD in the Rehabilitation Science Program - Methods of Inquiry for Rehabilitation Sciences and Core Concepts in Disability and Rehabilitation Sciences.

All students pursuing a Doctor of Philosophy in Rehabilitation Science degree will be required to demonstrate basic competency in designing and appraising research studies and to demonstrate basic competency in understanding the fundamentals of disability and rehabilitation sciences.

CORE: Methods of Inquiry for Rehabilitation Sciences

Upon completion of the courses, students will be able to design a research study to answer a specific research question, including the best design for the question asked, sampling, controls for bias or confounding, and basic statistical analysis. They will be able to critically appraise research and apply it to clinical practice.

CORE: Core Concepts in Disability and Rehabilitation Sciences

Upon completion of the modules, students will be able to describe and discuss core concepts in disability and rehabilitation sciences, and analyze and synthesize multiple perspectives on the current and future state-of-the science.

A grade of B or better for each term of the Methods of Inquiry for Rehabilitation Scientists Core and Core Concepts in Rehabilitation and Disability Core (2 terms, 2 credits)

- HRS 3002 - Methods of Inquiry I - 1 credit
- HRS 3003 - Core Concepts I - 2 credits
- HRS 3004 - Methods of Inquiry II - 1 credits
- HRS 3005 - Core Concepts II - 2 credits
- HRS 3001 - **Dissertation Research: 18 credits**

Preliminary Examination for the Methods of Inquiry Core and the Core Concepts in Rehabilitation and Disability Core requires an unconditional PASS

Comprehensive Written and Oral Examinations in the content area of the dissertation requires an unconditional PASS

Content in the areas of research design and statistics: 9 credits

Participate in the teaching of at least one course

Successful completion of manuscript submission requirement

Manuscript Submission Requirements

Prior to scheduling the dissertation defense, each PhD student will demonstrate a minimum amount of experience in manuscript writing and submission by completing:

- 1 co-author manuscript accepted for publication
- 1 first author manuscript submitted and reviewed by a peer-reviewed journal
- Data-based manuscripts are strongly preferred.

Successful completion of grant application submission requirement

Grant Submission Requirement

Prior to scheduling the dissertation defense, each PhD student will demonstrate a minimum experience with grant writing and submission by completing one of the following:

- Submission and peer-review of a Doctoral Research or Research Fellowship Grant applications (SHRS Doctoral Scholarship Award or NIH or Private Foundations)
- Submission and peer-review of Pilot study grant applications (e.g., foundations, professional societies, the UPMC Rehab Institute Pilot Award)
- Completion of a grant writing course
- Submission of a provisional and non-provisional patent application
- Submission and peer-review of an SBIR like applications, or other options to secure funding for technology development (pitching an idea for commercial development, etc.)

Note: The peer-review may be internal or external peer review. A copy of the summary report from the review should be submitted with a copy of the grant application to Courtney Fleck (Courtney.fleck@pitt.edu) to be kept in the student's file.

Also, note: Submission to the $1,000.00 SHRS scholarship award will NOT qualify for satisfying the grant submission requirement.

Successful defense of the dissertation research

Note: PhD students are required to maintain a 3.000 Cumulative GPA and receive a grade of C or better in all courses required by their program curriculum.

Students who receive a grade below a C in a required course must repeat that course and attain a grade of C or better to graduate. (Note: University regulations state that a student may repeat any course in which a grade of B- or lower is received **if an authorization to repeat the course is given by the student's adviser/faculty.**) Students will not be permitted to register for a course until they attain a C or better in its prerequisites. Failure to receive an acceptable grade after the second opportunity to complete a required course may result in the student being dismissed from the program and SHRS.

Department of Community Health Services and Rehabilitation Science

Doctoral

Doctor of Chiropractic

The goal of the DC curriculum is to prepare students to become self-directed, self-accountable chiropractors who can function in a cost-effective manner in all settings, and with persons of all ages. Graduates of the program will be prepared to enhance spine and musculoskeletal function using evidence-based practice principles. Graduates of the Doctor of Chiropractic program will have a foundation on which to base further knowledge and skills in specialty areas and to contribute to development of the art and science of chiropractic care. The degree to be awarded will be the Doctor of Chiropractic , which will prepare graduates to sit for the licensure examinations in all 50 states, the District of Columbia, the US Virgin Islands, and Puerto Rico. Upon successful completion of the curriculum, graduates of the program are eligible for the national certification examination through the National Board of Chiropractic Examiners (NBCE), which is required to practice as a chiropractor.

The chiropractic curriculum is designed around four longitudinal curricular tracts:

1. 1. Structure and function of the human body in health and disease.
2. 2. Chiropractic studies: the knowledge, skills, and attitudes to practice chiropractic.
3. 3. Diagnosis and clinical reasoning.
4. 4. Clinical education: training and practice in appropriate supervised clinical settings.

The addition of eight program outcomes consistent with the meta-competencies of the Council on Chiropractic Education results in a two-dimensional curriculum structure, providing for integration of accreditation-required professional competencies and the broad areas of knowledge and skill required of healthcare professionals.

Basic Science Core

- DC - 3111 - Spinal Anatomy
- DC - 3112 - Human Function and Metabolism
- DC - 3115 - Neuroscience
- DC - 3116 - Gross Anatomy
- DC - 3117 - Microbiology and immunology

- DC - 3118 - Pathology

Diagnosis and Management

- DC - 3132 - The Patient Interview
- DC - 3136 - Clinical Pain Classification and Phenotyping
- DC - 3332 - Case Studies in Differential Diagnosis
- DC - 3151 - Clinically Relevant Palpation
- DC - 3155 - Manual Therapy Skill Development
- DC - 3156 - Spinal and Tissue Biomechanics
- DC - 3157 - Soft Tissue Manipulation
- DC - 3232 - Clinical Laboratory Diagnosis
- DC - 3233 - Clinical Pharmacology
- DC - 3235 - Clinical Neurology
- DC - 3241 - Special Populations
- DC - 3256 - Nutrition in Chiropractic Practice
- DC - 3137 - Medical Screening and Diagnosis: Chest and Abdomen
- DC - 3159 - Thoracic and Lumbopelvic Spine-Related Disorders
- DC - 3160 - Examination of the Thoracic and Lumbopelvic Spine
- DC - 3161 - Thoracic and Lumbopelvic Mobilization and Manipulation
- DC - 3162 - Rehabilitative Exercise: Thoracic and Lumbopelvic Spine
- DC - 3234 - Medical Screening and Diagnosis: Head and Neck
- DC - 3251 - Cervical Spine-Related Disorders
- DC - 3252 - Examination of the Cervical Spine
- DC - 3253 - Cervical Mobilization and Manipulation
- DC - 3254 - Rehabilitative Exercise: Cervical Spine
- DC - 3257 - Extremity disorders
- DC - 3258 - Examination of the extremities
- DC - 3259 - Extremity Mobilization and Manipulation
- DC - 3260 - Rehabilitative Exercise: Extremities

- DC - 3263 - Special Topics in Manual Therapy I
- DC - 3351 - Special Topics in Manual Therapy II
- DC - 3261 - Spinal Manipulation Review
- DC - 3264 - Advanced Topics in Rehabilitation
- DC - 3265 - Taping and Bracing
- DC - 3267 - Physical Agents and Modalities
- DC - 3131 - Intro to Diagnostic Imaging
- DC - 3133 - Diagnostic imaging I
- DC - 3135 - Diagnostic imaging II
- DC - 3231 - Diagnostic Imaging III
- DC - 3236 - Diagnostic Imaging IV
- DC - 3240 - Cases in Diagnostic Imaging

Clinical Reasoning

- DC - 3153 - Evidence-based Practice I
- DC - 3158 - Evidence-Based Practice II
- DC - 3164 - Evidence-based Practice III
- DC - 3266 - Evidence-Based Practice IV
- DC - 3154 - Introduction to Clinical Reasoning
- DC - 3163 - Clinical Reasoning for the Primary Spine Provider I
- DC - 3255 - Clinical Reasoning for the Primary Spine Provider II
- DC - 3262 - Clinical Reasoning for the Primary Spine Provider III
- DC - 3331 - Outcomes Accountability Capstone I
- DC - 3333 - Outcomes Accountability Capstone II

Clinical Experience

- DC - 3171 - Clinical practicum I
- DC - 3172 - Clinical practicum II
- DC - 3173 - Clinical practicum III and Comprehensive Clinical Exam I
- DC - 3271 - Clinical practicum IV

- DC - 3272 - Clinical practicum V
- DC - 3273 - Pre-clerkship and Comprehensive Clinical Exam II
- DC - 3371 - Clinical Clerkship I
- DC - 3372 - Clinical Clerkship II

Professional Practice

- DC - 3152 - Introduction to the Chiropractic Profession
- DC - 3237 - Review of systems and interprofessional collaboration
- DC - 3238 - Emergency Care
- DC - 3239 - Public Health and Epidemiology
- DC - 3361 - Chiropractic Practice

School of Law

School of Law

- Contact Information
- Admissions
- Scholarships and Financial Aid
- Academic Standards
- Professional and Career Development
- School of Law Faculty
- Programs and Course Offerings

The essential mission of the University of Pittsburgh School of Law is to help lawyers and legal institutions to meet the demands of a rapidly changing legal and professional environment. Pitt Law excels in teaching the next generation of diverse legal professionals producing research of impact, and contributing to society through public service.

In serving its students, the school is committed to an active and inclusive spirit of community and to the effective, efficient, and congenial provision of service. In teaching, research, and public service, the School of Law aspires to conduct all of its programs at a nationally prominent level of quality that adds luster to the legal and business communities of Pittsburgh; that makes the school relevant to the key needs of this region's private, public, and nonprofit sectors; and that distinguishes it as one of the finest public urban law schools in the United States.

For more than 130 years, the School of Law has prepared students to become excellent attorneys and leaders in both the legal profession and in society. Today, Pitt Law builds on this proud history by training lawyers to take on the opportunities and challenges of 21st century legal practice in the United States and around the world.

At Pitt Law we turn out practice-ready lawyers by providing students with both traditional law school classroom experiences designed to develop and hone analytical and communication skills and with experiential learning opportunities in one of our six clinics, which range in subject area from Environmental Law to Family Law to Securities Arbitration. Students who wish to focus their studies can enjoy the numerous benefits of enrolling in one of our five certificate or concentration programs, with their opportunities for international externships, instruction in litigation skills by teams of top practicing litigators, or membership on a moot court team. Seven joint degree programs, including four partnerships with Carnegie Mellon University, permit students to craft discipline-bridging courses of study in areas including public health, business administration, and international affairs. And Pitt Law students can serve as editors at the award-winning website JURIST, the world's only Web-based, student-powered legal news source, which is viewed weekly by 100,000 viewers and is based right here at the School of Law.

Among its first-professional degrees, the School of Law offers the Juris Doctor (JD) degree; a number of joint degree programs with other schools of the University and Carnegie Mellon University, leading to both a JD and a master's degree; and LLM degrees for foreign law graduates as well as several certificate programs. The School of Law also offers graduate programs leading to a Master of Studies in Law (MSL) and a Doctor of Jurisprudence (SJD) degree. *For further information on the graduate programs, see the School of Law-Graduate Programs section of this bulletin.*

Contact Information

Financial Aid and Admissions are located in the same office at the University of Pittsburgh School of Law.

Office of Admissions and Financial Aid
Barco Law Building
3900 Forbes Avenue
Pittsburgh, PA 15260

Website: www.law.pitt.edu

Admissions Information: ((412) 648-1413
Financial Aid Information: (412) 648-1415

Email Admissions: admitlaw@pitt.edu
Email Financial Aid: lawfa@pitt.edu

Office Hours: 8:00 a.m. - 5:00 p.m. Monday through Friday

Walk in appointments are available during office hours; however, scheduling an appointment is encouraged. To schedule an appointment, please email, schedule online, or call our office.

Admissions

Pitt Law accepts JD applications from September 1 through May 1, with a priority deadline of February 1 for full scholarship consideration. There is a $65 non-refundable application fee (waivers available by contacting admissions). Applications are submitted through LSAC and reviewed for fall enrollment, with the committee weighing undergraduate coursework, GPA, graduate work, and professional experience.

Testing: Pitt Law accepts the LSAT, GRE, or JD-Next exam. The GRE requires a 3.5 GPA and 85th percentile score. The JD-Next is an eight-week online course culminating in a four-hour exam. The highest LSAT score is used if taken multiple times; scores older than four years are not considered.

Required materials include:

- Official transcripts from all post-high school institutions
- Personal statement (max two double-spaced pages)
- Current resume (professional experience, activities, and awards)
- One letter of recommendation (up to three accepted; academic letters preferred for recent graduates)

Optional materials include addenda addressing community service intent, additional context for the application, or explanations for LSAT scores or grades that don't reflect true academic ability.

A Character & Fitness addendum is required if any related questions are answered "yes."

Key dates: Applications open September 1, first decisions go out in early November, the priority scholarship deadline is February 1, FAFSA is due March 1, seat deposits are due April 15, and the final application deadline is May 1.

Transfer Students

The University of Pittsburgh School of Law will accept transfer students after those students have successfully completed the first year of academic study at another law school, and students may apply to visit Pitt Law if he/she has completed two years of law study at another law school and have the permission of the dean of their current school. For more information, visit our website.

Tuition

Tuition Rates and Fees can be found on the University's website at https://www.tuition.pitt.edu/graduate/tuition/school-law. In addition to standard tuition, JD students are subject to several law-specific fees: an exam fee, a Public Service Interest fee, a Bar Success fee, and a one-time laptop fee for first-year students.

Financial Aid

Financial aid resources available to students include merit scholarships, endowment scholarships, fellowships, and loans. Students can borrow through both federal and private educational loans. Please visit the Pitt Law website for more details on financial aid available to law students.

Academic Standards

The School of Law Policy on Written Work for Credit, its Standards of Academic Integrity, the Grading Guidelines, and other academic policies of the school are included in the Policies and Procedures page on the School of Law web site, at https://www.law.pitt.edu/resources/policies-procedures.

Professional and Career Development

The Professional Development Office is dedicated to providing JD students and graduates with the information and tools necessary for successful career development and advancement. Our office assists JD students and graduates in their pursuit of careers in a wide variety of settings, including private law firms, public interest organizations, government agencies, corporate and business environments, judicial clerkships, academia, and non-traditional careers.

Through an extensive array of services including individual counseling, educational programming, interviewing opportunities, printed and online resources, job posting databases, and a substantial alumni network, the PDO helps educate students and graduates for a lifetime of successful career management.

The PDO also serves as an intermediary between prospective employers and JD students. By posting job vacancies, scheduling on-campus interviews, sponsoring programs, and participating in and promoting off-campus job fairs, we provide a range of employment prospects. Through ongoing outreach, the PDO Staff endeavors to create ever-increasing employer interest in Pitt Law students and graduates.

Each student will meet with a Career Counselor during their first year and is encouraged to meet with the counselor as often as needed. As a students begins to develop his or her legal career path they are able to work with an PDO counselor whose background mirrors the student's desired path. Our office is open Monday- Friday 8:30 a.m. - 5:00 p.m. Additionally, PDO has daily walk-in hours.

Location

Barco Law Building
Second Floor
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1411 / Phone
PDO@pitt.edu

Programs and Course Offerings

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

School of Law's Programs

You expect the Juris Doctor (JD) program at Pitt Law to offer a solid foundation in the basics of legal education. You might not expect the opportunity to specialize in areas like environmental and energy law, health law, International law, and intellectual property, technology, and innovation law.

You might not expect to be able to pursue both a JD and a second master's degree at another Pitt school-in an area such as bioethics, business, public health, and social work-or at nearby Carnegie Mellon University in less time than it would normally take to complete two consecutive degrees.

You might not expect a 30-credit Master of Studies in Law advanced degree designed for graduates and mid-career professionals seeking to enhance their careers with a versatile alternative to the traditional three-year Juris Doctor degree, which includes online Certificates in Sports and Entertainment Law, Corporate Compliance, Health Care Compliance, Human Resources Law, Business Law, and International

Business Law. Or a Master of Laws degree to provide foreign law graduates with critical training in the common law legal tradition and the U.S. legal system during an academic year.

And you might not expect how quickly and the extent to which you'll get to apply those classroom lessons. Assisting the public through work with a clinic (health law, elder law, the environment, immigration, and more); serving as a full-time extern on Capitol Hill or throughout Washington, D.C., as part of the Semester in D.C. Program; interning with a federal agency, nonprofit, or corporation; and participating in a national or international moot court competition are just some of the opportunities you'll have to practice your skills and hone your expertise even before you graduate.

Certificate

Law - Health Law Certificate - JD Program

Students enrolled in the JD program at the University of Pittsburgh School of Law can develop an expertise in the rapidly changing, steadily growing field of health law through the Law School's Health Law Certificate Program.

Pitt Law's Health Law Program, one of the oldest in the country, provides students with a basic grounding in the healthcare field, complemented by clinical experience and more in-depth study of advanced topics and closely related areas of law. Students are encouraged to obtain the same broad background in law expected of all graduates from Pitt Law.

The Health Law Program provides students with a strong foundation in health law that will enable them to practice in various contexts, including law firms, health care management firms and insurers, government, and health care institutions. A combination of classroom and skills components acquaints students with everything from complex business and legal transactions to bioethics and patient care issues to the variety of legal issues that arise in the operation of a healthcare institution. Students gain hands-on experience in these areas through their work in the Law School's clinics, externships, and summer jobs available in the health care setting.

To sign up for, drop or verify your continuation in the Health Law Certificate Program, please complete the Certificate/Concentration Form.

Requirements

The Health Law Certificate Program is an educational program of concentration in health law for students in their second and third years of the JD curriculum. Admission is available to all students entering their second year in the JD program.

Complete a minimum of 18 credits in courses in health law.

A paper in satisfaction of the Upper-Level Writing Requirement
Students must earn a grade of B+ or higher on a paper that both satisfies the Upper Level Writing (ULW) and addresses a topic that falls within the health law spectrum.
Students must have the topic of their paper approved by the Health Law Certificate Program Director

Additional Related Courses: Other Graduate-Level Courses
Students may take a maximum of 6 credits of graduate-level courses outside the School of Law for credit toward the Health Law Certificate with permission of the program director. Especially relevant courses are those offered by the Department of Health Services Administration in the Graduate School of Public Health, the Center for Bioethics and Health Law, and the Heinz School of Public Policy and Management at Carnegie-Mellon University.

1 required Upper-Level Course:

- LAW 5395 - HEALTH LAW AND POLICY

2 of the following Core Elective Courses

- LAW 5089 - PUBLIC HEALTH LAW
- LAW 5464 - BIOETHICS AND LAW
- LAW 5673 - HEALTH CARE FRAUD, ABUSE, AND COMPLIANCE
- LAW 5811 - HEALTH CARE BUSINESS TRANSACTIONS

At least 1 Additional Elective

- LAW 5135 - COMMERCIALIZING NEW TECHNOLOGIES
- LAW 5155 - EHEALTH LAW
- LAW 5201 - ADMINISTRATIVE LAW
- LAW 5212 - BUSINESS PLANNING, ENTREPRENEURSHIP AND TECHNOLOGY
- LAW 5251 - BIOTECHNOLOGY LAW
- LAW 5283 - MENTAL HEALTH LAW
- LAW 5339 - LAW OF DISABILITY DISCRIMINATION
- LAW 5355 - NON-PROFIT ORGANIZATIONS
- LAW 5391 - ELDER LAW CLINIC
- LAW 5430 - INFORMATION PRIVACY: LAW AND PRACTICE
- LAW 5672 - IMPLICIT BIAS IN HEALTH CARE
- LAW 5721 - FDA LAW & POLICY
- LAW 5731 - CURRENT ISSUES IN HEALTH LAW
- LAW 5735 - AI - PRACTICALITY & GOVERNANCE
- LAW 5760 - HEALTH JUSTICE SEMINAR
- LAW 5764 - STREET MEDICINE PRACTICUM
- LAW 5865 - ELDER LAW SEMINAR

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Total Credits: 18

Law - International and Comparative Law Concentration - JD Program

The International & Comparative Law Concentration is intended to provide JD students a foundation for careers and further study in the application of legal regimes to transnational and international relationships. Students should keep in mind that in order to be a good international or comparative lawyer, one must first be a good domestic lawyer. Thus, JD students in this concentration are expected and encouraged to obtain the same broad background in law expected of all graduates of the University of Pittsburgh School of Law.

Expected Learning Outcomes

In completing their coursework for the Certificate, students will:

- Learn and understand the substantive and procedural law in the area of international and comparative law;
- Produce substantial written work in the area of international and comparative law, generally in the form of a seminar paper supervised by a professor in the discipline; and
- Acquire the ability to apply subject matter expertise in international and comparative law in experiential settings such as clinics and externships or through classroom simulations.

Requirements

To receive the International & Comparative Law Concentration upon graduation, students must complete:

- the required courses (below);
- satisfy the Upper Level Writing Requirement (ULW) with a paper focused on international or comparative law content;

- complete twelve credits of elective courses (below);
- and attend two designated CILE programs in each of the candidate's 2L and 3L years at the School of Law.

The courses that qualify as international and comparative law electives for purposes of the Concentration requirements are determined annually. In general, a course will satisfy the elective requirement if at least 25 percent of its content is in the areas of international or comparative law. Listed below are courses offered in recent years that have satisfied this elective requirement. You should consult the schedule of courses for any given term to determine what courses are being offered and the credits awarded. For new course offerings, you should contact CILE to determine if a given course will satisfy the elective requirement. Courses in the School of Law that do not have a predominantly international or comparative law subject matter may be approved for elective purposes on a case-by-case basis at the discretion of the CILE Academic Director if, in practice, the student's work in the class included that element in a particularly substantial manner; for example, the student satisfies the written requirement of a "W" course with a paper using a comparative law approach. (Note this would not be permitted if the given paper was also being used to satisfy the ULW requirement.)

Coursework outside the School of Law may also be eligible to satisfy up to 3 elective credits if the CILE Academic Director determines that at least 25 precent of its content is in international topics, that it otherwise is an appropriate course for these purposes, and the use of these credits has been approved by the Vice Dean of the School of Law as qualifying under School policy for the six credits of non-School of Law coursework permitted to be credited towards the JD degree. Proposed elective courses outside the School of Law must be approved in advance by the CILE Academic Director as well as in accordance with general School of Law policies.

Required Courses

- LAW 5226 - INTERNATIONAL LAW
- LAW 5225 - INTERNATIONAL BUSINESS TRANSACTIONS

Example Electives

- LAW 5204 - COLONIALISM & INTERNATIONAL LAW
- LAW 5165 - COMPARATIVE LAW: THE US AND EUROPEAN UNION
- LAW 5622 - COMPARATIVE PROFESSIONAL RESPONSIBILITY
- LAW 5304 - COMMERCIAL TRANSACTIONS
- LAW 5213 - CONFLICT OF LAWS
- LAW 5986 - INTERNATIONAL ARBITRATION SEMINAR
- LAW 5043 - INTERNATIONAL COMMERCIAL ARBITRATION
- LAW 5871 - INTERNATIONAL CRIMINAL LAW SEMINAR
- LAW 5275 - INTERNATIONAL AND FOREIGN LEGAL RESEARCH
- LAW 5653 - INTERNATIONAL HUMAN RIGHTS
- LAW 5680 - CAPITAL MARKETS/INTERNATIONAL BANKRUPTCY
- LAW 5547 - INTERNATIONAL INTELLECTUAL PROPERTY LAW
- LAW 5841 - INTERNATIONAL TAX
- LAW 5087 - INTERNATIONAL TRADE LAW AND REGULATION
- LAW 5149 - LAW OF ARMED CONFLICT
- LAW 5475 - SPANISH FOR LAWYERS
- LAW 5476 - SPANISH FOR LAWYERS 2
- LAW 5694 - TRADEMARK LAW

Registration

To register for the International & Comparative Law certificate program, complete the Registrar's online form anytime during the school year.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - John P. Gismondi Civil Litigation Concentration - JD Program

Pitt Law's John P. Gismondi Civil Litigation Concentration offers a special curriculum for JD students devoted exclusively to training the trial lawyers of tomorrow. Are you drawn to the real-life drama of the courtroom? Do you have dreams of becoming a trial attorney? If so, then the University of Pittsburgh School of Law may just be the place for you. Through its John P. Gismondi Civil Litigation Concentration, Pitt Law can provide you with a curriculum devoted to training the trial lawyers of tomorrow.

JD students who wish to register for the Gismondi program do so at the beginning of their second year of study. All students enrolled in the program will take specific required foundational core courses, a clinic or practicum, and several specialized classes during their second and third years.

At the Program Director's discretion, JD students may register for the program after their third semester of law school if there is a reasonable likelihood that they can complete the program requirements on time. Please review the requirements carefully before enrolling in the program and be aware of course prerequisites. Enrolling in Evidence in the Fall semester of the second year is advised to give you ample opportunity to complete the requirements.

Class size is kept small in each specialized skills course to enrich the learning experience. Students are not only taught legal rules and principles in a typical lecture format but are, more importantly, assigned to "role-play" in various real-world litigation scenarios, each designed to develop specific skills essential to successful trial work.

Students complete their training by taking a required litigation skills clinic or practicum selected from this group of options. In all of these clinics, students have the potential to represent real clients in actual court proceedings.

The students in the John P. Gismondi Civil Litigation Concentration will complete their law school education having developed a set of skills that better prepares them to do courtroom work than traditional law school graduates, and that advantage, in turn, makes the Gismondi concentration students more attractive to law firms seeking to hire young and enthusiastic litigation associates.

Requirements

All students must follow the JD degree requirements in order to graduate. To qualify for this certificate, students must complete the Core Courses and Required Specialized Skills Courses listed below. In addition, students must take a litigation skills clinic or practicum, or a combination thereof, approved by the Director of the Civil Litigation Program for a minimum of four credits.

Students must participate in the Murray S. Love Trial Moot Court Program during their second or third year or the Interscholastic Mock Trial Team (enroll in the attendant seminar Mock Trial Strategy and Practice).

Students must participate in the Program's Court Observation. Students will spend a day organized by the Academy of Trial Lawyers of Allegheny County observing court proceedings. Students will fulfill this requirement in their third year. Students must sign up with the Program Director in order to participate on one of these dates.

Core Courses

- LAW 5103 - EVIDENCE
- LAW 5407 - TRIAL ADVOCACY
- LAW 5616 - MOCK TRIAL STRATEGY AND PRACTICE

Specialized Skills courses

Students must take three of these courses for six credits. One of the courses marked with * may be substituted for one of the specialized skills courses upon request to the Director.

- LAW 5197 - ADVANCED PENNSYLVANIA TORT PRACTICE
- LAW 5295 - EXPERT WITNESS
- LAW 5236 - PRE-TRIAL PRACTICE-PLEADINGS AND DISCOVERY
- LAW 5223 - ADVANCED TRIAL EVIDENCE
- LAW 5320 - LITIGATION STRATEGY AND PLANNING
- LAW 5422 - ALTERNATIVE DISPUTE RESOLUTION *
- LAW 5630 - FEDERAL CIVIL LITIGATION SKILLS *

Clinic or Practicum

Students must take a minimum of three credits in experiential learning courses

- LAW 5391 - ELDER LAW CLINIC
- LAW 5398 - FAMILY EMPOWERMENT & LEGAL ACCESS CLINIC

- LAW 5425 - LOW-INCOME TAX CLINIC
- LAW 5429 - COMMUNITY LAWYERING
- LAW 5880 - IMMIGRATION LAW CLINIC
- LAW 5883 - ENVIRONMENTAL LAW & POLICY CLINIC
- LAW 5874 - SECURITIES ARBITRATION CLINIC
- LAW 5937 - PA PRACTICE ANTI-EVICTION PRACTICUM
- LAW 5939 - CRIMINAL DEFENSE PRACTICUM
- LAW 5952 - CRIMINAL PROSECUTION PRACTICUM
- LAW 5393 - HEALTH LAW CLINIC

Registration

Please review the above requirements carefully before enrolling in the Gismondi Civil Litigation Concentration. Be aware of course prerequisites. Enrollment generally occurs at the end of the first year or within the first week of the second year (before the add-drop period ends). Enroll by completing the Concentration Program form. At the Program Director's discretion, students may register for the program after their third semester of law school if there is a reasonable likelihood that they can complete the program requirements. Taking Evidence in the fall semester of the second year is advised to give you ample opportunity to complete the requirements. A student who wants to disenroll from the Concentration must complete the Concentration Program form, choosing the "Drop" option.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Public Policy Concentration - JD Program

JD studetns can earn the Public Policy Concentration by completing the Policy Track of the Semester in DC Program in the spring semester of your 2L or 3L year.

While JD students learn many skills that are useful for policy-related work, they do not typically learn how to apply those skills in a policy context, for example by analyzing a government agency report, mapping the stakeholders on a particular issue, preparing questions for a Senate hearing, writing a short policy brief, or developing an advocacy campaign.

The Semester in DC Program Policy Track is designed to fill this gap by teaching you how to apply your legal advocacy, research, and writing skills in the policy context, so that you can successfully engage in policy-related work after graduation. The Policy Track is offered each spring semester jointly with the Graduate School of Public and International Affairs (GSPIA) at Pitt's Washington Center in downtown Washington, DC.

Highlights of the Semester in DC Program Policy Track include:

- A policy-related externship with a government or nonprofit organization in Washington, DC
- Classes that are focused on learning from policy experts who regularly visit as guest speakers and on attaining pragmatic policy advocacy, analysis, and writing skills
- Joint classes with GSPIA students, so that both policy and law perspectives are represented in each class
- An individual alumni mentor for each student, as well as connections with Law and GSPIA's alumni network of hundreds of attorneys and policy practitioners in the Washington, DC area

By completing the Public Policy Concentration, students are expected to achieve the following Learning Outcomes:

- Students will understand and be able to describe the processes by which law and policy are developed, contested, and implemented. They can identify and explain factors and dynamics affecting these processes.
- Students will learn how to apply their research, analysis, and writing skills in a policy context by regularly practicing their informal writing skills and by researching and writing a policy issue brief.
- Students will improve their proficiency in policy skills, such as stakeholder mapping, preparing for and summarizing Congressional hearings, or designing advocacy campaigns.

- Students will explore and be able to describe the professional roles of lawyers and policymakers in lawmaking and policy development.
- Through policy-related externships and classroom simulations, students can apply their subject matter expertise, legal knowledge, and professional skills in real-life policy settings. This will benefit them as they enter a policy career or another field in which knowledge of law and policy is important.

Requirements

You can earn the Public Policy Concentration by completing the Policy Track of the Semester in DC Program after taking the required 1L Legislation and Regulation course.

The Public Policy Concentration requires students to earn 15 credits in the policy-related classes listed below. Students will have already completed the 3-credit foundational course in Legislation and Regulation in their 1L year. Students can complete the 12 remaining credits by participating in the Semester in DC Program Policy Track, which offers the listed courses. Only the courses listed below may be used to fulfill the requirements of this concentration; other courses may not be substituted.

Foundational Course (3 credits)

- LAW 5032 - LEGISLATION AND REGULATION

Electives (up to 7 credits Required)

- LAW 5877 - PUBLIC POLICY SEMINAR
- LAW 5666 - LOBBYING AND ADVOCACY
- LAW 5668 - POLICY COLLOQUIUM
  or
- LAW 5954 - D.C. SEMINAR
  (Students may apply 1 credit from the DC Seminar to the Public Policy Concentration if their seminar papers are approved in advance as policy-focused.)

Skills Component (5 credits required)

- LAW 5667 - POLICY EXTERNSHIP *
- LAW 5955 - D.C. EXTERNSHIP *
  * must be approved in advance as policy focused.

Registration

Students who wish to earn the Public Policy Concentration by participating in the Semester in D.C. Program Policy Track should complete the Certificate/Area of Concentration Registration Form. This form should be filled out by the first week of the semester in which the student participates in the Semester in D.C. Program Policy Track to effectively enable Professor Baylis to oversee the student's completion of the requirements.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Tax Law Program - JD Program

The Area of Concentration in Tax Law is intended to provide JD students with a solid foundation in tax law that can be used either to enter a career in tax law, as a basis for pursuing further study in tax law, or as an adjunct to a career in another area of law. Tax law is unique in that it intersects with every area of the law-from energy and environmental law to corporate law to health law to personal injury law, just to name a few examples. Knowledge of tax law is thus important whether one wishes to specialize in tax law or whether one wishes to gain a deeper knowledge of tax law to improve skills in another area of law (e.g., in advising corporations, partnerships, and other businesses).

JD students may pursue this concentration by taking a foundational course in tax law, six credits of elective courses, and three credits of skills-based courses.

Requirements

The Tax Law Area of Concentration requires a minimum of 13 credits. The program requirements are divided into foundational, elective, and skills. Students must take a foundational course in tax law, 6 credits from among the listed elective courses, and 3 credits from among the listed skills courses.

By completing these courses, it is expected that students enrolled in the concentration will learn and understand the substantive and procedural law in the area of federal tax law and will acquire the ability to apply subject-matter expertise in the area of federal tax law in experiential settings (e.g., clinics and externships or through classroom simulations) that will benefit them as they enter a career in the tax field or in another field in which knowledge of tax law is essential.

Foundational Course (Required)

- LAW 5105 - FEDERAL INCOME TAXATION

Elective Courses (6 credits required)

- LAW 5817 - CORPORATE TAXATION
- LAW 5371 - PARTNERSHIP TAXATION
- LAW 5259 - ESTATE AND GIFT TAX
- LAW 5414 - ESTATE PLANNING
- LAW 5200 - INTRODUCTION TO ACCOUNTING FOR LAWYERS
- LAW 5841 - INTERNATIONAL TAX *
- LAW 5325 - FEDERAL TAX PRACTICE AND PROCEDURE
- LAW 5355 - NON-PROFIT ORGANIZATIONS
- LAW 5273 - STATE AND LOCAL TAX
- LAW 5511 - TAX LAW & POLICY SEMINAR
- LAW 5818 - LAW INTERSESSION
- LAW 5931 - PITTSBURGH TAX REVIEW
  Please note: A maximum of one credit from the *Pittsburgh Tax Review* will count toward satisfying the requirements for the concentration.

Skills Component (3 credits required)

- LAW 5425 - LOW-INCOME TAX CLINIC
  Tax Law Moot Court Competition
- LAW 5414 - ESTATE PLANNING
- LAW 5955 - D.C. EXTERNSHIP
  Externship in area of Tax Law

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Registration

To register for the Tax Law concentration, complete the Registrar's online form anytime during the school year.

Concentration

Law - Environmental and Energy Law Concentration - JD Program

Law - Environmental and Energy Law Concentration

Pitt Law offers JD students who wish to explore the Environmental and Energy law field a flexible concentration with courses designed to equip them with the skills necessary for success. Students can study the key laws and regulations they will apply in their future legal practice. They can choose to take courses that cover any - or all - of the following substantive areas of law: pollution control, energy, oil and gas (including the law of shale plays), electrical utilities, land and natural resource use and conservation, renewable energy, and climate change.

By completing this program, it is expected that JD students enrolled in the concentration will gain a comprehensive understanding of the substantive and procedural law of environmental and energy law. They will also acquire the ability to apply subject-matter expertise in environmental and energy law in experiential settings (e.g., clinics and externships or through classroom simulations) that will benefit them as they enter a career in the environmental or energy field or in another field in which knowledge of environmental or energy law is important.

Requirements

All students must follow the JD degree requirements in order to graduate. To qualify for this concentration, students are required to take a foundational course in environmental law, 5-6 credits of electives, and 4-6 skills-based credits.

Please note that this program may require that you complete an internship, externship, or other field work at a facility or facilities external to the University and that such facility or facilities may require a criminal background check, an Act 33/34 clearance (if applicable), and perhaps a drug screen to determine whether you are qualified to participate.

Required Course

- LAW 5340 - ENVIRONMENTAL LAW

Elective Courses (5-6 credits required)

- LAW 5201 - ADMINISTRATIVE LAW
- LAW 5038 - ENERGY LAW
- LAW 5082 - CLIMATE CHANGE AND THE LAW
- LAW 5295 - EXPERT WITNESS
- LAW 5198 - ANIMAL LAW

Skills Component (4-6 credits required)

- LAW 5883 - ENVIRONMENTAL LAW & POLICY CLINIC
- Environmental Moot Court Competition
- Externship in the area of Environmental Law or Energy Law
- LAW 5955 - D.C. EXTERNSHIP

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - IP, Tech, & Innovation Law Concentration - JD Program

Intellectual property law encompasses patents, copyrights, and trademarks as its core subjects, along with specialized bodies of law for designs, plants, and geographical indications, among other things. "Innovation law" is meant to deal broadly with IP issues and with related business law, employment law, technology law, trade law, and free speech law questions-among many others-for individuals, firms, and

governments in the arts, entertainment, privacy and security, software and computer networks, life sciences, and technology development and commercialization. Today, Pitt Law is building on its distinguished tradition of scholarship and teaching in these disciplines.

The IP, Tech, and Innovation Law Concentration is designed to give JD students a focused introduction to these bodies of law and practice while getting a broad grounding in modern law practice. No scientific or technical background is required to pursue the Area of Concentration or practice law in any related field. However, students who wish to practice law as a patent prosecutor do need to have an engineering degree or other similar technical qualification.

JD students may pursue this concentration by taking foundational courses in intellectual property law, 5-6 credits of electives, and 4-6 skills-based credits. These skills-based credits will equip students with the practical skills necessary to excel in their future careers.

Concentration Requirements

All students must follow the JD degree requirements in order to graduate. To qualify for this concentration, students must have a minimum of 14 credits and meet the below course requirements. In addition, students can opt to use one of the following as a Skills Component:

- Giles Sutherland Rich Moot Court Competition (1 credit)
- Cardozo/BMI Moot Court Competition (1 credit)
- Externships with government agencies or other organizations that focus on intellectual property and/or technology law, practice, and/or policy (4 credits)
- Semester in DC externship with a focus on intellectual property and/or technology law, practice, and/or policy (13 credits)

Foundational Courses (2 courses totaling 5-6 credits required)

- LAW 5210 - PATENT LAW
- LAW 5260 - INTELLECTUAL PROPERTY
- LAW 5328 - COPYRIGHT
- LAW 5694 - TRADEMARK LAW

Elective Courses (5-6 credits required)

- LAW 5126 - CORPORATE & VENTURE FINANCE
- LAW 5212 - BUSINESS PLANNING, ENTREPRENEURSHIP AND TECHNOLOGY
- LAW 5251 - BIOTECHNOLOGY LAW
- LAW 5352 - LAW & ECONOMICS
- LAW 5430 - INFORMATION PRIVACY: LAW AND PRACTICE
- LAW 5547 - INTERNATIONAL INTELLECTUAL PROPERTY LAW
- LAW 5690 - BLOCKCHAIN FOR LAWYERS
- LAW 5719 - APPLIED LEGAL DATA ANALYTICS AND AI
- LAW 5722 - TECHNOLOGY, RACE & THE LAW
- LAW 5735 - AI - PRACTICALITY & GOVERNANCE
- LAW 5754 - TECHNOLOGY, LAW & LEADERSHIP
- LAW 5763 - ANTIRACIST INTELLECTUAL PROPERTY LAW

Skills Component (4-6 credits required)

- LAW 5135 - COMMERCIALIZING NEW TECHNOLOGIES
- LAW 5242 - PATENT LAW PRACTICE
- LAW 5276 - PATENT LITIGATION
- LAW 5481 - INTELLECTUAL PROPERTY LICENSING
- LAW 5647 - INTRODUCTORY ENTERTAINMENT LAW
- LAW 5695 - TRADEMARK LAW PRACTICE
- LAW 5839 - LAW ENTERTAINMENT AND SOCIAL ENTERPRISE PRACTICUM

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Doctoral

Law - Juridical Science, SJD

Program Information

The Doctor of Juridical Science (SJD) is the Law School's most advanced degree, which is designed for legal academics who wish to pursue advanced independent study, research and writing. The Law School's SJD program offers candidates the opportunity to become active members of a vibrant legal community.

Degree Requirements

The SJD is a research degree. There is no formal requirement for candidates to pursue course work, whether for credit or otherwise, other than required participation in a non-credit, ungraded colloquium for SJD students during their first year in the program. However, a candidate may be required by his advisor to take or audit courses and participate in seminars and discussions which will further the student's understanding of his or her field of knowledge and its relation to other fields. Each candidate will be allowed 2-4 years to complete the program, the first year of which must be spent in residency at the University of Pittsburgh School of Law. The year of residency is in addition to the LLM year for Pitt Law LLM graduates. A candidate is required to conduct rigorous research and produce an original dissertation that will contribute significantly to legal scholarship and further understanding of the law. Specifically, a candidate is required to submit a dissertation overview, defend that overview, submit a doctoral dissertation, and successfully defend the dissertation. The SJD degree must be completed under the supervision of a faculty member who has consented to serve as the faculty advisor.

Graduate Certificate

Law - Corporate Compliance Certificate - MSL Program

Law - Corporate Compliance Online Certificate - MSL Program

The Graduate Certificate in Corporate Compliance is an 11-month, accredited, online program that fills a growing need for compliance professionals and leverages the University of Pittsburgh School of Law's reputation and expertise in this area.

As international trade and globalization continue to grow, U.S. corporations doing business abroad and foreign corporations doing business with U.S. corporations find themselves subject to a multitude of U.S. legal compliance requirements. Organizations recognize reputational risk can be as great as or greater than strategic, financial or operational risks. As a result, compliance programs are growing as many organizations implement them to prevent and detect misconduct and to protect the interests of employees, shareholders, and businesses and to guard against reputational risk.

Compliance professionals are key to ensuring that organizations are complying with their own policies and procedures as well as applicable legal statutes, regulations, and judicial decisions.

The Graduate Certificate in Corporate Compliance is designed for U.S. and foreign corporate employees who work or wish to work in the corporate compliance area, such as lawyers, paralegals, and other compliance professionals in finance, internal audit, human resources and environmental sustainability, in order to enhance their careers by expanding their knowledge, skills, and professional understanding of corporate compliance.

The program covers key foundational topics in corporate compliance, and it enhances the ability of students to understand the fundamentals of corporate compliance, to design a compliance program as well as related policies and procedures, and to evaluate the effectiveness of ethics and compliance programs. Faculty - both full-time and part-time - who teach or practice corporate compliance teach the four mandatory and one elective 3-credit courses over the course of the 40-week program. The required curriculum covers legal aspects of corporate compliance; ethics and compliance; designing, measuring effectiveness, and auditing compliance programs; and conducting investigations and risk assessments. In addition, several electives are available to students who wish to specialize in a particular area of compliance such as Foreign Corrupt Practices Act, Antitrust, International Trade and Export, Pharmaceutical and Medical Devices, and Securities compliance.

Students learn how to establish an effective program to monitor organizational misconduct; to ensure that employees and third parties have mechanisms in place to report misconduct and seek advice; to audit compliance and ethics risks; and to evaluate the effectiveness of the ethics and compliance program as well as other issues around public company disclosures and compliance programs. The potential clientele discussed includes individuals, as well as for-profit and nonprofit corporations, and hybrid and governmental entities.

The program helps position students for leadership in:

- Corporate compliance and ethics
- Regulatory affairs
- Compliance program training
- Policy development, including CSR (Corporate Social Responsibility) and ESG (Environmental, Social, and Governance)
- Auditing and monitoring
- Financial fraud
- Environmental and other corporate compliance

Curriculum:

- LAW 2011 - Introduction to Corporate Compliance
- LAW 2012 - Ethics and Compliance
- LAW 2013 - Designing, Measuring Effectiveness, and Auditing Compliance Programs (Based on US DOJ Guidance)
- LAW 2014 - Conducting Investigations and Risk Assessments
- LAW 2015 - Special Topics in Corporate Compliance

Law - Health Care Compliance Online Graduate Certificate - MSL Program

The Health Care Compliance Graduate Certificate Program is a fully online, accelerated 11-month graduate certificate program designed for working professionals. This advanced, accelerated program will support you as you take on more strategic compliance roles. In this program, you will:

- Learn the relevant law, practical applications of compliance, best practices and explore current issues;
- Interact with expert faculty-professors from the School of Law and School of Public Health, current and former federal regulators, and compliance industry experts;
- Network and collaborate with your peers in other industries and locations through innovative online applications; and
- Work on weekly assignments when and where you choose.

This program is designed for:

- Compliance professionals who wish to enhance their understanding and professional development;
- Attorneys who wish to acquire an appreciation of the compliance industry, client needs, and issues;
- Health care professionals who must understand compliance;
- Industry administrators and leaders; and/or
- Those interested in an exciting career change.

HCC Online course work is asynchronous, meaning there are no scheduled meeting times or locations. You will complete each course in the program within eight weeks, working through weekly modules, based on your own schedule and from any location.

The objectives of the Health Care Compliance Online program are to:

- Provide an understanding of the laws that shape the health care industry in general, and compliance in particular;
- Help students acquire a deeper understanding of the regulatory context of compliance;
- Help students develop the skills and knowledge necessary to identify compliance issues, guide change, and navigate complexity while supporting an ethical culture;
- Identify best practices in compliance management;
- Enhance critical thinking and problem solving skills in a compliance context;
- Help students acquire knowledge and skills to manage conflict;
- Improve students' communication and presentation skills; and
- Facilitate peer-to-peer learning and networking opportunities.

Required Courses (15 credits):

- LAW 2061 - LEGAL ASPECTS OF HEALTHCARE COMPLIANCE
- LAW 2062 - INTRODUCTION TO LEGAL SYSTEM FOR HEALTHCARE AND COMPLIANCE
- LAW 2968 - EFFECTIVE COMPLIANCE PROGRAM DEVELOPMENT AND SKILLS
- LAW 2969 - PROFESSIONAL JUDGEMENT AND ETHICS, THE CANVAS OF COMPLIANCE
- LAW 2970 - SELECT APPLICATIONS IN COMPLIANCE

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Human Resources Law Online Graduate Certificate - MSL Program

The Human Resources Law Graduate Certificate program is an 11-month, accelerated program. It offers five courses designed to be taken in order. Each is eight weeks in length. At the completion of the program, students will be eligible to sit for some of the industry-based human resources certification exams offered by the Society for Human Resource Management (SHRM) and the HR Certification Institute.

The Human Resources (HR) Law Certificate program provides students the legal and ethical tools to take on workplace challenges in a world of rapid technological, social and legal change. Students learn best practices and practical applications of the law to human resource situations and explore current issues that they may come across in their current position.

The certificate in HR Law is ideal for:

- HR professionals who want to enhance their understanding of HR laws and regulations
- Graduates of business administration programs who wish to develop a more thorough understanding of HR law and practices
- Professionals interested in an exciting career change
- College graduates interested in entering the HR field
- Attorneys who wish to acquire an appreciation of the HR field, client needs, and issues
- The HR Law Certificate cohort is comprised of professionals working in various roles in an array of industries. Certificate courses are taught by industry experts and Pitt Law Faculty.

Students may elect to combine their certificate studies with the Online MSL core courses to earn both a Master's Degree and a professional certificate in as little as two years, studying part-time.

Required Courses

- LAW 2070 - INTRODUCTION TO THE LEGAL SYSTEM FOR HUMAN RESOURCES; HIRING AND FIRING
- LAW 2071 - WAGES, HOURS AND BENEFITS
- LAW 2072 - WORKING CONDITIONS
- LAW 2073 - ANTI-DISCRIMINATION LAW
- LAW 2074 - SELECTED TOPICS IN HUMAN RESOURCES LAW

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - International Business Law Online Graduate Certificate - MSL Program

Pitt Law's Online International Business Law Certificate program helps students advance or begin their careers in international commercial law. The curriculum focuses on key foundational topics in U.S. and international business law applied to business transactions, and to the resolution of cross-border disputes through litigation, mediation, and/or arbitration.

After completing the International Business Law Certificate, students will have a solid working knowledge of the complexities of cross-border business transactions, a roadmap of the potential pitfalls and most likely areas where disputes will arise, and the framework for how to either avoid those issues, or work toward resolving them if a formal dispute arises.

The IBL Certificate is an 11-month, accelerated program. It consists of five courses designed to be taken in order. Each is eight weeks long. The IBL courses are taught by experienced legal professionals serving as part-time professors, and by Pitt Law Faculty.

Students may elect to combine their certificate studies with the Online MSL core courses to earn both a Master's Degree and a professional certificate in as little as two years, studying part-time.

Required Courses

The following five courses are required for the certificate.

- LAW 2001 - INTRODUCTION TO US & INTERNATIONAL BUSINESS LAW
- LAW 2002 - COMMERCIAL ASPECTS OF CROSS-BORDER TRANSACTIONS
- LAW 2003 - SPECIALTY AREAS IN CROSS-BORDER TRANSACTIONS
- LAW 2004 - FOUNDATIONS OF INTERNATIONAL DISPUTE RESOLUTION & LITIGATION
- LAW 2005 - SPECIAL TOPICS IN INTERNATIONAL OR DISPUTE RESOLUTION

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Sports, Entertainment & Arts Law Online Graduate Certificate - MSL Program

The graduate certificate in Sprots, Entertainment & Arts Law (SEAL) fills a gap in the legal education market and leverages the strengths of the University of Pittsburgh School of Law, the larger University and its alumni, and the region. Our University and region have long produced leaders in sports, entertainment, and arts, from Panther to Steeler Nation, Fred Rogers to George Romero, and August Wilson to Andy Warhol. In today's rapidly changing, increasingly intersecting, and highly competitive sports, entertainment, and arts industries, leaders also need legal skills, knowledge, understanding, and connections to succeed. By launching the SEAL certificate program, Pitt Law is helping to ensure that our graduates, the University, and the region will receive their cultural, social, and economic return on investment.

The SEAL certificate is an 11-month, accelerated program that targets the market of business, legal, and creative professionals who are currently working or planning to work in sports, entertainment, and or arts/sectors, and who wish to expand their legal skills, knowledge and understanding of these industries. These three synergistic sectors present similar legal issues, involving labor and employment, intellectual property, corporate, and commercial transactions law. Pitt Law Faculty with expertise in these fields oversees the development and implementation of the SEAL courses, which are taught by regular and adjunct Pitt Law faculty with industry experience.

By combining the study of sports, entertainment, and arts law into one program, the SEAL certificate seizes an opportunity to fill a gap left in the fields of sports, entertainment, and arts law education. Currently, the only programs offered by U.S. law schools that cover all three sectors are costly, in-person, full-time programs limited to lawyers or law students seeking degrees. Although a few part-time, online programs in these legal fields do now exist, these programs force students to choose one or two sectors, despite the increasing intersection of all three of these competitive industries.

SEAL students can apply their credits towards fulfilling the requirements in our Master of Studies in Law (MSL) degree.

Students may elect to combine their certificate studies with the Online MSL core courses to earn both a Master's Degree and a professional certificate in as little as two years, studying part-time.

Course Requirements: 15 Credits

Applicants must have earned a baccalaureate degree at an accredited institution. Admissions decisions will be made based on professional experience, academic credentials, and a personal statement. In some instances, an interview (online or via phone) may be required. Students must complete the entire curriculum to earn the certificate.

- LAW 2006 - INTRODUCTIO TO THE LAW & BUSINESS OF SPORTS, ENTERTAINMENT, & ARTS LAW
- LAW 2007 - LABOR & EMPLOYMENT LAW IN SPORTS, ENTERTAINMENT AND ART LAW
- LAW 2034 - SPORTS, ENTERTAINMENT AND ART INTELLECTUAL PROPERTY LAW
- LAW 2035 - ORGANIZATIONS, FINANCE & DISTRIBUTION LAW IN SEAL
- LAW 2036 - SPECIAL TOPICS IN SEAL

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Joint Degree

Law and Arts Management (Carnegie Mellon), JD/MAM

The University of Pittsburgh School of Law and Heinz College offer a joint degree program designed to train students for careers in which arts management and law overlap. This program, spanning four years, prepares you for careers in which arts management and law overlap. You must satisfy both schools' degree requirements, but some credit is given by each school for completing the other school's program.

The joint degree program is designed to be completed in eight semesters over four academic years instead of the five years required if pursued separately. Students interested in the joint degree program can pursue both programs simultaneously. During the first year, students study at either the Heinz School or the School of Law, taking the standard first-year curriculum of the respective school. The second year involves full-time study at the other school. For the third and fourth years, students take courses at both schools. In order to graduate with both degrees, students have to fulfill both schools' degree requirements.

Law Arts Management Requirements

The Heinz School of Public Policy and Management and the Law School have different degree requirements. Carnegie Mellon courses are counted in units and University of Pittsburgh courses are counted in credits. A 12-unit course is the equivalent of a 4-credit course. To

fulfill the program requirements for the Law School, students have to complete 88 credits while the Heinz School requires 198 units for the MAM degree. Students in the joint degree program are able to transfer 30 units to the Heinz School degree after completing their JD degree and 14 credits to the JD degree after completing their MAM degree.

Students are required to register for a minimum of one class per semester at Heinz College during years 3 and 4 in order to qualify for the transfer of credits between institutions. A full listing of the requirements for graduation from the University of Pittsburgh School of Law can be found on the Graduation Requirements page.

Before selecting courses for each program, students are required to meet with their Academic Advisors at both programs to map out a course of study. In addition to the course work for both programs, Heinz School students are required to complete a summer internship after their first year at the Heinz School. Students can receive assistance from the Career Services Office in securing an internship.

Since degrees in the joint programs are awarded concurrently, it is important to note that a student who resigns from one program will be subject to all the requirements for graduation from the remaining degree program.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Bioethics, JD/MA

Program Overview

JD/MA, University of Pittsburgh School of Arts and Sciences and the Center for Bioethics and Health Law

The School of Law and the School of Arts and Sciences (A&S) offer a joint degree program in law and bioethics. Graduates of the program receive the Juris Doctor (JD) degree, the basic professional degree in law, and the Master of Arts (MA) degree from FAS, in bioethics. The joint degree program is directed by Greer Donley, in cooperation with Lisa S. Parker, PhD, who directs the interdisciplinary Master of Arts in Bioethics.

The joint degree program has been established in recognition of the extensive and increasing overlap between law and bioethics. The objective of this educational program is to prepare graduates with an interdisciplinary background in law and bioethics so they can address those issues and situations that require knowledge of and expertise in both. Graduates will be academically prepared for professional roles as bioethicists in health care institutions, in public policy working for government or philanthropic organizations, or in the practice of law, for example, giving counsel to health care institutions.

Writing Requirements

The writing requirements for both degrees are simultaneously satisfied by completion of the master's thesis requirement in a subject in the field of law and bioethics.

Practica

The Clinical Practica ensure that students will be comfortable in and knowledgeable about the clinical setting by learning how to identify the normative issues in clinical cases and to be able to give practical advice regarding difficult bioethical dilemmas. Students are scheduled for six credits of clinically-based work, which may be reduced to three for students with previous health care training. In Clinical Practica I and II students participate in rounds with residents, physicians, and other healthcare professionals, attend twice-weekly seminars, and observe ethics consultations and clinical ethics teaching sessions.

In Clinical Practicum II, students participate in an intensive four-week rotation in the clinical area of their choice, allowing in-depth development in an area of clinical medicine. Students should relate this intensive clinical experience to their thesis topic.

In addition to meeting the specifically required coursework for the JD degree and the MA degree, students will select electives from among an array of courses available in the two separate degree programs. For a list of law school courses considered to be appropriate for students in this joint degree program, consult the courses listed as electives for the Health Law Certificate Program.

Advising

Students are required to consult with the Director of the Joint Degree Program during or prior to the spring registration period each year in order to assure that they meet all requirements of the Joint Degree program.

Credits

Students enrolled in the joint degree program accomplish this in three to four years. The degree requires 99 credits and includes 34 credits of specifically prescribed law courses, the Bioethics and Health Law Clinical Practicum (3 credits), and 18 specifically prescribed credits in bioethics. Within the remaining 45 credits, students must satisfy the requirements for their law degree, take a course from the list of Restricted Elective courses for the bioethics degree, and take at least 3 credits in a course relevant to bioethics (either in the law school or not).

Joint degree students must be coded by the University Registrar as "primary law" for at least five semesters. During these semesters, they pay tuition at the Law School rate and enroll in at least 10 credits of law school courses.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Business Administration (Carnegie Mellon), JD/MBA

The daily interaction of Law and Business in our society presents attorneys, entrepreneurs, and other professionals with a diverse set of challenges arising from public and private institutions, policies, and practices. A joint degree program can provide valuable interdisciplinary skills to tackle these challenges. To prepare the next generation of leaders, the University of Pittsburgh School of Law offers an outstanding joint degree program in Law and Business with a unique option.

Students may combine a Juris Doctor (JD) degree with a Master in Business Administration (MBA) from Carnegie Mellon University Tepper School of Business, which is in the top 20 of all U.S. business schools according to the the U.S. News rankings. The JD/MBA program enables students to receive integrated training in Law and Business while reducing the amount of time ordinarily necessary to earn the two degrees from five years to four years.

Requirements

Students in the JD/MBA program complete the joint degree in either eight (8), nine (9), or ten (10) semesters. During the first four (4) semesters of the program, students must enroll full-time for one (1) entire year at the School of Law and for one (1) entire year at the appropriate School of Business. Students have an option of enrolling either at the School of Law or the School of Business for the first-year of the program. During the third- and fourth years of the program students enroll in courses at both schools, subject only to availability and each school's respective upper-level requirements. To graduate from the Law School, students in the JD/MBA program must have five semesters of full-time enrollment (minimum of 10 credits per semester) at the Law School (rather than the six that is normally required).

School of Law

Details about the first-year program at the School of Law can be found on the First-Year Curriculum page. A full listing of the requirements for graduation from the University of Pittsburgh School of Law can be found on the Graduation Requirements page.

Tepper School of Business

To graduate with a JD/Tepper MBA degree students must acquire a total 88 credits from the School of Law and 64 credits (or 192 units) from Tepper. However, completing the MBA degree entitles the student to 15 credits of advanced standing at the School of Law, resulting in an actual total of 73 credits; and completing the JD degree entitles the student to 10 credits (or 30 units) at Tepper, resulting in an actual total of 54 credits (or 162 units). This means that, after a year at the School of Law and a year at Tepper, a student must acquire at least 40 additional credits from the School of Law and 22 credits (or 66 units) in electives from Tepper to graduate with a JD/MBA.

More information can be found on their website.

MBA Degree Requirements

Students enrolled in an MBA program must fulfill the following requirements in order to earn the MBA degree:

1. A minimum of 45 credits of approved graduate work
2. The appropriate distribution of required core courses and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

MBA Core Curriculum

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Professional Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a student's academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

Elective Courses

Students in the MBA program must complete a minimum of 19.5 elective credits from any area of study offered at the School of Business.

Taking electives at other Professional Schools at Pitt

Students may also choose to take elective courses at other professional schools at the University, including the School of Law, the Swanson School of Engineering, the School of Social Work, the Graduate School of Public and International Affairs, and the School of Computing & Information

Micro-credentials and Graduate Certificates

Students wishing to add additional specialization to the MBA program may be able to declare one or more micro-credentials or graduate certificates, many of which are stackable within the elective portion of the programs. Not all micro-credentials or graduate certificates will be feasible for every MBA program. Students should discuss their interest in micro-credentials and graduate certificates with their academic advisor to see how those requirements might be stackable within their degree program.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Business Administration, JD/MBA

The daily interaction of Law and Business in our society presents attorneys, entrepreneurs, and other professionals with a diverse set of challenges arising from public and private institutions, policies, and practices. A joint degree program can provide valuable interdisciplinary skills to tackle these challenges. To prepare the next generation of leaders, the University of Pittsburgh School of Law offers an outstanding joint degree program in Law and Business with a unique option.

Students may combine a Juris Doctor (JD) degree with a Master in Business Administration (MBA) from the University of Pittsburgh Katz Graduate School of Business, which is in the top 50 of U.S. public business schools according to the U.S. News rankings. The JD/MBA program enables students to receive integrated training in Law and Business while reducing the amount of time ordinarily necessary to earn the two degrees from five years to four years.

Requirements

Students in the JD/MBA program complete the joint degree in either eight (8), nine (9), or ten (10) semesters. During the first four (4) semesters of the program, students must enroll full-time for one (1) entire year at the School of Law and for one (1) entire year at the School of Business. Students have an option of enrolling either at the School of Law or the School of Business for the first-year of the program. During the third- and fourth years of the program students enroll in courses at both schools, subject only to availability and each school's respective upper-level requirements. To graduate from the Law School, students in the JD/MBA program must have five semesters of full-time enrollment (minimum of 10 credits per semester) at the Law School (rather than the six that is normally required).

School of Law

Details about the first-year program at the School of Law can be found on the First-Year Curriculum page. A full listing of the requirements for graduation from the University of Pittsburgh School of Law can be found on the Graduation Requirements page.

School of Business

To graduate with a JD/Katz MBA degree students must acquire a total of 76 credits from the School of Law and 33 credits from Katz. This means that, after a year at the School of Law and a year at Katz, a student must normally acquire at least 43 additional credits from the School of Law and 3 credits from Katz to graduate with a JD/MBA.

More information can be found on their website.

MBA Degree Requirements

The Katz MBA curriculum requirements may be found on the Katz School of Business website

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Information Security Policy (Carnegie Mellon), JD/MSISPM

Pitt Law and Heinz College offer a joint degree program to train students for careers in which management, information security, and law overlap. Participants will emerge with a broad knowledge of the fundamental intersections of law, government, privacy and information security, and management. The multidisciplinary nature of this program allows for practical skill sets to solve economic and social problems that require technological, managerial, and legal expertise.

Cybersecurity, information privacy, intellectual property law, cybercrime, and other IT-related sectors are growing rapidly. There are many job opportunities in this emerging space, many with legal dimensions. Joint degree program graduates will be better prepared to compete for and succeed in those jobs.

Curriculum & Requirements

The joint degree program is designed to be completed in eight semesters over four academic years instead of the five years required if pursued separately. Students can pursue both programs simultaneously. During the first year, students study at either Heinz College or Pitt Law, taking the standard first-year curriculum of the respective school. The second year involves full-time study at the other school. For the third and fourth years, students take courses at both schools. To graduate with both degrees, students must fulfill both schools' degree requirements.

Heinz College and Pitt Law have different degree requirements. CMU's courses are counted in units, and the University of Pittsburgh's in credits. A 12-unit course is the equivalent of a 4-credit course. To fulfill Pitt Law's program requirements, students must complete 88 credits, while Heinz College requires 198 units. Students in the joint degree program can transfer 30 units to the Heinz College degree after completing their JD degree and 14 credits to the JD degree after completing their Heinz College degree.

Students must register for at least one class per semester at Heinz College during years 3 and 4 to qualify for credit transfer between institutions.

Before selecting courses, students must meet with their Academic Advisors at both programs. In addition to the coursework for both programs, Heinz College students must complete a summer internship after their first year at Heinz College. The Professional Development Office can assist students in securing an internship.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and International Development, JD/MID

This program provides rigorous, integrated training for students preparing for a professional career that combines law and public and international affairs. Increasingly, lawyers in the public and nonprofit private sectors work in managerial and policy-making capacities for which legal training alone does not prepare them. At the same time, legal considerations impinge more than ever on the work of public managers and planners, although most of them have had no exposure to legal training. Students in the joint-degree program gain a broadened knowledge base and a cross disciplinary approach to solving problems involving the intersection of law, policy, and management. They also develop more marketable professional skills than are usually acquired through single-degree programs.

Professionals trained in both law and public and international affairs thus enjoy expanded career opportunities. The University of Pittsburgh's program is unique because of the range of master's degree options available.

Curriculum & Requirements

The structuring of this four-year degree program is flexible. A student may begin study in either school. The only requirement in this connection is that the first year in the School of Law be taken in its entirety, with no outside courses. GSPIA also expects joint-degree program students to complete the required master's degree core courses early in their program in GSPIA.

Degrees in the joint-degree program are awarded concurrently. Therefore, it is important to note that a student who resigns from one program and elects to remain in the other will be subject to all the requirements of that particular degree program. The previously described arrangement for awarding advanced-standing credits will no longer be in effect.

Each student must satisfy both schools' requirements as modified by participation in the joint-degree program. The credit requirements are as follows:

Program	Joint Degree Credits
Juris Doctor (JD)	79 Credits
Master of International Development	36 Credits
Total Credits for Joint Degree	115 Credits

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Public Administration, JD/MPA

This program provides rigorous, integrated training for students preparing for a professional career that combines law and public and international affairs. Increasingly, lawyers in the public and nonprofit private sectors work in managerial and policy-making capacities for which legal training alone does not prepare them. At the same time, legal considerations impinge more than ever on the work of public managers and planners, although most of them have had no exposure to legal training. Students in the joint-degree program gain a broadened knowledge base and a cross disciplinary approach to solving problems involving the intersection of law, policy, and management. They also develop more marketable professional skills than are usually acquired through single-degree programs. Professionals trained in both law and public and international affairs thus enjoy expanded career opportunities. The University of Pittsburgh's program is unique because of the range of master's degree options available.

The MPA degree offers three fields of study, which includes majors in Urban and Regional Affairs, Public and Nonprofit Management, and Policy Research and Analysis.

Curriculum & Requirements

The structuring of this four-year degree program is flexible. A student may begin study in either school. The only requirement in this connection is that the first year in the School of Law be taken in its entirety, with no outside courses. GSPIA also expects joint-degree program students to complete the required master's degree core courses early in their program in GSPIA.

Degrees in the joint-degree program are awarded concurrently. Therefore, it is important to note that a student who resigns from one program and elects to remain in the other will be subject to all the requirements of that particular degree program. The previously described arrangement for awarding advanced-standing credits will no longer be in effect.

Each student must satisfy both schools' requirements as modified by participation in the joint-degree program. The credit requirements are as follows:

Program	Joint Degree Credits
Juris Doctor (JD)	79 Credits
Master of Public Administration	36 Credits
Total Credits for Joint Degree	115 Credits

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Public and International Affairs, JD/MPIA

The University of Pittsburgh School of Law and Graduate School of Public and International Affairs (GSPIA) provide rigorous, integrated training for students preparing for a professional career that combines law and public and international affairs. Increasingly, lawyers in the public and nonprofit private sectors work in managerial and policy-making capacities for which legal training alone does not prepare them. At the same time, legal considerations influence the work of public managers and planners more than ever, although most have had no exposure to legal training.

Students in the joint degree program gain a broadened knowledge base and a cross-disciplinary approach to solving problems involving the intersection of law, policy, and management. They develop marketable professional skills that are usually acquired through single-degree programs. Professionals trained in both law and public and international affairs enjoy expanded career opportunities.

This program is unique because of the range of master's degree options. The MPA degree offers three fields of study, including urban and Regional Affairs majors, Public and Nonprofit Management, and Policy Research and Analysis. Students in the MPIA degree program pursue majors in Global Political Economy or Security and Intelligence Studies. Students interested in international development choose two significant fields: Development Planning and Environmental Sustainability or Non-Governmental Organizations and Civil Society.

Curriculum & Requirements

The structuring of this four-year degree program is flexible. A student may begin study in either school. The only requirement in this connection is that the first year in the School of Law be taken in its entirety, with no outside courses. GSPIA also expects joint-degree program students to complete the required master's degree core courses early in their program in GSPIA.

Degrees in the joint-degree program are awarded concurrently. Therefore, it is important to note that a student who resigns from one program and elects to remain in the other will be subject to all the requirements of that particular degree program. The previously described arrangement for awarding advanced-standing credits will no longer be in effect.

Each student must satisfy both schools' requirements as modified by participation in the joint-degree program. The credit requirements are as follows:

Program	Joint Degree Credits
Juris Doctor (JD)	79 Credits
Master of Public and International Affairs	36 Credits

Program	Joint Degree Credits
Total Credits for Joint Degree	115 Credits

***The Masters program at GSPIA may be either in Public and International, Public Administration, or International Development**

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Public Health, JD/MPH

The University of Pittsburgh Schools of Law and Public Health offers students an interdisciplinary curriculum in law and public health, health policy, and management. Students in this integrated joint degree program learn to address the legalities and challenges affecting individual health care and the health of entire populations. The joint Juris Doctor and Master of Public Health in Health Law Policy and Management (JD/MPH) recognizes the connections between law and the broad range of health services and provides students with an interdisciplinary curriculum in law and public health, health policy, and management. Students learn to address the legalities and challenges affecting individual health care and the health of entire populations.

Graduates pursue careers serving governmental agencies at the federal, state, and local levels, practicing law representing private clients, serving as in-house counsel or on the management team at healthcare organizations and systems, and working with non-profit and community-based organizations.

Many contemporary issues - from the threat of bioterrorism to health care reform to the opioid epidemic - create a need to balance individual rights with public protection and demand expertise in law and public health, making public health law an exciting and vital focus for attorneys.

For Additional Information

For information regarding entrance examinations, tuition and financial aid, writing requirements and field experience, please visit the GSPH website.

Curriculum & Requirements

Students enrolled in the joint degree program take Pitt Law and Pitt Public Health classes. In the ordinary course, the first year of law school must be completed in a single academic year before embarking on studies in public health. Students must complete 76 credits in the JD curriculum. Neither degree may be granted before fulfilling all requirements for the joint degree program.

Joint degree students earn their credentials faster (8 semesters instead of 10) and with fewer course requirements than if each degree were completed separately.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Public Policy and Management (Carnegie Mellon), JD/MSPPM

The University of Pittsburgh School of Law and Heinz College offer a joint-degree program designed to train students for careers in which management, public policy and law overlap. A successful partnership that has been in existence for over a decade, this program offers students a comprehensive education that marries the analytic and quantitative strength of the Heinz School with the rigorous legal training afforded by the School of Law. This joint degree offering is particularly beneficial to many students' careers since legal considerations

affect many public management and policy decisions, and the practice of law is enhanced by a clear understanding of public policy and management concerns. Participants of the program emerge with a broad knowledge of the fundamental intersections of law, government, policy analysis and management. Furthermore, the interdisciplinary nature of this program allows for practical skill sets to solve economic and social problems that require technological, managerial, and legal expertise.

The joint-degree program is designed to be completed in eight semesters over four academic years instead of the five years required if pursued separately. Students interested in the joint degree program can pursue both programs simultaneously. During the first year, students study at either the Heinz School or the School of Law, taking the standard first-year curriculum of the respective school. The second year involves full-time study at the other school. For the third and fourth years, students take courses at both schools. In order to graduate with both degrees, students have to fulfill both schools' degree requirements.

Curriculum & Requirements

Heinz College and Pitt Law have different degree requirements. Carnegie Mellon University's courses are counted in units, and the University of Pittsburgh's in credits. A 12-unit course is the equivalent of a 4-credit course. To fulfill Pitt Law's program requirements, students must complete 88 credits, while Heinz College requires 198 units. Students in the joint degree program can transfer 30 units to the Heinz College degree after completing their JD degree and 14 credits to the JD degree after completing their Heinz College degree.

The joint degree program is designed to be completed in eight semesters over four academic years instead of the five years required if pursued separately. Students can pursue both programs simultaneously. During the first year, students study at either Heinz College or Pitt Law, taking the standard first-year curriculum of the respective school. The second year involves full-time study at the other school. For the third and fourth years, students take courses at both schools. To graduate with both degrees, students must fulfill both schools' degree requirements.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Master's

Law - Foreign Law Graduates, LLM

The Master of Laws (LLM) degree provides foreign law graduates with critical training in the common law legal tradition, the U.S. legal system, and the global practice of law during an academic year at the University of Pittsburgh, located in Pittsburgh's vibrant Oakland neighborhood. Pitt Law's LLM program provides lawyers who have completed their law degree outside the United States with an opportunity to study common law legal tradition and the U.S. legal system from within the United States.

Degree Requirements

The LLM program is completed in one academic year from August to May, and students must complete a minimum of 24 credits to graduate. Part-time admission is considered on a case-by-case basis. The CILE Academic Director, Executive Director, and Program Administrator take an active role in personally counseling each LLM student on their course selections, helping you to plan a year of study that is uniquely tailored to your personal needs. Courses taken must include:

- LAW 5076 - LEGAL ANALYSIS AND WRITING
- LAW 5386 - FOUNDATIONS OF LEGAL RESEARCH
- LAW 5820 - LL.M COLLOQUIUM
  Writing Requirement - Choose one of the following:
- LAW 5902 - INDEPENDENT STUDY
  or a Seminar Course (Usually 3 credits-various courses are offered each semester). In seminars, the class will meet once a week for two hours with the guidance of a faculty member. The students will conduct research on the seminar topic and prepare drafts

of their paper throughout the semester. Each student will present their paper in class and submit a final paper at the end of the semester.

- LAW 5977 - INTRODUCTION TO AMERICAN LAW

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Total Credits: 24

Law - Foreign Law Graduates, LLM - Hybrid

The Master of Laws (LLM) degree provides foreign law graduates with critical training in the common law legal tradition, the U.S. legal system, and the global practice of law during an academic year at the University of Pittsburgh, located in Pittsburgh's vibrant Oakland neighborhood. Pitt Law's LLM program provides lawyers who have completed their law degree outside the United States with an opportunity to study common law legal tradition and the U.S. legal system from within the United States.

Degree Requirements

A Virtual to In-Person LLM option can be completed by students in as little as a year and a half. A student will complete the LLM requirements by doing a one-year Online Certificate Program in International Business Law, and after the completion of the certificate program, the student will be required to spend the Fall semester doing coursework on campus.

Courses taken must include:

- LAW 5820 - LL.M COLLOQUIUM
- LAW 5977 - INTRODUCTION TO AMERICAN LAW

Online Certificate Program Courses

Students must complete the International Business Law 15-credit online graduate certificate.

International Business Law

- LAW 2001 - INTRODUCTION TO US & INTERNATIONAL BUSINESS LAW
- LAW 2002 - COMMERCIAL ASPECTS OF CROSS-BORDER TRANSACTIONS
- LAW 2003 - SPECIALTY AREAS IN CROSS-BORDER TRANSACTIONS
- LAW 2004 - FOUNDATIONS OF INTERNATIONAL DISPUTE RESOLUTION & LITIGATION
- LAW 2005 - SPECIAL TOPICS IN INTERNATIONAL OR DISPUTE RESOLUTION

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Total Credits: 24

Law - Professional Master of Studies in Law - Online Option

The Professional Master of Studies in Law ("MSL") at the University of Pittsburgh School of Law is a 30-credit online advanced degree designed for graduates and mid-career professionals seeking to enhance their careers with a versatile alternative to the traditional three-year Juris Doctor degree.

Professional Master's students gain essential, specialized knowledge of laws and legal systems. Law is a pervasive influence on almost all aspects of life across the globe, but higher education often ill-prepares students and professionals for navigating laws and legal dynamics in business and life. The degree addresses this critical knowledge gap.

Pitt Law commands one of the oldest and most established Professional Master of Studies in Law programs in the country. The degree is now online. The Online MSL program is a popular and fast-growing program, providing efficiency, flexibility, and affordability. Students can earn their master's degree in two calendar years in a flexible part-time schedule.

The 15-credit Online MSL series of core courses consists of 7 short courses of between 5 and 8 weeks in length. Online students take one course at a time along with their starting cohort. The courses are designed as an asynchronous learning opportunity, so students work largely at their own pace, week by week. Course materials are created specifically for professional master's students. All courses are carefully designed to combine essential legal and policy content with practice in applying that content in the workplace.

Professors guide students through the core course series, provide personalized feedback to students, offer a weekly optional synchronous session, and are available for online, one-on-one meetings and review sessions.

International students are welcome and encouraged to apply. They must have completed the equivalent of a U.S. bachelor's degree, and they must submit a TOEFL, IELTS, or Duolingo score. International students are encouraged to apply as early as possible because of the greater amount of time needed to process their application.

Degree Requirements

Applicants must have completed at least an undergraduate bachelor's degree. Applicants need to provide official transcripts of all college, graduate, and professional studies, whether a degree was obtained or not. No standardized test is required.

Curriculum

Students must complete 30 course credits of School of Law coursework to receive the MSL degree. Students are required to take the entire Online MSL 15-credit core course series, which includes:

- LAW 2008 and 2009 - Constitutional Law (I & Ii)
- LAW 2017 - Torts
- LAW 2016 - Property
- LAW 2018 - Criminal Law
- LAW 2019 - Legislation & Regulation
- LAW 2021 - American Legal System
- LAW 2022 - Contracts

Students can then complete the master's degree entirely online by taking 15 additional credits through one of our online specializations. These specializations include Healthcare Compliance, Human Resources, Law, Corporate Compliance, International Business Law, and Sports, Arts and Entertainment Law. A Business Law specialization is expected to be added in Fall 2027. Students who successfully complete the MSL core courses and a specialization will earn a master's degree plus a certificate in their specialization.

Students can then complete the master's degree entirely online by taking 15 additional credits through one of our online specializations. These specializations include Healthcare Compliance, Human Resources, Law, Corporate Compliance, International Business Law, and Sports, Arts and Entertainment Law. A Business Law specialization is expected to be added in Fall 2027. Students who successfully complete the MSL core courses and a specialization will earn a master's degree plus a certificate in their specialization.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School website.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Total Credits: 30

Micro-Credential

Law - Cyber Law and IT, Micro-Credential - LLM Program

The Micro-credential in Cyber and IT Law will focus on subjects relating to the regulation of technology and cyberspace, privacy law, and intellectual property. Credits taken in this micro-credential will also count toward the student's general LL.M. degree. 9 required credits for the micro-credential.

Curriculum:

Completion of this micro-credential requires that students take at least nine credit hours, with a grade of C or higher, in courses of which at least one is drawn from each of the following two rubrics:

Cyber Law:

Classes focusing on cyber law, including, for example, Cybersecurity, Privacy, and Democracy, Cyber Law and Policy Seminar, Cyberspace and the Law, or similar courses approved by the CILE Director.

IT Law:

Courses focusing on IT Law, including, for example, Information Privacy Law and Practice, Commercializing New Technologies, Technology, Law, and Leadership, Intellectual Property, Technology and Employment Law, Applied Legal Analytics and AI, or similar courses approved by the CILE Director.

Law - Energy and Environmental Law, Micro-Credential - LLM Program

The Micro-credential in Energy and Environmental Law will focus on subjects relating to energy regulation and environmental policy. Credits taken in this micro-credential will also count toward the student's general LL.M. degree. 9 required credits for the micro-credential.

Curriculum:

Completion of this micro-credential requires that students take at least nine credit hours, with a grade of C or higher, in courses of which at least one is drawn from each of the following two rubrics:

Energy Law:

Energy Law and Regulation, Climate Change and the Law, or similar courses approved by the CILE Director.

Environmental Law:

Environmental Law, Environmental Law, Policy, and Politics, Environmental Justice Law Seminar, Environmental Policy & Practice, Land Use, or similar courses approved by the CILE Director.

Law - Health Care Law and Regulation, Micro-Credential - LLM Program

This program requires a minimum of nine credit hours of coursework chosen from a menu of courses currently offered on a regular basis by the School. Credits taken in this micro-credential will also count toward the student's general LL.M. degree.

Curriculum:

Completion of this micro-credential requires that students take at least nine credit hours, with a grade of C or higher, in courses drawn from each of the following 2 rubrics:

The Landscape of US Health Care Law:

Current Issues in Health Law, Health Law & Policy, or an equivalent course approved by the CILE Director if neither is offered during a student's time in residence.

US Health Law Issues Encountered by Foreign Counsel:

Health Care Business Transactions, Biotechnology Law, Law of Disability Discrimination, or similar courses approved by the CILE Director.

Law - Human Rights Law, Micro-Credential - LLM Program

The Micro-credential in Human Rights Law will focus on subjects relating to the protection of human rights under domestic and international law. Credits taken in this micro-credential will also count toward the student's general LL.M. degree. 9 required credits for the micro-credential.

Curriculum:

Completion of this micro-credential requires that students take at least nine credit hours, with a grade of C or higher, out of the following list of courses: Philosophy of Crime and Punishment - National and International Perspective, Legal Institutions and the Holocaust, Conflict of Laws, International Human Rights Law, International Law, Law of Slavery, Abolition & Freedom Seminar, Federal Hate Crimes, Islamic Law and Jurisprudence Seminar, or similar courses approved by the CILE Director.

Law - Intellectual Property Law, Micro-Credential - LLM Program

The Micro-credential in Intellectual Property Law will focus on subjects relating to technology policy, patent, trademark, and copyright law. Credits taken in this micro-credential will also count toward the student's general LL.M. degree. 9 required credits for the micro-credential.

Curriculum:

Completion of this micro-credential requires that students take at least nine credit hours, with a grade of C or higher, out of the following list of courses: Foundations of Intellectual Property Law Seminar, Commercializing New Technologies, Technology, Law, and Leadership,

Foundations of Intellectual Property Seminar, Copyright Law, Patent Law Practice, Trademark Law, or similar courses approved by the CILE Director.

Law - International Arbitration, Micro-Credential - LLM Program

The micro-credential in International Arbitration will focus on subjects relating to the settlement of disputes outside of national courts and before arbitral fora, and will include specific courses on how to structure international transactions to prepare for arbitration, the practice and theory of international arbitration, and substantive international law related to state-to-state and investor-state arbitration. Credits taken in this micro-credential will also count toward the student's general LL.M. degree.

Curriculum:

Completion of this micro-credential requires that students take at least nine credit hours, with a grade of C or higher, in courses drawn from each of the following two rubrics as well as an internship/externship:

Commercial Law:

International Business Transactions or, if not offered in a given term, another course approved by the CILE Director that provides a comparable introduction to commercial and business law.

Dispute Resolution:

International Arbitration Seminar, The Practice of International Litigation and Arbitration, or another course approved by the CILE Director that provides a comparable introduction to one or more forms of alternative dispute resolution.

International Law

Public International Law or, if not offered in a given term, or another course approved by the CILE Executive Director that provide a comparable introduction to commercial and business law.

Internship/Externship:

The completion of a topical externship for credit as approved by the CILE Director.

Law - International Commercial Law and Dispute Resolution, Micro-Credential - LLM Program

This program requires a minimum of nine credit hours of coursework chosen from a menu of courses currently offered on a regular basis by the School.

Curriculum:

Completion of this micro-credential requires that students take at least nine credit hours, with a grade of C or higher, in courses from each of the following two rubrics:

Commercial Law:

International Business Transactions or, if not offered in a given term, another course approved by the CILE Director that provides a comparable introduction to commercial and business law.

Dispute Resolution:

International Commercial Arbitration, the practice of International Litigation and Arbitration, or, if not offered in a given term, another course approved by the CILE Director that provides a comparable introduction to one or more forms of alternative dispute resolution.

Law - Tax Law, Micro-Credential - LLM Program

The Micro-credential in Tax Law will focus on subjects relating to personal and corporate, domestic and international tax law. Credits taken in this micro-credential will also count toward the student's general LL.M. degree. 9 required credits for the micro-credential.

Curriculum:

Completion of this micro-credential requires that students take at least nine credit hours, with a grade of C or higher, out of the following list of courses: Corporate Taxation, Federal Income Taxation, Low-Income Tax Clinic, Nonprofit Exempt Organizations, Pittsburgh Tax-Review, State and Local Tax, Estate and Gift Tax, Partnership Tax, International Tax, or similar courses approved by the CILE Director.

Law - U.S. Business and Entrepreneurial Law, Micro-Credential - LLM Program

This program requires a minimum of nine credit hours of coursework chosen from a menu of courses currently offered on a regular basis by the School.

Curriculum:

Completion of this micro-credential requires that students take at least nine credit hours, with a grade of C or higher, in courses of which at least one is drawn from each of the following two rubrics:

Commercial Relations:

Courses focusing on the contractual relations of business entities, including, for example, Contracts, Commercial Transactions in Goods, Secured Transactions, International Business Transactions, or similar courses approved by the CILE Director.

Structures of Business:

Courses focusing on the law of business entities and their ownership, including, for example, Business Organizations, Agency & Partnership, Securities Regulation, or similar courses approved by the CILE Director.

Professional

Law - Juris Doctor (JD)

Pitt Law offers the Juris Doctor (JD) degree as well as several joint degree programs with other Pitt schools that lead to both a JD and a second master's degree.

In all of these programs, Pitt Law's essential mission is to help lawyers and legal institutions to meet the demands of a rapidly changing legal and professional environment.

The program's first-year curriculum offers a solid foundation in legal analysis and reasoning through courses in subject areas traditionally viewed as basic for legal education.

Pitt Law JD students enjoy a large degree of latitude in designing courses of study that meet their individual goals and interests, with only a handful of graduation requirements beyond the first year.

Pitt Law offers particularly rich opportunities in:

- **International Law**, featuring prominent international/comparative law faculty, a rich international and comparative law curriculum, several courses each year taught by visiting foreign law professors, internships abroad, internationally focused scholarships and fellowships, Languages for Lawyers courses, strong University programs (including area studies certificate programs), and international moot law competitions.
- **"Live-Client" Clinics** in a range of substantive areas and practice settings, giving students opportunities to develop valuable lawyering skills in the context of real-life, not simulated, legal disputes and transactions. Students grapple with legal, ethical, and practical issues under the supervision of - and in close counsel with - a seasoned attorney faculty member.
- **The Semester in D.C. Program**, during which students spend a semester in Washington, D.C., earning a full semester's worth of academic credit while working full-time as an extern with a non-profit organization or government agency.
- **Seven Juris Doctor Specializations** enabling students to concentrate their studies in particular areas of law. These programs include specialized advanced courses that incorporate lawyering skills relevant to particular areas of practice.
- **Joint Degrees** Pitt Law students may take courses in other schools at Pitt or other local colleges and universities (up to six non-law graduate credits can be used toward the JD requirements).

Some Pitt Law courses incorporate multiple disciplines, such as Law & Economics Seminar, or are jointly taught by law faculty and faculty from other disciplines to classes comprising both law and other graduate/professional students.

Pitt Law joint degree programs enable students to earn the JD as well as a master's degree in another discipline through an integrated program, more quickly than earning the two degrees separately.

Degree Requirements

Admission applications for the Pitt Law JD program will be accepted starting September 1 through our deadline of May 1. Applications are considered only for the current year for the fall semester. We require all applicants to submit their applications online through the Law School Admission Council (LSAC). Pitt Law is highly competitive, and decisions are based upon many factors. Once your application is complete, our Admissions Committee will review your application. Once we are able to make a decision, you will be notified by email. You can also verify your application status with LSAC's online application status checker. We ask for your patience during the admissions cycle, as it can become very busy during key times of the year.

Application Requirements:

- Applicants must submit a $65 application fee
- Applicants must have completed a bachelor's degree from a regionally accredited college or university in the United States before the first day of law school.
- In cases where an applicant has completed studies outside the United States, the requirement is education deemed by the University of Pittsburgh to be comparable to a bachelor's degree from a regionally accredited college or university in the United States. Click here for more information
- When evaluating an undergraduate degree, the committee pays careful attention to the strength of the major field of study, as evidenced by the courses listed on the undergraduate transcript. Pitt Law is looking for applicants who have demonstrated the discipline and ability to handle a rigorous and demanding program. The admissions committee carefully evaluates graduate work and professional experience, although it utilizes the undergraduate GPA.

- Applicants are required to register with the Credential Assembly Service (CAS) through LSAC and must take the LSAT, JD-Next, or the GRE. If an applicant takes the LSAT more than once, the highest score is considered by the admissions committee when making a decision. The latest test score that will be considered for entrance is the score from the previous February examination. Scores from tests taken more than four years prior to the current admissions year will not be considered. More information can be obtained from the Law School Admission Council (LSAC).
- A required personal statement gives the committee a view into the non-academic world of the applicant and serves as the interview. This is critical in our ability to enroll a diverse class. We ask that you keep your personal statement to no more than two pages, typed, double-spaced.
- Letters of recommendation play an equally important role in this process, as they can reveal the strengths of the applicant's academic achievements. The Admissions Committee requires one letter of recommendation, but will accept up to three letters of recommendation. Academic letters of recommendation are strongly preferred for those students who are currently in school or have graduated within the past three years. Letters should be submitted through the LSAC letter of recommendation service.
- We encourage applicants to submit a Resume, as they highlight for the admissions committee a broader view of their achievements.
- In addition to a bar examination, there are character, fitness, and other qualifications for admission to the bar in every U.S. jurisdiction. Applicants are encouraged to determine the requirements for any jurisdiction in which they intend to seek admission by contacting the jurisdiction. Addresses for all relevant agencies are available through the National Conference of Bar Examiners.

In order to graduate, a student pursuing a JD must complete 88 credits, including the following:

- A prescribed first-year curriculum, as follows: Contracts, Criminal Law, Legislation and Regulation, Torts, Civil Procedure, Constitutional Law, Property, and Legal Analysis and Writing, Foundations of Legal Research as well as attendance at a minimum of five programs (for students entering Fall 2019 or later) or six programs (for students entering before Fall 2019) in the Pitt Law Academy speaker series
- The upper-level writing requirement
- A course in Legal Profession
- Six credits in a course designated as satisfying the professional skills requirement
- The one-credit Foundations of Legal Research course
- A course designated as satisfying the international/comparative law requirement
- A course designated as satisfying the writing ("W") requirement

Academic requirements are described in the Academic Policies and Procedures and Graduation sections of the School of Law's website.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

First-Year Curriculum

The first-year curriculum is comprised of the following required courses, as well as attendance at a minimum of five programs in the **Pitt Law Academy**:

Fall:

- LAW 5020 - CONTRACTS
- LAW 5046 - CRIMINAL LAW
- LAW 5720 - LEGAL ANALYSIS AND WRITING
- LAW 5032 - LEGISLATION AND REGULATION
- LAW 5028 - TORTS

Spring:

- LAW 5024 - PROPERTY
- LAW 5033 - CIVIL PROCEDURE
- LAW 5076 - LEGAL ANALYSIS AND WRITING

- LAW 5101 - CONSTITUTIONAL LAW
- LAW 5386 - FOUNDATIONS OF LEGAL RESEARCH

Year Long Program

- LAW 5061 - PITT LAW ACADEMY

School of Medicine

School of Medicine

The mission of the University of Pittsburgh School of Medicine is to improve the health and well-being of individuals and populations through cutting-edge biomedical research, innovative educational programs in medicine and biomedical science, and leadership in academic medicine. We strive to implement this mission with the highest professional and ethical standards, in a culture of diversity and inclusiveness, and in an environment that enables each individual to develop to his or her fullest potential.

School of Medicine Faculty

Certificate

Clinical Translational Sciences Certificate

Clinical Translational Sciences Certificate

This certificate program in Clinical Translational Sciences provides students within MS or PhD programs in the health sciences the opportunity to develop expertise in conducting clinical and translational research. Though the majority of courses are in person, the certificate is considered hybrid because one course is offered online only. The core curriculum provides trainees with the basic set of skills that are required by clinical and translational investigators in all fields of interest. It is made up of 2 curricular cores: the first is the Research Core, which consists of 8 credits of courses in computer methods, clinical research methods and biostatistics. The second is a Regression and Ethics Core, which includes 3 credits of courses in Regression and ANOVA, Logistical Regression and Ethics in research. Combined with the mentorship from their graduate programs, this certificate provides added expertise and develops students' ability to conduct clinical and translational reserach.

Detailed Admissions Requirements

Students must first be admitted into a doctoral or masters degree granting program in one of the Schools of the Health Sciences prior to their acceptance into the clinical translational sciences graduate certificate program. Once admitted for graduate study within a program, students may apply to the Institute for Clinical Research Education for admission to the certificate program. Students must be in good academic standing and possess a strong interest in clinical and translational science

Contact Information

Institute for Clinical Research Education
200 Meyran Ave, Suite 300
Pittsburgh, PA 15213
Phone: 412-586-9632
Fax: 412-586-9672

Email: icre@pitt.edu

Admissions Criteria

- Applicants must meet the following requirements before filling out an online application.
- Candidates must be in a graduate program (PhD or MS) in the health sciences
- Candidates must have a high level of interest and potential for the pursuit of innovative clinical and translational research as a major focus of their career plan.
- A minimum GPA of 3.2 on a 4.0 scale
- TOEFL, IELTS, and Duolingo scores (when applicable)
- GRE scores are not accepted

Timeline

The Certificate in Clinical Translational Sciences accepts applications from December 15 through February 28 each year. In order to guarantee that you are considered for admission, we must receive your application and all component parts by February 28. Students will be notified via email of admission decisions approximately 1-2 months following the close of the application cycle.

Financial Assistance

The Institute for Clinical Research Education does not provide financial aid. Unless students have other funding sources, they are responsible for covering the tuition costs, taxes, and fees associated with their course enrollment.

Clinical Translation Sciences Certificate - Course Curriculum

Research Core (8 Credits)

- CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH
- CLRES 2010 - CLINICAL RESEARCH METHODS
- CLRES 2020 - BIOSTATISTICS

*CLRES 2020 (Biostatistics) may be substituted for an alternative graduate level biostatistics course up to 6 credits

Regression & Ethics Core (3 Credits)

- CLRES 2021 - REGRESSION AND ANOVA
- CLRES 2022 - LOGISTIC REGRESSION
- CLRES 2050 - ETHICS & RESPONSIBLE CONDUCT OF RESEARCH (ONLINE)

Total Credits: 11

Detailed Admissions Requirements

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  *CLRES 2020 (Biostatistics) may be substituted for an alternative graduate level biostatistics course up to 6 credits

Regression & Ethics Core (3 Credits)

- CLRES 2021 - REGRESSION AND ANOVA
- CLRES 2022 - LOGISTIC REGRESSION
- CLRES 2050 - ETHICS & RESPONSIBLE CONDUCT OF RESEARCH (ONLINE)

Total Credits: 11

Doctoral

Cell, Molecular and Systems Biology

Cell, Molecular and Systems Biology

The Cell, Molecular and Systems Biology (CMSB) Program

The proposed CMSB program brings together faculty in basic and translational sciences, including researchers from the University of Pittsburgh School of Medicine (Departments of Cell, Microbiology and Molecular Genetics, Magee-Womens Research Institute, Aging Institute, Rangos Research Center at the Children's Hospital of Pittsburgh, and the University of Pittsburgh Cancer Center (e.g., Cancer Virology Program).

CMSB will be an innovative program in graduate education that aims to train highly motivated PhD students as self-reliant scholars in an environment with ready access to the breadth of expertise, approaches, and sub-disciplines that constitute the diverse fields of molecular, cellular and systems biology. This unique program will rapidly immerse students into a research environment that will train them to become independent and creative scientists.

I. Key features of the CMSB include:

- Providing didactic, lecture-based instruction in fundamental and contemporary aspects of systems and computational biology, structural biology, molecular biology, cell biology and cellular signaling.
- Reinforcement of formal didactic teaching with small group discussions led by faculty experts through workshops that are in place in the Foundations of Biomedical Science course.
- Providing courses with cohesive themes to facilitate students' interest in the material, promoting gradual conceptual progression in the classroom with laboratory-based skill building that includes computational approaches.
- Engaging students early in research in core competencies of mentors' laboratories with emphasis on multidisciplinary approaches to important research questions.

II. Faculty research interests in the proposed CMSB can be broadly divided into the following areas:

Aging

Cell Biology

Developmental Biology

Evolution

Genetics

Molecular Physiology

Stem Cell and Regenerative Biology

Quantitative Systems Pharmacology

Reproductive Biology

Systems Biology

Admissions and Recruiting. The current structure of the IBGP and ISB will serve as the admissions process for the CMSB program. A program admissions committee will be convened annually to review student applications to the program, schedule interviews, and make recommendations to the dean of graduate studies regarding admission. A committee with nine voting members (including a chair) will be established. It is anticipated that the makeup of this program will include at least three faculty from the prior graduate programs, CBMP, MGDB, and ISB.

First-year curriculum and time to candidacy. First-year students admitted into the CMSB program will be enrolled in Foundations of Biomedical Sciences and Bioinformatics (Introduction using Python) courses.

Impact on trainee education and preparedness. The CMSB program will significantly improve the training of graduate students with the fundamental molecular underpinnings of modern biomedical science combined with systems biology. This training will provide opportunities to engage in computational analyses and interpret large datasets. This core skill is increasingly crucial for future success as a post-graduate scientist. We will accomplish this in many ways, but will highlight a few of these below:

Training in fundamental principles of biomedical science: The fundamental molecular biology principles underpinning biomedical research are essential core knowledge for CBMP, MGDB, and ISB students and lay the foundations for more specialized training in individual research disciplines. This will be accomplished in the combined CMSB program through students' participation in Foundations of Biomedical Science course. Currently, ISB students do not participate in a foundational course outlying these fundamental molecular principles at the beginning of their training.

Training in Computational and Systems Biology: The application of both these disciplines has in the past decade been important in the discovery of new concepts in biomedical research. The application of big data analyses has offered new insights and methods for understanding important questions in biomedical research. This includes understanding cell and developmental biology, aging, reproductive biology and stem cell and regenerative medicine. We believe all scientists in these fields should have some exposure and training in Systems Biology and be familiar with programming languages such as R and Python. In the current IBGP, students who eventually track to the CBMP and MGDB program receive no instruction in computation in their first semester of the IBGP. Enrolling in a 3-credit course in Bioinformatics using Python and adding other computational courses as electives will provide a pathway for students to gain experience and knowledge in Systems Biology. Courses in Machine Learning, Systems Genomics, Proteomics, and Computational methods exist at Pitt but are not taken by MGDB and CBMP students in the IBGP.

Core CMSB Curriculum

- ISB 2020 - SYSTEMS BIOLOGY 1
- ISB 2035 - SYSTEMS BIOLOGY II
- ISB 2070 - THE BEDSIDE TO BENCH
- ISB 2080 - DIRECTED STUDY
- MSCBMP 2840 - REGULATION OF MEMBRANE TRAFFIC
- MSCBMP 2870 - HISTOLOGY
- MSCBMP 2875 - EXPERIMENTS AND LOGIC IN CELL BIOLOGY
- MSCBMP 2880 - CELLULAR BIOLOGY OF NORMAL AND DISEASE STATES
- MSCBMP 2885 - IMAGING CELL BIOLOGY IN LIVING SYSTEMS
- MSCBMP 2895 - CELLULAR PHYSIOLOGY OF THE KIDNEY

- MSMGDB 2525 - DEVELOPMENTAL MECHANISMS OF HUMAN DISEASE
- MSMGDB 2535 - MODEL ORGANISMS
- MSMGDB 3530 - GENOME INSTABILITY AND HUMAN DISEASE
- MSMGDB 3540 - REPRODUCTIVE DEVELOPMENT FROM MODEL ORGANISMS TO HUMANS
- MSMGDB 3560 - MOLECULAR MECHANISMS OF LONGEVITY & AGING

CMSB Electives

- ISB 2020 - SYSTEMS BIOLOGY 1
- ISB 2035 - SYSTEMS BIOLOGY II
- ISB 2070 - THE BEDSIDE TO BENCH
- ISB 2080 - DIRECTED STUDY
- MSCBMP 2840 - REGULATION OF MEMBRANE TRAFFIC
- MSCBMP 2870 - HISTOLOGY
- MSCBMP 2875 - EXPERIMENTS AND LOGIC IN CELL BIOLOGY
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- MSMGDB 2525 - DEVELOPMENTAL MECHANISMS OF HUMAN DISEASE
- MSMGDB 2535 - MODEL ORGANISMS
- MSMGDB 3530 - GENOME INSTABILITY AND HUMAN DISEASE
- MSMGDB 3540 - REPRODUCTIVE DEVELOPMENT FROM MODEL ORGANISMS TO HUMANS
- MSMGDB 3560 - MOLECULAR MECHANISMS OF LONGEVITY & AGING

First Professional Program (MD)

The mission of the University of Pittsburgh School of Medicine is to improve the health and well-being of individuals and populations through cutting-edge biomedical research, innovative educational programs in medicine and biomedical science, and leadership in academic medicine. We strive to implement this mission with the highest professional and ethical standards, in a culture of diversity and inclusiveness, and in an environment that enables each individual to develop to their fullest potential.

UPSOM has a well-developed curricular infrastructure that combines a case-based curriculum with early and in-depth clinical experiences. The clinical years are characterized by an integrated clerkship structure and an emphasis on student flexibility. The UPSOM educational objectives, which are used to guide course content and learning objectives, underwent a school-wide review and update in 2023.

UPSOM introduced the Three Rivers Curriculum (3RC) in 2023. This is a case-based curriculum with more frequent assessment, greater integration across the curriculum, and enhanced coverage of priority areas of four key threads: clinical reasoning, interprofessional education, leadership, and social medicine. Students will also participate in other activities (which includes observation of and appropriate participation in patient care, community-site visits, experiences with standardized patients, high-fidelity simulations, patient conferences, laboratory exercises, and other activities). A longitudinal performance-based assessment program provides formative support as students hone their clinical skills.

The patient focus of the UPSOM curriculum begins on day one, in the Introduction to Being a Physician course. Students interview patients about their experience of illness and experiences with their physicians, to develop an understanding of their roles as medical professionals. Medical interviewing and physical examination courses follow, along with exercises examining the many facets of physician life-in society, ethical and legal settings, and at the patient bedside.

Throughout the Foundations phase, students apply their new skills in local practices and hospitals one afternoon per week.

The Keystone Fundamentals course runs through the fall of the first year and provides language and concepts that underlie the scientific basis of medical practice. Organ Systems block courses integrate physiology, pathophysiology, pharmacology, and introduction to medicine with concurrent courses in the Patient-Centered Care and Patient, Physician and Society blocks. Weekly discussions, patient interviews, and examination of patients reinforce essential clinical skills. In addition, three progress tests will both help students and their coaches track progress through curricular subjects and gauge Step 1 readiness.

There are a number of other learning activities students participate in during their time in the Three Rivers Curriculum. The Longitudinal Alliance Program is designed to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system. The Community Alliance Program is a uniquely innovative program that aims to partner with community organizations to engage students and faculty in communities of practice to address social and structural determinants of health. The Streams are a unique way students can do a deeper dive into select areas such as advocacy or innovation. Flex Weeks are dedicated time for independent learning and remediation, shadowing, research, and personal activities.

The third-year curriculum consists **of required clerkships (ten in Legacy and eight in 3RC)**. They are designed to optimize the balance between out-of-hospital and inpatient learning opportunities, eliminate unintentional curriculum redundancy, and optimize opportunities for student- designed curricula in the junior and senior years**. The third year begins with a one-week clinical focus course**. Every student engages in a mentored longitudinal research project conducted longitudinally throughout the four-year curriculum.

Completion and presentation of the longitudinal research project is due in the spring of the senior year and is a requirement for graduation. An innovative system of web-based learning portfolios facilitates learner-mentor communication and enriches the possibilities for collaboration within and beyond the University.

The information above details the school's MD program.

The MD Curriculum was modified in Spring 2023. Students enrolled in the Legacy curriculum will have until Fall 2031 to complete the previous program requirements. For more information on the legacy curriculum, please reference the First Professional Program, MD in the archived catalogs.

Contact Information

Office of Admissions and Financial Aid

S520 Alan Magee Scaife Hall

3550 Terrace Street

Pittsburgh, PA 15261

412-648-9891

Fax: 412-648-8768

E-mail: admissions@medschool.pitt.edu

Requirements for Admission

Admission Process

The admissions process is described in great detail on the Office of Admissions and Financial Aid web site. The by-laws of the Admissions Committee specifically state the school's criteria for selecting students for admissions. The by-laws are reviewed and updated at the year-end business meeting of the UPSOM Admissions Committee.

Financial Aid

Financial aid for medical students is available in the form of scholarships, need-based grants, and loans (federal, private, and institutional resources). For maximum consideration of all resources, students should complete the CSS Profile and the Free Application for Federal Student Aid (FAFSA). These applications should include the student's information, spouse's information (if applicable), and both parents' information. Signed copies of federal tax returns (for student/spouse and parents) must be provided to the financial aid office. Aid is awarded on the basis of financial need, as determined from the financial aid applications and supporting documentation.

Newly admitted students should apply by March 1, or if admitted after February 15 no later than two weeks after acceptance, to ensure that an award letter is provided prior to the national decision date of April 15th.

Upperclassmen should provide all required information no later than March 1. The Free Application for Federal Student Aid (FAFSA) should be submitted prior to March 1 to ensure results are available prior to the deadline.

Students who do not wish to provide parental information are still considered for Federal Direct Unsubsidized loans, Federal Direct Graduate PLUS loans, and private loans; these students should complete the FAFSA and provide a signed copy of their federal tax return but do not have to submit parent information or the CSS Profile.

The financial aid process is described in detail on the Office of Financial Aid's website

Academic Standards

The University of Pittsburgh School of Medicine offers a centrally governed, integrated, interdisciplinary curriculum that emphasizes problem solving and self-directed learning. The academic year is in session between 10 and 12 months, depending on the level of study. Academic calendars specific to each year can be found on the Office of Medical Education's web site. The first three years is a set curriculum and the fourth year is a combination of both set and elective offerings. To be considered to be making satisfactory academic progress, the student must complete the first two years of the curriculum by the end of the third year after initial enrollment. The full text of the guidelines for student promotion can be found in the medical student handbook on the Office of Student Affairs web site. Students are governed by a Code of Professionalism, which seeks to support and sustain respect for each other as well as for patients. The full text of the Code can be found in the student handbook.

Grading

The UPSOM makes use of a 2-tiered grading system. The Foundations Phase of the curriculum are graded as Satisfactory/Unsatisfactory. In the second two years of the curriculum, all clinical rotations and most electives are graded using a five-tiered grading system, with narrative comments: Honors, , High Satisfactory, Satisfactory, Low Satisfactory, or Unsatisfactory.

Degree Requirements

To receive the MD degree, students must:

Successfully complete curricular requirements for each of the four years.

The Foundations Phase courses include: introduction to being a physician; keystone fundamentals; cardiology; nephrology; pulmonology; digestion and nutrition; rheumatology; dermatology; evidence, discovery, and reasoning; patient, physician and society;medical interviewing; physical examination, and introduction to clinical medicine 1.

Second year: Courses include: endocrinology; reproduction, sexual health, and gynecology; musculoskeletal; neuroscience, psychiatry; oncology; and introduction to clinical medicine 2.

Third year: **Rotations in inpatient medicine; family medicine; pediatrics; obstetrics and gynecology; neurology; psychiatry; surgery, anesthesiology; and outpatient medicine; emergency medicine; otolaryngology; and ophthalmology**. The third and fourth year schedule is viewed as a continuum and designed so students may enroll in clinical or research electives at any time during the third or fourth years.

Fourth year: An acting internship in either **internal medicine, pediatrics, family medicine, cardiothoracic surgery, physical medicine and rehabilitation, medical intensive care unit, NICU, or surgery;** four weeks of an integrated life science course of the student's selection; a boot camp; and seven to eight months of clinical and/or research elective experiences.

Pass the United States Medical Licensing Examination, both Steps 1 and 2 CK, as well as an internal clinical skills competency assessment.

Complete a Longitudinal Research Project and waiver training for buprenorphine prescribing.

Degree Options

In addition to the MD program, the UPSOM offers a structured MD/PhD dual degree program, an MD/MA in Bioethics, a certificate program in Clinical Research, and a five-year non-degree- granting program for physician-scientists. Students can also participate in a joint degree program with the School of Public Health, earning a MPH, MMPH, or MS degree. The school encourages and facilitates students completing other degree programs during the MD curriculum, such as a MBA or MPA. [Add MS in not graduating here].

Professional Enrichment Courses

Professional Enrichment Courses (PECs) provide increased opportunities for preclinical medical student exploration and growth. Examples of PECs include Medical Spanish, Culinary Medicine, Introduction to Ophthalmology, and Plastic Surgery. Students have the opportunity to enrollin PECs during their Flex Weeks or as longitudinal experiences.

Doctoral

First Professional Program, MD Curriculum

The mission of the University of Pittsburgh School of Medicine is to improve the health and well-being of individuals and populations through cutting-edge biomedical research, innovative educational programs in medicine and biomedical science, and leadership in academic medicine. We strive to implement this mission with the highest professional and ethical standards, in a culture of diversity and inclusiveness, and in an environment that enables each individual to develop to their fullest potential.

UPSOM has a well-developed curricular infrastructure that combines a case-based curriculum with early and in-depth clinical experiences. The clinical years are characterized by an integrated clerkship structure and an emphasis on student flexibility. The UPSOM educational objectives, which are used to guide course content and learning objectives, underwent a school-wide review and update in 2023.

UPSOM introduced the Three Rivers Curriculum (3RC) in 2023. This is a case-based curriculum with more frequent assessment, greater integration across the curriculum, and enhanced coverage of priority areas of four key threads: clinical reasoning, interprofessional education, leadership, and social medicine. Students will also participate in other activities (which includes observation of and appropriate participation in patient care, community-site visits, experiences with standardized patients, high-fidelity simulations, patient conferences, laboratory exercises, and other activities). A longitudinal clinical skills assessment program provides formative support as students hone these skills.

The patient focus of the UPSOM curriculum begins on day one, in the Purpose and Practice of Becoming a Physician course. Students interview patients about their experience of illness and experiences with their physicians to develop an understanding of their roles as medical professionals. Medical interviewing and physical examination courses follow, along with exercises examining the many facets of physician life-in society, ethical and legal settings, and at the patient bedside.

Throughout the Foundations phase, students apply their new skills in local practices and hospitals one afternoon per week.

The Keystone Fundamentals course runs through the fall of the first year and provides language and concepts that underlie the scientific basis of medical practice. Organ Systems block courses integrate physiology, pathophysiology, pharmacology, and introduction to medicine with concurrent courses in the Patient Centered Care; Evidence, Discovery, and Reasoning; and Patient, Physician and Society blocks. Weekly discussions, patient interviews, and examination of patients reinforce essential clinical skills. In addition, three progress tests will both help students and their coaches track progress through curricular subjects and gauge Step 1 readiness.

There are a number of other learning activities students participate in during their time in the Three Rivers Curriculum. The Longitudinal Alliance Program is designed to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system. The Community Alliance Program is a uniquely innovative program that aims to partner with community organizations to engage students and faculty in communities of practice to address social and structural determinants of health. The Streams are a unique way students can do a deeper dive into select areas such as advocacy or innovation. Professional Development Weeks are dedicated time for independent learning and remediation, shadowing, research, and personal activities.

The Clerkship Phase consists of eight required clerkships. They are designed to optimize the balance between out-of-hospital and inpatient learning opportunities, eliminate unintentional curriculum redundancy, and optimize opportunities for student-designed curricula in the third and fourth years. The Clerkship Phase begins with a two-week preclerkship course prior to clerkship rotations. The clerkship phase will also contain three Discovery Weeks that will offer student the ability to expand their knowledge in a variety of ways.

The Bridge phase consists of an acting internship, an integrated life science course, and a residency preparation boot camp. In addition, students have the opportunity to take electives throughout the clinical portion of the curriculum for further career development and exploration. There will also be two Discovery Weeks for students to take in the fourth-year curriculum (3RC)

Every student engages in a mentored longitudinal research project conducted longitudinally throughout the four-year curriculum. Completion and presentation of the longitudinal research project is due in the spring of the senior year and is a requirement for graduation. An innovative system of web-based learning portfolios facilitates learner-mentor communication and enriches the possibilities for collaboration within and beyond the University.

The information above details the school's MD program.

The MD Curriculum was modified in Spring 2023. Students enrolled in the Legacy curriculum will have until Fall 2031 to complete the previous program requirements. For more information on the legacy curriculum, please reference the First Professional Program, MD in the archived catalogs.

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Financial aid for medical students is available in the form of scholarships, need-based grants, and loans (federal, private, and institutional resources). For maximum consideration of all resources, students should complete the CSS Profile and the Free Application for Federal Student Aid (FAFSA). These applications should include the student's information, spouse's information (if applicable), and both parents' information. Signed copies of federal tax returns (for student/spouse and parents) must be provided to the financial aid office. Aid is awarded on the basis of financial need, as determined from the financial aid applications and supporting documentation.

Newly admitted students should apply by March 1, or if admitted after February 15 no later than two weeks after acceptance, to ensure that an award letter is provided prior to the national decision date of April 15th.

Current students should provide all required information no later than March 1. The Free Application for Federal Student Aid (FAFSA) should be submitted prior to March 1 to ensure results are available prior to the deadline.

Students who do not wish to provide parental information are still considered for Federal Direct Unsubsidized loans, Federal Direct Graduate PLUS loans, and private loans; these students should complete the FAFSA and provide a signed copy of their federal tax return but do not have to submit parent information or the CSS Profile.

The financial aid process is described in detail on the Office of Financial Aid's website

Academic Standards

The University of Pittsburgh School of Medicine offers a centrally governed, integrated, interdisciplinary curriculum that emphasizes problem solving and self-directed learning. The academic year is in session between 10 and 12 months, depending on the level of study. Academic calendars specific to each year can be found on the Office of Medical Education's web site. The first year and a half is a set curriculum and the fourth year is a combination of both set and elective offerings. To be considered to be making satisfactory academic progress, the student must complete the first two years of the curriculum by the end of the third year after initial enrollment. The full text of the guidelines for student promotion can be found in the medical student handbook on the Office of Student Affairs web site. Students are governed by a Code of Professionalism, which seeks to support and sustain respect for each other as well as for patients. The full text of the Code can be found in the student handbook.

Grading

The UPSOM makes use of a 2-tiered grading system. The Foundations Phase of the curriculum is graded as Satisfactory/Unsatisfactory. In the Clerkships and Bridges phases, all clinical rotations and most electives are graded using a five-tiered grading system, with narrative comments: Honors, High Satisfactory, Satisfactory, Low Satisfactory, or Unsatisfactory.

Degree Requirements

To receive the MD degree, students must:

Successfully complete curricular requirements for each of the four years.

The Foundations Phase courses include: Purpose and Practice of Becoming a Physician ; keystone fundamentals; cardiology; nephrology; pulmonology; digestion and nutrition; rheumatology; dermatology; evidence, discovery, and reasoning (parts 1,2&3); patient, physician and society (parts 1,2&3); medical interviewing; physical examination; introduction to clinical medicine 1; endocrinology; reproduction, sexual health, and gynecology; musculoskeletal; neuroscience, psychiatry; oncology; introduction to clinical medicine 2; the longitudinal alliance program; and the community alliance program. Throughout the Foundations Phase, students will also take part in six weeks of Professional Development courses.

Clerkship Phase: Rotations in Adult Inpatient Medicine, Adult Outpatient Medicine, Family Medicine, Neurology, OBGYN, Pediatrics, Psychiatry, and Surgery . There are also 3 Discovery Weeks imbedded throughout the clerkship phase.

Fourth year: An acting internship in either internal medicine, pediatrics, family medicine, physical medicine and rehabilitation, medical intensive care unit, NICU, or surgery; four weeks of an integrated life science course ; a boot camp; and seven to eight months of clinical and/or research elective experiences, with two Discovery Weeks interwoven in the curriculum.

Pass the United States Medical Licensing Examination, both Steps 1 and 2 , as well as an internal clinical skills competency assessment.

Complete a Longitudinal Research Project and waiver training for buprenorphine prescribing.

Degree Options

In addition to the MD program, the UPSOM offers a structured MD/PhD dual degree program, an MD/MA in Bioethics, a certificate program in Clinical Research, and a five-year non-degree- granting program for physician-scientists. Students can also participate in a joint degree program with the School of Public Health, earning a MPH, MMPH, or MS degree as well as a join degree with the Graduate School of Business. The school encourages and facilitates students completing other degree programs during the MD curriculum

Professional Enrichment Courses

Professional Enrichment Courses (PECs) provide increased opportunities for preclerkship medical student exploration and growth. Examples of PECs include Medical Spanish, Culinary Medicine, Introduction to Ophthalmology, and Plastic Surgery. Students have the opportunity to enroll in PECs during their Flex Weeks or as longitudinal experiences.

Programs

Doctoral

- First Professional Program, MD Curriculum

Joint Degree

- Bioethics, MD/MA

- Clinical Science Training Program, MD/MS
- Law and Bioethics, JD/MA
- Medical Scientist Training Program, MD/PhD
- MD/MBA
- MD/MPH

Master's

- Medical Science, MS

Non-Degree

- Physician Scientist Training Five-Year Non-Degree Program

First Professional Program, MD Curriculum

Foundations Phase

• Purpose and Practice of Becoming a Physician

• Keystone Fundamentals - MED 5102

• Patient, Physician, and Society 1 -MED 5103

• Medical Interviewing - MED 5104

• Evidence, Discovery, and Reasoning 1 - MED 5105

• Physical Examination - MED 5108

• Cardiology - MED 5109

• Nephrology - MED 5120

• Pulmonology - MED 5140

• Digestion & Nutrition - MED 5118

• Rheumatology - MED 5130

• Dermatology - MED 5136

• Patient, Physician, and Society 2 - MED 5125

• Evidence, Discovery, and Reasoning 2 - MED 5129

• Introduction to Clinical Medicine 1 - MED 5139

• Endocrinology - MED 5235

• Reproduction, Sexual Health, and Gynecology - MED 5237

• Musculoskeletal - MED 5239

• Neuroscience - MED 5241

• Psychiatry - MED 5242

• Oncology - MED 5243

• Introduction to Clinical Medicine 2 - MED 5246

• Patient, Physician, and Society 3 - MED 5244

• Longitudinal Alliance Program - MED 5106

• Community Alliance Program - MED 5107

• Longitudinal Research Project - MED 5134

- 6 Professional Development Weeks

Clerkship Phase

The Preclerkship Course is an introduction that is presented immediately prior to the start of the Clerkship Phase. It includes aspects of clinical, humanistic, and administrative preparation for clinical experiences.

Required clerkships form the core of this phase. The overall aim of the clerkship experience is to provide students with the essential experiences where they will apply their knowledge and skills as they develop competence in the care of patients. In addition, students may take up to 6 weeks of electives during this phase.

- Adult Inpatient Medicine
- Family Medicine
- Neurology
- Obstetrics and Gynecology
- Pediatric
- Psychiatry
- Surgery
- 3 Discovery Weeks

Bridges Phase

- Eight electives
- Adult Outpatient Medicine

- One acting internship
- Integrated Life Science
- One boot camp course
- Two recess/interview periods
- Acting Internship
- Two Discovery Weeks

An acting internship (sub-internship) of four-week duration is required during the senior year. An AI is a clinical rotation offered on an in-patient service in which one or more attending physicians have overall responsibility for coordinated patient care. The service will be structured with both attending staff and house staff.

The acting internship should include the assignment to the student of specific groups of patients upon whom they complete an initial history and physical examination, constructs a differential diagnosis, formulates a treatment plan, writes orders, and carries out necessary therapy, all under careful supervision.

Acting internships that fulfill this requirement are offered in:

- Family Medicine
- Internal Medicine
- Medical Intensive Care Unit
- NICU
- Pediatrics
- Physical Medicine and Rehabilitation
- Surgery

Search the Course Catalog for more information on Acting internships.

Acting internships in other departments or out of the city will not fulfill the AI requirement.

Integrated Life Science Course

One Integrated Life Science Course will take place in-person and will be offered to all students in February of year four.

Boot Camp

A Residency Boot Camp of four-week duration is required during the senior year.

Boot Camps that fulfill this requirement are offered in:

- Anesthesiology
- Emergency Medicine
- Internal Medicine

- Obstetrics, Gynecology, and Reproductive Sciences
- Pediatrics
- Psychiatry
- Surgery

Recommended Electives

In order to provide diversity, it is strongly recommended that you take at least one elective in each of the following blocks:

- Medicine or neurology
2. Pediatrics, pediatric neurology, pediatric pathology, pediatric surgery
3. Surgery or surgical subspecialties, obstetrics and gynecology
4. Ambulatory care, community medicine, or psychiatry.

Foundations Phase

• Introduction to Being a Physician - MED 5111

• Keystone Fundamentals - MED 5102

• Patient, Physician, and Society 1 -MED 5103

• Medical Interviewing - MED 5104

• Evidence, Discovery, and Reasoning 1 - MED 5105

• Physical Examination - MED 5108

• Cardiology - MED 5109

• Nephrology - MED 5120

• Pulmonology - MED 5140

• Digestion & Nutrition - MED 5118

• Rheumatology - MED 5130

• Dermatology - MED 5136

• Patient, Physician, and Society 2 - MED 5125

• Evidence, Discovery, and Reasoning 2 - MED 5129

• Introduction to Clinical Medicine 1 - MED 5139

• Endocrinology - MED 5235

• Reproduction, Sexual Health, and Gynecology - MED 5237

• Musculoskeletal - MED 5239

• Neuroscience - MED 5241

• Psychiatry - MED 5242

• Oncology - MED 5243

• Introduction to Clinical Medicine 2 - MED 5246

• Patient, Physician, and Society 3 - MED 5244

• Longitudinal Alliance Program - MED 5106

• Community Alliance Program - MED 5107

• Longitudinal Research Project - MED 5134

MS-3

The Preclerkship Course is an introduction that is presented immediately prior to the start of the third year. It includes aspects of clinical, humanistic, and administrative preparation for clinical experiences.

Required clerkships form the core of the combined clinical years (ten required in Legacy, eight required in Three Rivers Curriculum). The overall aim of the clerkship experience is to provide students with the essential experiences where they will apply their knowledge and skills as they develop competence in the care of patients. Together, the clerkships, and all other clinical experiences, share a fundamental set of objectives.

Overall, the objectives of the required clerkships are for students to be able to:

• Integrate basic science concepts with clinical reasoning.

• Establish and maintain appropriate therapeutic relationships with patients.

• Obtain a sensitive and thorough medical history.

• Perform a sensitive and accurate physical examination.

• Perform general clinical procedures.

• Participate in discussions and decision-making with patients and families.

• Clearly communicate medical information in spoken and written form.

• Develop knowledge, skills, and attitudes to practice the basic principles of prevention.

• Demonstrate sound clinical reasoning.

• Appropriately assess patients with common signs and symptoms.

• Appropriately use testing to guide diagnostic and therapeutic decisions.

• Diagnose and demonstrate basic understanding of common diseases and conditions.

• Describe therapeutic options and participate in the care of patients with common problems.

• Recognize acute life-threatening medical problems and initiate care.

• Develop the knowledge and exhibit the skills necessary to assist in the management of chronic diseases.

• Participate in care in a variety of settings.

• Develop the knowledge, skills and attitudes necessary to provide culturally competent care.

• Recognize and develop approaches to mitigate bias, social inequities, and systemic racism that undermine health and create challenges to achieving health equity at individual, organizational, and societal levels.t undermine health and create challenges to achieving health equity at individual, organizational, and societal levels undermine health and create challenges to achieving health equity at individual, organizational, and societal levels.

• Use information and educational technology to facilitate research, education and patient care.

• Incorporate ethical and legal principles in clinical practice and research.

• Demonstrate professional behaviors.

• Work effectively with others as a member or leader of a health care team or other professional group.

• Develop an understanding of the impact of nonmedical determinants of health on health outcomes and health equity.

Clerkships

- Adult Inpatient Medicine
- Adult Outpatient Medicine
- Anesthesiology (Required in third year for Legacy only)Family Medicine
- Neurology
- Obstetrics and Gynecology
- Pediatric Medicine
- Psychiatry
- Specialty Care (Legacy only)
- Surgery

Clinical Clerkships

Ten required clerkships form the core of the combined clinical years. The overall aim of the clerkship experience is to provide students with the essential experiences where they will apply their knowledge and skills as they develop competence in the care of patients. Together, the clerkships, and all other clinical experiences, share a fundamental set of objectives.

Overall, the objectives of the required clerkships are for students to be able to:

• Integrate basic science concepts with clinical reasoning.

• Establish and maintain appropriate therapeutic relationships with patients.

• Obtain a sensitive and thorough medical history.

• Perform a sensitive and accurate physical examination.

• Perform general clinical procedures.

• Participate in discussions and decision-making with patients and families.

• Clearly communicate medical information in spoken and written form.

• Develop knowledge, skills, and attitudes to practice the basic principles of prevention.

• Demonstrate sound clinical reasoning.

• Appropriately assess patients with common signs and symptoms.

• Appropriately use testing to guide diagnostic and therapeutic decisions.

• Diagnose and demonstrate basic understanding of common diseases and conditions.

• Describe therapeutic options and participate in the care of patients with common problems.

• Recognize acute life-threatening medical problems and initiate care.

• Develop the knowledge and exhibit the skills necessary to assist in the management of chronic diseases.

• Participate in care in a variety of settings.

• Develop the knowledge, skills and attitudes necessary to provide culturally competent care.

• Recognize and develop approaches to mitigate bias, social inequities, and systemic racism that undermine health and create challenges to achieving health equity at individual, organizational, and societal levels.t undermine health and create challenges to achieving health equity at individual, organizational, and societal levels undermine health and create challenges to achieving health equity at individual, organizational, and societal levels.

• Use information and educational technology to facilitate research, education and patient care.

• Incorporate ethical and legal principles in clinical practice and research.

• Demonstrate professional behaviors.

• Work effectively with others as a member or leader of a health care team or other professional group.

• Develop an understanding of the impact of nonmedical determinants of health on health outcomes and health equity.

MS-4

General Schedule for Fourth Year

Clerkship Period	1	2	3	4	5	6	7	8	9	10	11	12	12.5
Length (in Weeks)	4	4	4	4	4	4	4	4	4	4	4	4	4

During the combined clinical years (MS-3 & MS-4) students rotate through required clerkships in any sequence. Additional requirements are 1 Acting Internship, 1 Integrated Life Sciences Selective, 1 Boot Camp Selective, and 8 electives.

What do the 12.5 Periods in the MS-4 year include?

- Eight electives
- One acting internship
- One integrated life science course
- One boot camp course

- Two recess/interview periods
- One recess week in the fall

Acting Internship

An acting internship (sub-internship) of four-week duration is required during the senior year. An AI is a clinical rotation offered on an in-patient service in which one or more attending physicians have overall responsibility for coordinated patient care. The service will be structured with both attending staff and house staff.

The acting internship should include the assignment to the student of specific groups of patients upon whom he or she completes an initial history and physical examination, constructs a differential diagnosis, formulates a treatment plan, writes orders, and carries out necessary therapy, all under careful supervision.

Acting internships that fulfill this requirement are offered in:

- Cardiothoracic Surgery
- Family medicine
- Internal Medicine
- Medical Intensive Care Unit
- NICU
- Pediatric
- Physical Medicine and Rehabilitation
- Surgery

Search the Course Catalog for more information on Acting internships.

Acting internships in other departments or out of the city will not fulfill the AI requirement.

Integrated Life Science Course

The fourth year Integrated Life Science (ILS) Program includes a choice of courses that revisit some aspect of basic science after students have had several years of clinical experience. Because of the level of sophistication that students have developed by this stage in their medical education, they can better understand the relevance of basic science to clinical problems. Each student is required to complete one ILS course.

ILS Courses

- Changing Science, Changing Society: A Guide to 21st Century Medicine - MSELCT 5700
- Clinical Pharmacology - MED 5710
- Immunization, Immune Deficiency, and Inflammation in Kids - PEDS 5710
- Infectious Disease in Obstetrics, Gynecology and Reproductive Medicine - OBGYN 5725
- Neoplasia and Neoplastic Disease - MED 5715
- Neurosurgery and Head and Neck Dissection - NSURG 5705
- Science of Resuscitation - EMED 5735

Boot Camp

A Residency Boot Camp of four-week duration is required during the senior year.

Boot Camps that fulfill this requirement are offered in:

- Anesthesiology

- Emergency Medicine
- Internal Medicine
- Obstetrics, Gynecology, and Reproductive Sciences
- Pediatrics
- Psychiatry
- Surgery

Recommended Electives

In order to provide diversity, it is strongly recommended that you take at least one elective in each of the following blocks:

1. Medicine or neurology
2. Pediatrics, pediatric neurology, pediatric pathology, pediatric surgery
3. Surgery or surgical subspecialties, obstetrics and gynecology
4. Ambulatory care, community medicine, or psychiatry.

Clinical Competency Assessment (CCA)

- Clinical Competency Assessment Orientation Handbook

Joint Degree

Bioethics, MD/MA

Students enrolled in the University of Pittsburgh School of Medicine may elect to earn the Master of Arts in Bioethics in conjunction with their medical degree. This allows the 30 credit MA degree to be earned in an accelerated program, taking a year away from the MD program, usually between the second and third years of medical school. During this one year, the student will follow the Dietrich School of Arts and Sciences calendar for the fall and spring terms, pay tuition at the in-state tuition rate set for Dietrich School graduate students, and must adhere to the rules, regulations, policies, and procedures of the Dietrich School. Applicants must complete the on-line application and provide official transcripts from their undergraduate and graduate studies, 3 letters of recommendation, a personal statement, and writing sample. Inquires about the MD/MA program, the MA curriculum, and the Center for Bioethics & Health Law, which runs the Bioethics Program may be directed to bioethics@pitt.edu.

Core Course Requirements

The following courses are required for the degree:

- BIOETH 2658 - PHILOSOPHY OF MEDICINE
- BIOETH 2661 - THEORETICAL FOUNDATIONS OF APPLIED ETHICS
- BIOETH 2664 - BIOETHICS

OR

- LAW 5464 - BIOETHICS AND LAW

Clinical Practica

The following courses are required for the degree:

- BIOETH 2604 - CLINICAL PRACTICUM 1

Thesis Research

Students must complete a research project and write a thesis under the supervision of and advisor, and defend it before a committee. Students may register for up to 6 course credits related to their thesis research.

Restrictive Electives

Students choose one elective from a list of "restricted elective" courses. Courses placed on this pursue ethical issues related to a particular area in substantial depth, than or employ a particular disciplinary perspective to explore issues in medicine and research. In recent years, restricted electives have included:

- Ethics and Aging
- Gender, Ethics, and the Body
- Medical Anthropology
- Medical Sociology
- Mental Health Law
- New Reproductive Practices and Law
- Philosophy of Psychiatry
- Public Health Law and Ethics
- Special Topics in Bioethics

Electives

The remaining credits may be taken in electives approved by the program director. Students work with the program director and their thesis advisor to pursue their particular interests. Students may take a Special Topics in Bioethics or Directed Reading in Bioethics course, or may identify relevant elective courses from various departments and schools of the University, including:

- Anthropology
- Communication
- Cultural Studies
- English
- Film Studies
- Gender, Sexuality, and Women's Studies
- History and Philosophy of Science
- Law

- Philosophy
- Psychology
- Public Health
- Sociology
- Women's Studies

In addition, through the Pittsburgh Council on Higher Education, full-time students may take courses at consortium-affiliated institutions, including including Carnegie Mellon University.

Core Course Requirements

The following courses are required for the degree:

- BIOETH 2658 - PHILOSOPHY OF MEDICINE
- BIOETH 2661 - THEORETICAL FOUNDATIONS OF APPLIED ETHICS
- BIOETH 2664 - BIOETHICS
  OR
- LAW 5464 - BIOETHICS AND LAW

Clinical Practica

The following courses are required for the degree:

- BIOETH 2604 - CLINICAL PRACTICUM 1

Thesis Research

Students must complete a research project and write a thesis under the supervision of and advisor, and defend it before a committee. Students may register for up to 6 course credits related to their thesis research.

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Students choose one elective from a list of "restricted elective" courses. Courses placed on this pursue ethical issues related to a particular area in substantial depth, than or employ a particular disciplinary perspective to explore issues in medicine and research. In recent years, restricted electives have included:

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- Psychology
- Public Health
- Sociology
- Women's Studies

In addition, through the Pittsburgh Council on Higher Education, full-time students may take courses at consortium-affiliated institutions, including including Carnegie Mellon University.

Clinical Science Training Program, MD/MS

The Clinical Scientist Training Program (CSTP) offers clinical research training and scholarships to University of Pittsburgh medical students who are committed to careers in clinical investigation. Students may complete the dual MD/MS in clinical research or the MD/Certificate in clinical research.

The CSTP involves a research year between third and fourth year of medical school, typically scheduled July 1 - June 30. We expect students to take their research year after completing their core clerkships in the third year of medical school in order to ensure that their research will be informed by their clinical knowledge. The research year includes:

- Formal coursework: Students complete the ICRE core curriculum (11 credits). Those completing the MD/Certificate complete 7 additional elective credits. Those completing the dual MD/MS program complete 6 units of thesis research and 10 additional track-specific required and elective credits.
- Mentored clinical research: Students complete a mentored clinical research project with their SP mentor.
- Financial support: During the research year, students receive a living stipend, health insurance, and travel funds. Additionally, they receive a full tuition scholarship for the cost of the Certificate. The cost of the additional credits for the MS are the student's responsibility to pay. Students who successfully complete their research year objectives additionally receive a substantial tuition scholarship toward the fourth year of medical school upon returning from the research year.

For more information, contact us.

Clinical Science Training Program, MD/MS

The Clinical Scientist Training Program (CSTP) offers clinical research training and scholarships to University of Pittsburgh medical students who are committed to careers in clinical investigation. Students may complete the dual MD/MS in clinical research or the MD/Certificate in clinical research.

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For more information, contact us.

Core Curriculum

All CSTP students complete the core curriculum during the CSTP research year.

- CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH
- CLRES 2010 - CLINICAL RESEARCH METHODS
- CLRES 2020 - BIOSTATISTICS
- CLRES 2040 - MEASUREMENT IN CLINICAL RESEARCH
- CLRES 2075 - SEMINAR FOR UNDERSTANDING PRINCIPLES AND PRACTICES OF RESEARCH TECHNIQUES (SUPPORT)
- MEDEDU 2140 - SCIENTIFIC WRITING & PRESENTATION SKILLS (ONLINE)

or

- NROSCI 2014 - SPEAKING OF SCIENCE

MD/Certificate

Students completing the dual MD/Certificate register for 18 units during their CSTP research year (9 units in Summer, 4.5 units in Fall, and 4.5 units in Spring). These credits include the 11-credit core curriculum and 7 credits of elective credits.

MD/MS

Students completing the dual MD/MS degree receive 3 credits from pre-clinical courses in the MD curriculum MED 5180, MED 5181, & MED 5265) toward the 30-credit MS degree. Students register for the remaining 27 credits during their CSTP research year (9 credits in Summer, 6 credits in Fall, and 6 credits in Spring) and after returning to medical school.

Core Curriculum

All CSTP students complete the core curriculum during the CSTP research year.

- CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH
- CLRES 2010 - CLINICAL RESEARCH METHODS
- CLRES 2020 - BIOSTATISTICS
- CLRES 2040 - MEASUREMENT IN CLINICAL RESEARCH
- CLRES 2075 - SEMINAR FOR UNDERSTANDING PRINCIPLES AND PRACTICES OF RESEARCH TECHNIQUES (SUPPORT)

- MEDEDU 2140 - SCIENTIFIC WRITING & PRESENTATION SKILLS (ONLINE)
  or
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Students completing the dual MD/MS degree receive 3 credits from pre-clinical courses in the MD curriculum MED 5180, MED 5181, & MED 5265) toward the 30-credit MS degree. Students register for the remaining 27 credits during their CSTP research year (9 credits in Summer, 6 credits in Fall, and 6 credits in Spring) and after returning to medical school.

Law and Bioethics, JD/MA

Program Overview

JD/MA, University of Pittsburgh School of Arts and Sciences and the Center for Bioethics and Health Law

The School of Law and the School of Arts and Sciences (A&S) offer a joint degree program in law and bioethics. Graduates of the program receive the Juris Doctor (JD) degree, the basic professional degree in law, and the Master of Arts (MA) degree from FAS, in bioethics. The joint degree program is directed by Greer Donley, in cooperation with Lisa S. Parker, PhD, who directs the interdisciplinary Master of Arts in Bioethics.

The joint degree program has been established in recognition of the extensive and increasing overlap between law and bioethics.
The objective of this educational program is to prepare graduates with an interdisciplinary background in law and bioethics so they can address those issues and situations that require knowledge of and expertise in both. Graduates will be academically prepared for professional roles as bioethicists in health care institutions, in public policy working for government or philanthropic organizations, or in the practice of law, for example, giving counsel to health care institutions.

Writing Requirements

The writing requirements for both degrees are simultaneously satisfied by completion of the master's thesis requirement in a subject in the field of law and bioethics.

Practica

The Clinical Practica ensure that students will be comfortable in and knowledgeable about the clinical setting by learning how to identify the normative issues in clinical cases and to be able to give practical advice regarding difficult bioethical dilemmas. Students are scheduled for six credits of clinically-based work, which may be reduced to three for students with previous health care training. In Clinical Practica I and II students participate in rounds with residents, physicians, and other healthcare professionals, attend twice-weekly seminars, and observe ethics consultations and clinical ethics teaching sessions.

In Clinical Practicum II, students participate in an intensive four-week rotation in the clinical area of their choice, allowing in-depth development in an area of clinical medicine. Students should relate this intensive clinical experience to their thesis topic.

In addition to meeting the specifically required coursework for the JD degree and the MA degree, students will select electives from among an array of courses available in the two separate degree programs. For a list of law school courses considered to be appropriate for students in this joint degree program, consult the courses listed as electives for the Health Law Certificate Program.

Advising

Students are required to consult with the Director of the Joint Degree Program during or prior to the spring registration period each year in order to assure that they meet all requirements of the Joint Degree program.

Credits

Students enrolled in the joint degree program accomplish this in three to four years. The degree requires 99 credits and includes 34 credits of specifically prescribed law courses, the Bioethics and Health Law Clinical Practicum (3 credits), and 18 specifically prescribed credits in bioethics. Within the remaining 45 credits, students must satisfy the requirements for their law degree, take a course from the list of Restricted Elective courses for the bioethics degree, and take at least 3 credits in a course relevant to bioethics (either in the law school or not).

Joint degree students must be coded by the University Registrar as "primary law" for at least five semesters. During these semesters, they pay tuition at the Law School rate and enroll in at least 10 credits of law school courses.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Program Overview

JD/MA, University of Pittsburgh School of Arts and Sciences and the Center for Bioethics and Health Law

The School of Law and the School of Arts and Sciences (A&S) offer a joint degree program in law and bioethics. Graduates of the program receive the Juris Doctor (JD) degree, the basic professional degree in law, and the Master of Arts (MA) degree from FAS, in bioethics. The joint degree program is directed by Greer Donley, in cooperation with Lisa S. Parker, PhD, who directs the interdisciplinary Master of Arts in Bioethics.

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Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Medical Scientist Training Program, MD/PhD

The Medical Scientist Training Program (MSTP) offers exceptionally talented individuals the opportunity to undertake a physician-scientist training program tailored to their specific research interests. Our primary directive is to create future biomedical investigators by providing the highest quality graduate medical training. This program offers a range of special services and opportunities to facilitate the completion of a dual degree (MD/PhD). In addition to efficiency, the close integration of clinical and basic science training better reflects the future careers of biomedical scientists. Information regarding the application process can be found on the MSTP web site.

Admissions Process: Prospective students must apply individually to the University of Pittsburgh School of Medicine through the American Medical College Application Service (AMCAS) and complete the MSTP online application. The criteria for acceptance to the MSTP include an outstanding academic record and letters of recommendation, positive personal interviews, and significant prior research experience. Admission to the MSTP is competitive, as is admission to graduate school, with students applying to the PhD programs of their choice after the first year of medical school.

Every year the program receives approximately 600 applications for a maximum of 15 available positions. The application review committee screens each completed application and well-qualified applicants are invited for an interview in Pittsburgh. Students recently enrolled in the MSTP have an average undergraduate GPA of 3.78 (This is for general assessment purposes only; applications are considered holistically.) We also review the letters of recommendation that are submitted to the medical school as part of candidates' School of Medicine application. Please be sure to include two letters of recommendation from faculty and/or scientists who are conversant with your research training. Previous research experience and commitment to a career as a physician-scientist are crucial in the evaluation of applications. Please convey your anticipated research interests and plans as well as past work. Additionally, a bachelor's degree or equivalent must be completed prior to matriculating.

1. MSTP Application Deadline: Applicants must submit an initial application through AMCAS by October 1. In order to be considered for the MSTP, your MD application along with the supplemental application for Pitt-CMU MSTP and all supporting documents, including letters of recommendation, are due no later than 11:59 PM on **OCTOBER 15.** We do not grant application deadline extensions. Early applications is strongly encouraged, as interview offers are made on a rolling basis. Our MSTP admits only U.S. citizens and U.S. permanent residents; international students are ineligible for the MSTP.
2. Acceptances: We accept students on a rolling basis; therefore, it is very important to complete the application, including recommendation letters, as early as possible. Applicants must complete their MD secondary application as soon as possible. Starting October 17, those who were chosen for interviews will be informed of their acceptance status to our program within roughly three weeks of their interview date. Applicants are ranked and notified of the following action:
    1. Acceptance into MSTP with full funding for all years of medical school and graduate school (including tuition and stipend)
    2. Wait-listed for acceptance into MSTP with funding
    3. Not accepted into MSTP

A second group of students is placed on the wait list that is considered depending on spots available after admitted student decisions. The University of Pittsburgh MSTP also accepts a small number of matriculated second-year medical students into the dual-degree program based upon their outstanding performance and developing interest in research pursuits during their medical school experience. Once admitted to the program, we do not accept any transfer credits from undergraduate or graduate courses to fulfill the MSTP course requirements.

The University of Pittsburgh and Carnegie Mellon University MSTP recognizes that our training environment is positively enriched by trainees with diverse backgrounds and needs. Our program considers all eligible applicants and does not discriminate on the basis of race, color, sex, veteran status, disability, national origin, creed, marital status, age, disability, gender identity, or sexual orientation.

Degree and Program Requirements

The MSTP program has many unique aspects of the curriculum, designed to integrate MSTP education through courses such as molecular medicine, the research basis of medical knowledge, professional development, ethics, and longitudinal clinical clerkships. MSTP students begin training to become physician-scientists from the very first week, and are well advised about possible courses and research opportunities. Descriptions of additional MSTP courses are listed below:

- MSTP 5015 - MSTP LABORATORY RESEARCH ROTATION
- MSTP 5010 - CAREER AND INVESTIGATIVE SCIENCE SKILLS
- MSTP 5290 - TRANSLATING DISCOVERY INTO THE CLINICAL REALM
- MSTP 5973 - STATISTICS, CODING, AND DATABASE ANALYSIS
- MSTP 5971 - MSTP PROFESSIONAL DEVELOPMENT
- MSTP 5983 - ETHICS FOR MEDICAL SCIENTISTS
- MSTP 5990 - LONGITUDINAL CLINICAL COURSE
- MSTP 5993 - LONGITUDINAL CLN CLERKSHIP 3
- MSTP 5975 - CAREER-RELATED RESEARCH

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- MSTP 5290 - RESEARCH BASIS OF MEDICAL KNOWLEDGE
- MSTP 5973 - STATISTICS, CODING AND DATABASE ANALYSIS
- MSTP 5971 - MSTP PROFESSIONAL DEVELOPMENT
- MSTP 5983 - ETHICS FOR MEDICAL SCIENTISTS
- MSTP 5990 - LONGITUDINAL CLINICAL COURSE
- MSTP 5993 - LONGITUDINAL CLN CLERKSHIP 3
- MSTP 5955 - MSTP WORKSHOPS
- MSTP 5975 - CAREER-RELATED RESEARCH

Master's

Medical Science, MS

Medical Science, MS The academic requirements for this degree will include successful completion, i.e., passing grades, of all courses in the Preclerkship Years (MS 1-2) and submission a scholarly project that incorporates the student's medical knowledge. The scholarly project would represent a mentored capstone project rather than be a credit bearing course. The scholarly project would culminate in a document structured as a research report or literature view. The written product will be at least 5-page summary demonstrating the knowledge gained through the engagement in the project. Together, these requirements would meet the criteria defined by the Program Committee for the Master of Medical Science. No additional courses will be required, and no additional tuition will be required for completion of the scholarly project. The Program Committee for the Master of Medical Science will decide on the acceptability of the project. The student must also submit a letter voluntarily withdrawing from the University of Pittsburgh School of Medicine MD program.
Foundations Phase Foundations Phase Introduction to Being a Physician - MED 5111 Keystone Fundamentals - MED 5102 Patient, Physician, and Society 1 -MED 5103 Medical Interviewing - MED 5104 Evidence, Discovery, and Reasoning 1 - MED 5105

Physical Examination - MED 5108

Cardiology - MED 5109

Nephrology - MED 5120

Pulmonology - MED 5140

Digestion & Nutrition - MED 5118

Rheumatology - MED 5130

Dermatology - MED 5136

Patient, Physician, and Society 2 - MED 5125

Evidence, Discovery, and Reasoning 2 - MED 5129

Introduction to Clinical Medicine 1 - MED 5139

Endocrinology - MED 5235

Reproduction, Sexual Health, and Gynecology - MED 5237

Musculoskeletal - MED 5239

Neuroscience - MED 5241

Psychiatry - MED 5242

Oncology - MED 5243

Introduction to Clinical Medicine 2 - MED 5246

Patient, Physician, and Society 3 - MED 5244

Longitudinal Alliance Program - MED 5106

Community Alliance Program - MED 5107

Scholarly Project

Total Credits: 79.5

Foundations Phase

Foundations Phase

- Introduction to Being a Physician - MED 5111
- Keystone Fundamentals - MED 5102
- Patient, Physician, and Society 1 -MED 5103
- Medical Interviewing - MED 5104
- Evidence, Discovery, and Reasoning 1 - MED 5105
- Physical Examination - MED 5108
- Cardiology - MED 5109
- Nephrology - MED 5120

- Pulmonology - MED 5140
- Digestion & Nutrition - MED 5118
- Rheumatology - MED 5130
- Dermatology - MED 5136
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- Evidence, Discovery, and Reasoning 2 - MED 5129
- Introduction to Clinical Medicine 1 - MED 5139
- Endocrinology - MED 5235
- Reproduction, Sexual Health, and Gynecology - MED 5237
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- Neuroscience - MED 5241
- Psychiatry - MED 5242
- Oncology - MED 5243
- Introduction to Clinical Medicine 2 - MED 5246
- Patient, Physician, and Society 3 - MED 5244
- Longitudinal Alliance Program - MED 5106
- Community Alliance Program - MED 5107
- Scholarly Project

Total Credits: 79.5

Non-Degree

Physician Scientist Training Five-Year Non-Degree Program

Physician Scientist Training Five-Year Non-Degree Program

Overview: The Physician Scientist Training Program (PSTP) at the University of Pittsburgh School of Medicine is a five-year tuition assistance non-degree granting program through which students with a strong basic/translational research interest can start to build careers as physician-scientists. The PSTP website is located at pstp.pitt.edu.

Tuition Assistance: Medical school tuition is partially covered by the program ($10,000 for each of the four years of medical school). Students do not pay tuition during their research year between MS2 and MS3.

Admissions Process: Applicants invited for an interview at the University of Pittsburgh School of Medicine are eligible to apply to the PSTP. A completed PSTP application consists of both the PSTP supplemental application and two research-focused letters of recommendation.

The PSTP interviews approximately 20 qualified candidates per year. Qualified applicants demonstrate a high degree of scholastic excellence, a sincere commitment to a career in academic medicine, and the potential to be a leader in biomedical research.

Program Completion Requirements

All PSTP students successfully complete paid research rotations during the summer before and after the first year of medical school, and a paid research year between the second and third years of medical school. PSTP students also participate in a longitudinal enrichment curriculum of research-oriented classes:

- MSELCT 5100 - PSTP PROFESSIONAL DEVELOPMENT 1
- MSELCT 5120 - PSTP PROFESSIONAL DEVELOPMENT 2
- MSELCT 5130 - PSTP RESEARCH BASIS OF MEDICAL KNOWLEDGE
- MSELCT 5950 - PSTP WORK IN PROGRESS SEMINAR
- MSELCT 5100 - PSTP PROFESSIONAL DEVELOPMENT 1
- MSELCT 5120 - PSTP PROFESSIONAL DEVELOPMENT 2
- MSELCT 5130 - PSTP RESEARCH BASIS OF MEDICAL KNOWLEDGE
- MSELCT 5950 - PSTP WORK IN PROGRESS SEMINAR

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- MSELCT 5120 - PSTP PROFESSIONAL DEVELOPMENT 2
- MSELCT 5130 - PSTP RESEARCH BASIS OF MEDICAL KNOWLEDGE
- MSELCT 5950 - PSTP WORK IN PROGRESS SEMINAR

Graduate Programs

The University of Pittsburgh School of Medicine has a long tradition of research excellence and training by world-class faculty committed to mentoring the next generation of scientists. The School of Medicine offers a variety of programs leading to the Doctor of Philosophy, the Master of Science, or a certificate. In addition, it works with other schools of the University through collaborative graduate programs. The School of Medicine also offers an MD degree as well as a joint MD/PhD program enabling exceptionally able students to earn both degrees simultaneously. These programs are described in the First Professional Program section of the School of Medicine catalog.

Contact Information

Associate Dean for Graduate Studies
Office of Graduate Studies
M240 Scaife Hall
412-648-8957
Fax: 412-648-1077
http://www.somgrad.pitt.edu

Degree Requirements

In addition to School of Medicine requirements, all University requirements as detailed in the *Regulations Governing Graduate Study at the University of Pittsburg*h section of this catalog apply.

Graduate Programs (PhD, MS, Certificate)

Biomedical Informatics (PhD, MS, Certificate)

Biomedical Sciences (MS)

Cancer Biology and Oncology (PhD)

Computational Biology (PhD)

Computational Biomedicine and Biotechnology (MS)

Hearing and Vision Sciences (Certificate)

Institute for Clinical Research Education

Clinical & Translational Science (PhD)
Clinical Research (MS, Certificate)
Medical Education (MS, Certificate)

Integrative Systems Biology (PhD)

Interdisciplinary Biomedical Graduate Program

Cell Biology & Molecular Physiology (PhD)
Cellular & Molecular Pathology (PhD)
Molecular Genetics & Developmental Biology (PhD)
Molecular Pharmacology (PhD)

Microbiology and Immunology (PhD)

Molecular Biophysics and Structural Biology (PhD)

Neurobiology/Neuroscience (PhD)

Cancer Biology and Oncology, PhD

Certificate

Biomedical Informatics Certificate

Biomedical informatics is the science and engineering of information handling in health care delivery and biomedical research, studying and developing models of the various aspects of health care delivery and biomedical research in order to better understand how they operate. Those models suggest interventions that may improve health care delivery and biomedical research, including new methods for capturing, organizing, analyzing, and conveying clinical information to clinicians and researchers. Experiments are performed in which the effect of promising interventions on health care delivery or biomedical research are observed and compared to existing methods, which serve as controls. The analysis of the results of such experiments can lead to greater understanding of health care delivery and biomedical research, and thereby to methods with which to improve them.

Example research areas include (1) use of cause modeling to tailor psychiatric treatments, (2) machine learning tools to detect potential cardiac events during surgery, (3) prediction of potentially adverse events for pediatric intensive care patients, (4) using deep learning to predict medication response for cancer patients, (5) novel methods for interpreting spatial transcriptomics data, (6) natural language processing and visualization tools for extracting and interpreting longitudinal patient care histories, and (7) deep learning methods for studying cell signaling within the tissue microenvironment.

This program offers both master's and doctoral degrees. Most students choose to follow a general course of study in biomedical informatics; some, however, elect a specialization in one of the following areas: bioinformatics, clinical informatics, image informatics, or public health informatics. The specific curricula for the specializations, which are variations of the general course of study in biomedical informatics, can be found on the Training Program Web site at http://dbmi.pitt.edu.

Individuals who want less intensive exposure to informatics may seek a 15-credit certificate in lieu of an academic degree. The biomedical informatics certificate can be a means of augmenting professional training in fields related to informatics and/or fulfilling educational needs associated with a professional position. Trainees across all health professions are welcome.

Contact Information

Toni Porterfield
Training Program Coordinator
825 Murdoch
412-648-9203

More information on Admissions, Financial Aid, Curriculum, Courses, Degree Requirements, and Faculty, can be found at http://dbmi.pitt.edu.

Certificate Requirements

The biomedical informatics certificate is a 15-credit (minimum) experience. The curriculum of all students in this program will have the following general structure includes 11 credits of required core courses, 3 credits of certificate research, and 1 or more credits from additional courses, independent study, directed study, etc.

Research Project: The research project should be summarized in a report commensurate with its scope, one copy of which must be submitted to the training program coordinator after approval by the student's research advisor.

Additional Requirements for Doctoral, Master's, and Certificate Students in Biomedical Informatics

Instruction in the Responsible Conduct of Research: This Web-based set of instructions and evaluation modules may be accessed at https://ctsi.pitt.edu.

Attendance at and participation in the Department of Biomedical Informatics' invited lectures, symposia, conferences, etc. (particularly the Annual Training Program Retreat and special departmental lectures). Such lectures are considered important educational experiences, as well as introducing students to primary researchers and their work in the field of biomedical informatics.

Certificate Requirements

The biomedical informatics certificate is a 15-credit (minimum) experience. The curriculum of all students in this program will have the following general structure: required Foundation (9 credits); electives (minimum 3 credits); and research project (3 credits)

Research Project: The research project should be summarized in a report commensurate with its scope, one copy of which must be submitted to the training program coordinator after approval by the student's research advisor.

Additional Requirements for Master's, Doctoral, and Certificate Students in Biomedical Informatics

Instruction in the Responsible Conduct of Research: This Web-based set of instructions and evaluation modules may be accessed at http://www.ctsi.pitt.edu/RCR/index.shtml.

Attendance at and participation in the Department of Biomedical Informatics' invited lectures, symposia, conferences, etc. (particularly the Annual Training Program Retreat and special departmental lectures). Such lectures are considered important educational experiences, as well as introducing students to primary researchers and their work in the field of biomedical informatics.

Certificate in Hearing and Vision Sciences

Certificate in Hearing and Vision Sciences
The Certificate in Hearing and Vision Sciences (HVS Doctoral Certificate) is designed to train the next generation of hearing and vision researchers both in basic and translational research. This goal will be accomplished by offering additional coursework and opportunities for collaborative research and mentorship with basic and translational researchers. The certificate will be available to students who are pursuing a doctoral degree in any relevant graduate program at the University of Pittsburgh. This program will attract and train top graduate students and leverage the strengths of our world-class hearing and vision sciences programs. As such, this program will train new graduate students, serve the needs of our faculty, and further promote the highly collaborative academic research environment that is a hallmark of our school and university. The purpose of the Hearing and Vision Sciences Certificate (HVS Doctoral Certificate) is to allow students in existing doctoral programs in the University of Pittsburgh to obtain additional training in Hearing and Vision research and methodology, and to stimulate involvement in translational research. This goal will be accomplished by offering additional coursework and opportunities for collaborative research and mentorship with translational researchers. Admission Requirements: Students must first be admitted into a doctoral degree granting program in one of the graduate programs of the University of Pittsburgh prior to applying to the graduate certificate program. Once admitted for graduate study within a program, students may apply to the PHVC for admission to the Hearing and Vision Sciences Certificate program. Students must be in good academic standing (i.e., not in probation and must have successfully completed all the required courses and program milestones for their current year of studies) and demonstrate a strong interest in clinical and translational science. Students will enroll in the program after the successful completion of their comprehensive examination.
Course Requirements The certificate has two main components: (1) A set of core courses that provide students with standardized skills that are fundamental to hearing and vision research (2) Research support and training through the Center Successful completion of the required curriculum and elective courses will lead to the granting of the certificate. The requirements for the certificate are expected to be spread over years 2-4 of graduate study. Support will be provided for one year, but requests for

extension will be considered. It is estimated that students who complete this certificate will add a maximum of six months to their overall graduate studies.

A. Required Courses

- The Neuroscience of Hearing and Vision (3 credits) - The goal of this course will be to discuss the neurobiology of hearing and vision, starting from the cochlea and retina to cortex and back.
- Methods for Assessing Hearing and Vision (3 credits) - The goal of this course is to cover fundamental concepts and basic methods pertaining to quantify and assess hearing and vision in animal models and humans.
- Recent Advances in Therapy in Hearing and Vision (3 credits) - This course is designed to introduce students who have no significant clinical experience to the recent advances in treatment and cures in hearing and vision pathology. Surgeon- and physician-scientists along with our basic scientist faculty will participate in teaching this course.

B. Research

Within the PHVC, our over 50 world-class faculty and trainees are investigating hearing and vision sciences. The PHVC also promotes the translation of findings from basic research into applications for new treatments in hearing and vision pathology. This certificate program is open to students pursuing PhDs in PHVC-affiliated departments and graduate programs. Students may apply for membership upon admission to a PHVC-affiliated doctoral program.

Students involved in basic and translational research will be mentored by accomplished investigators who are actively involved in basic or translational research, have active NIH funding, have established track records of mentoring, and are committed to the career development of students.

Total Credits: 10

Course Requirements

The certificate has two main components:

(1) A set of core courses that provide students with standardized skills that are fundamental to hearing and vision research

(2) Research support and training through the Center

Successful completion of the required curriculum and elective courses will lead to the granting of the certificate. The requirements for the certificate is expected to be spread over years 2-4 of graduate study. Support will be provided for one year, but requests for extension will be considered. It is estimated that students who complete this certificate will add a maximum of six months to their overall graduate studies.

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Total Credits: 10

Clinical Research (Certificate)

Clinical Research (Certificate)

The Certificate in Clinical Research Program is aligned with the mission of the Institute for Clinical Research Education to offer the highest-caliber training and education in clinical research and to enhance collaboration among trainees from multiple disciplines. This program is geared toward clinicians who are pursuing a research career, and can be completed over a year of part-time study.

Contact Information

Institute for Clinical Research Education
200 Meyran Ave, Suite 300
Pittsburgh, PA 15213
Phone: 412-586-9632
Fax: 412-586-9672

Email: icre@pitt.edu
Learn more.

Admissions

Admissions Criteria

- Applicants must meet the following requirements before filling out an online application.
- Candidates are encouraged, but not required, to have completed a graduate or professional degree.
- Candidates must have a high level of interest and potential for the pursuit of innovative clinical research as a major focus of their career plan.
- Candidates from departments who ensure 50%-75% of protected time during their pursuit of the degree.
- A minimum GPA of 3.2 on a 4.0 scale
- TOEFL, IELTS, and Duolingo scores (when applicable)
- GRE and MCAT scores are not accepted

Timeline

The Certificate in Clinical Research Program accepts applications from December 15 through February 28 each year. In order to guarantee that you are considered for admission, we must receive your application and all component parts by February 28. Students will be notified via email of admission decisions approximately 1-2 months following the close of the application cycle.

Degree Requirements

Coursework Requirement:

Core Curriculum

The purpose of the core curriculum is to provide trainees with the basic set of skills that are required by clinical investigators in all fields of interest. These skills include an understanding of research design, epidemiologic methods, biostatistics, study and survey design, and measurement of outcomes.

The four core courses that comprise the core curriculum are offered in July and August. They are commonly taken together but can be distributed over two summer terms with the guidance of an academic advisor.

CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH

CLRES 2010 - CLINICAL RESEARCH METHODS

CLRES 2020 - BIOSTATISTICS

CLRES 2040 - MEASUREMENT IN CLINICAL RESEARCH

Electives

Students collaborate with your academic advisor to enroll in ICRE courses that most benefit their research and future career goals. Certificate students take a minimum of 6 elective credits.

Responsible Conduct of Research (RCR) Requirement:

Clinical Research Certificate students are required to attend eight 1-hour CTSI Responsible Conduct in Research workshops or enroll in the ICRE course CLRES 2050: Ethics and Responsible Conduct of Research. At the time of graduation, students must have at least 8 hours of RCR training through CTSI or have successfully completed CLRES 2050 in order to be eligible to graduate.

More Information:

For additional program details, please visit the certificate program page and review the program handbook.

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More Information:

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Comparative Effectiveness Research (Certificate)

The Certificate in Comparative Effectiveness Research aims to teach trainees the skills necessary to design and conduct high quality comparative effectiveness research. The program is for advanced clinical researchers who have already completed the Institute for Clinical Research Education core curriculum. Since this program is highly specialized, please contact the ICRE using the contact information below for further program details.

Contact Information

Institute for Clinical Research Education
200 Meyran Ave, Suite 300
Pittsburgh, PA 15213
Phone: 412-586-9632
Fax: 412-586-9672

Email: icre@pitt.edu
https://www.icre.pitt.edu/degrees/cert_cer.html

Health Professions Education, Certificate

Print (opens a new window)

Help (opens a new window)

Health Professions Education, Certificate

This certificate program is flexible and allows students to choose courses within the Medical Education program that align with their learning and professional goals. Students in this program typically choose courses in teaching and learning to enhance their skills as a clinician-educator at either a university or community-based program. The program is typically completed over one year of part-time study.

Contact:

Institute for Clinical Research Education
200 Meyran Ave., Suite 300
412-586-9632
Fax: 412-586-9672
http://www.icre.pitt.edu/Cert_MedEdu/index.html

Learn more.

Admissions

Admissions Criteria

Applicants must meet the following requirements before filling out an online application.

- Candidates must have completed one of the following degrees: MD, DDS, DMD, DO, ND, OD, PharmD, PhD, DNS in nursing, PhD with clinical responsibilities, or other professional degree as deemed appropriate by the selection committee.
- Candidates must have a clinical appointment within UPMC (faculty, fellow, or resident) and/or an academic appointment within a University of Pittsburgh Health Sciences school. Since successful participation in and completion of our courses depend on having clinical and classroom environments in which to teach, concurrent with the program.
- Candidates must have a high level of interest in and potential for the pursuit of innovative medical education as a major focus of their career plan.
- Candidates must be based in departments that ensure adequate protected time to participate in courses and complete a research project during their pursuit of the degree.
- A minimum GPA of 3.2 on a 4.0 scale
- TOEFL, IELTS, and Duolingo scores (when applicable)
- We do not accept GRE or MCAT scores

Timeline

The Certificate in Medical Education Program has two application cycles per year. The application period for the Spring Term occurs from September 1 through October 31. The application period for the Summer Term occurs from December 15 through February 28. In order to guarantee that you are considered for admission, we must receive your application and all component parts by the last day of the admission cycle. Students will be notified via email of admission decisions 1-2 months following the close of the application cycle.

Degree Requirements

The Certificate in Medical Education offers a very flexible curriculum. Students are required to complete 15 credits, but are able to choose courses based on their individual educational interests and research goals. A minimum of 9 credits out of the 15 must be Medical Education courses. Please see the ICRE courses page for a complete list of our courses.

More information

To learn more about the Medical Education Program at the Institute for Clinical Research Education, please visit the program page and review the program handbook.

Admissions

Admissions Criteria

Applicants must meet the following requirements before filling out an online application.

- Candidates must have completed one of the following degrees: MD, DDS, DMD, DO, ND, OD, PharmD, PhD, DNS in nursing, PhD with clinical responsibilities, or other professional degree as deemed appropriate by the selection committee.
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Degree Requirements

The Certificate in Medical Education offers a very flexible curriculum. Students are required to complete 15 credits, but are able to choose courses based on their individual educational interests and research goals. A minimum of 9 credits out of the 15 must be Medical Education courses. Please see the ICRE courses page for a complete list of our courses.

More information

To learn more about the Medical Education Program at the Institute for Clinical Research Education, please visit the program page and review the program handbook.

Doctoral

Biomedical Informatics (PhD, MS, Certificate)

Biomedical Informatics (PhD, MS, Certificate)

Biomedical informatics is the science and engineering of information handling in health care delivery and biomedical research, studying and developing models of the various aspects of health care delivery and biomedical research in order to better understand how they operate. Those models suggest interventions that may improve health care delivery and biomedical research, including new methods for capturing, organizing, analyzing, and conveying clinical information to clinicians and researchers. Experiments are performed in which the effect of promising interventions on health care delivery or biomedical research are observed and compared to existing methods, which serve as controls. The analysis of the results of such experiments can lead to greater understanding of health care delivery and biomedical research, and thereby to methods with which to improve them.

Example areas of investigations in biomedical informatics at the University of Pittsburgh include the development and evaluation of new computer-based methods for (1) analyzing proteomic data to diagnosis disease, (2) supporting clinical trials, (3) providing clinical information to patients, (4) understanding the mechanism of diseases from genomic data, (5) natural language processing of electronically available medical text to extract important clinical features, (6) alerting clinicians when patient care appears atypical, (7) real-time detection and assessment of outbreaks of infectious disease and (8) teaching clinical trainees.

This program offers both master's and doctoral degrees. Most students choose to follow a general course of study in biomedical informatics; some, however, elect a specialization in one of the following areas: bioinformatics, clinical informatics, image informatics, or public health informatics. The specific curricula for the specializations, which are variations of the general course of study in biomedical informatics, can be found on the Training Program Web site at http://dbmi.pitt.edu.

Individuals who want a less intensive exposure to informatics may seek a 15-credit certificate in lieu of an academic degree. The biomedical informatics certificate can be a means of augmenting professional training in fields related to informatics and/or fulfilling educational needs associated with a professional position. Trainees across all health professions are welcome.

Contact Information

Toni Porterfield
Training Program Coordinator
415 Baum
412-648-9203
Fax: 412-648-9118

More information on Admissions, Financial Aid, Curriculum, Courses, Degree Requirements, and Faculty, can be found at http://dbmi.pitt.edu.

PhD Requirements

Credits: To earn the PhD degree in biomedical informatics, a student must complete a program of study approved by a committee of biomedical informatics faculty. The program requirements include a minimum of 72 credits consisting of a required Foundations course (15 credits); Research Skills (5 credits); Teaching Practicum (3 credits); doctoral dissertation research (18 credits), elective courses (12

credits); additional electives and/or independent study (19 credits); successful completion of a preliminary evaluation; successful completion of a doctoral comprehensive examination; and research work leading to an acceptable dissertation. All required courses must be taken for a letter grade, with the exception of the Journal Clubs/Colloquiums and some independent and/or dissertations studies (to be determined by the faculty advisors). A minimum "B" grade is required in all graduate courses.

Admission to Candidacy/Dissertation: To qualify for admission to candidacy, a student must have completed formal coursework with a 3.3 GPA or higher, passed the comprehensive examination, and received approval of the proposed subject and plan for the dissertations from their dissertation committee following a prospectus meeting. The dissertation committee usually includes the principal dissertation advisor and three additional faculty (a majority of the committee must be biomedical informatics core faculty and have University graduate faculty status).

An appropriate dissertation project involves a substantive piece of original and independent biomedical informatics research, grounded in an appropriate mode of literature and providing a significant contribution to the field. The dissertation must be successfully defended in a public oral defense. The dissertation process will follow the applicable regulations and procedures of the University and the School of Medicine, as described in the Regulations Pertaining to Doctoral Degrees section of this document.

MS Requirements

Credits: The Master of Science in Biomedical Informatics requires a minimum of 36 credits consisting of required biomedical informatics core Foundation (15 credits); Research Skills (4 credits); electives/independent study (14 credits); and Research (3 credits).

All required courses must be taken for a letter grade, with the exception of the Journal Clubs/Colloquiums and some independent and/or dissertation studies (to be determined by faculty advisors). A minimum "B" grade is required in all graduate courses.

Research Project or Thesis: A key element of the program is a research project with two key deliverables: (1) the writing and submission of a paper of publishable quality based upon the research and (2) the completion of an oral examination on its contents. A master's project committee will oversee the student's research progress, including the oral comprehensive examination. Students have the option of developing their projects into a formal master's thesis.

Successful completion of the oral examination on the research project satisfies the comprehensive examination requirement of the University's Committee on Graduate Studies. Final certification of the completion of the master's degree requires submission of the hard copy of the master's research project to the program coordinator.

Certificate Requirements

The biomedical informatics certificate is a 15-credit (minimum) experience. The curriculum of all students in this program will have the following general structure: required Foundation (9 credits); electives (minimum 3 credits); and research project (3 credits)

Research Project: The research project should be summarized in a report commensurate with its scope, one copy of which must be submitted to the training program coordinator after approval by the student's research advisor.

Additional Requirements for Doctoral, Master's, and Certificate Students in Biomedical Informatics

Instruction in the Responsible Conduct of Research: This Web-based set of instructions and evaluation modules may be accessed at https://ctsi.pitt.edu.

Attendance at and participation in the Department of Biomedical Informatics' invited lectures, symposia, conferences, etc. (particularly the Annual Training Program Retreat and special departmental lectures). Such lectures are considered important educational experiences, as well as introducing students to primary researchers and their work in the field of biomedical informatics.

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Cell Biology and Molecular Physiology (PhD)

The graduate program in Cell Biology and Molecular Physiology (CBMP) has a rich scientific training and discovery tradition. Graduates of the Ph.D. program have become chairs of departments at six major U.S. medical schools and are represented at all levels of academic and biomedical research. The program combines basic and clinical research faculty who are dedicated to the training of students. Faculty employ an integrative cell biology focus: combining tools of imaging, genetics, biochemistry, molecular biology, structural biology, computational modeling and, physiological approaches to understand the functions of cells, tissues and organisms. The program is home to the Center for Biologic Imaging, a state-of-the-art imaging center, and the NIH-supported O'Brien Kidney Center. Students in CBMP are supported in part by a T32 training grant from NIGMS. Areas of expertise in the program include the cellular trafficking of proteins and lipids, genetic disorders of ion channels, fundamental mechanisms of cell-cell adhesion and cell polarity, DNA damage repair and cancer, models of neurodegeneration and aging, signal transduction in diabetes, cell biology and physiology of renal diseases, and molecular mechanisms of aging.

Core Courses

Apart from the general degree requirements for all IBGP students, CBMP students are required to take the following core courses:

- MSCBMP 2880 - CELLULAR BIOLOGY OF NORMAL AND DISEASE STATES

- INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS

And one of the following imaging courses

- MSCBMP 2885 - IMAGING CELL BIOLOGY IN LIVING SYSTEMS

OR

Other electives include:

- MSCBMP 2870 - HISTOLOGY
- MSCBMP 2840 - REGULATION OF MEMBRANE TRAFFIC
- MSCBMP 2875 - EXPERIMENTS AND LOGIC IN CELL BIOLOGY
- MSCBMP 2852 - RESEARCH SEMINAR IN CELLULAR BIOLOGY

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OR

Other electives include:

- MSCBMP 2870 - HISTOLOGY
- MSCBMP 2840 - REGULATION OF MEMBRANE TRAFFIC
- MSCBMP 2875 - EXPERIMENTS AND LOGIC IN CELL BIOLOGY
- MSCBMP 2852 - RESEARCH SEMINAR IN CELLULAR BIOLOGY

Cellular and Molecular Pathology (PhD)

Overview

The Cellular & Molecular Pathology (CMP) graduate program integrates cell biology, molecular biology, genetics, immunology, and computational approaches to investigate the mechanisms underlying human disease and tissue repair. The program combines basic science and translational research to address fundamental questions in tissue growth and development, regenerative medicine, and the cellular and molecular pathways that drive disease initiation, progression, and recovery.

Research areas within CMP span a broad range of disciplines, including liver biology and regeneration, developmental neuroscience and neurological disease, cancer biology, pulmonary disease, inflammation and autoimmunity, angiogenesis, gene regulation, bioinformatics, molecular diagnostics, gene editing, vision and hearing research, women's health, and artificial intelligence applications in pathology and biomedical science. Faculty are closely aligned with major institutional initiatives, including the Center for Transcriptional Medicine and the Computational Pathology & AI Center of Excellence, fostering collaborative and technology-driven approaches to biomedical discovery.

CMP trainees work in a highly interactive research environment that emphasizes innovation, interdisciplinary science, and translational impact. Research laboratories are located throughout the medical center campus and include both basic research scientists and clinician-scientists, providing trainees with exposure to a broad spectrum of experimental and clinically relevant investigation. The program is equally committed to training the next generation of scientific leaders through rigorous graduate education, individualized mentorship, and collaborative research experiences that bridge discovery science and clinical application.

Core Courses

In addition to the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, CMP requires four lecture-based courses:

Course 1:

- MSCMP 2730 - MOLEC MECHS TIS GROWTH & DIFFRN

Course 2: Select one of the following

- MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS
- MSCMP 2740 - MOLECULAR PATHOBIOLOGY
- MSCMP 3790 - BASICS OF PERSONALIZED MEDICINE

Courses 3 and 4: Select two elective courses from courses throughout the School of Medicine on diverse topics of interest to students, such as the following CMP-sponsored courses (partial listing):

- MSCMP 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING
- MSCMP 3740 - STEM CELLS
- MSCMP 3750 - ANGIOGENESIS
- MSCMP 3770 - CELL THERAPY

In addition to the four lecture-based courses, CMP students are required to take at least 5 terms of:

- MSCMP 2750 - RESEARCH SEMINAR

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses for the Cellular and Molecular Pathology program:

- INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS
- MSCMP 2280 - BASIC UNDERSTANDING OF PROFESSIONALISM AS RELATED TO GRADUATE EDUCATION
- MSCMP 2730 - MOLEC MECHS TIS GROWTH & DIFFRN and EITHER
- MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS OR
- MSCMP 2740 - MOLECULAR PATHOBIOLOGY OR
- MSCMP 3790 - BASICS OF PERSONALIZED MEDICINE

Additionally we require at least 5 terms of:

- MSCMP 2750 - RESEARCH SEMINAR

As well as two electives of your choice

from either the above electives or from courses throughout the School of Medicine on diverse topics of interest to students such as the following CMP-sponsored courses (partial listing):

- MSCMP 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING
- MSCMP 3740 - STEM CELLS
- MSCMP 3750 - ANGIOGENESIS
- MSCMP 3770 - CELL THERAPY

Clinical and Translational Science (PhD)

Clinical and Translational Science (PhD)

The Institute for Clinical Research Education at the University of Pittsburgh has designed the PhD Program in Clinical and Translational Science to train researchers in this emerging field that aims to close the gap between basic science and clinical research. This rigorous and advanced training program is intended primarily for clinicians, and aims to substantially enhance the capabilities of scientists to conduct high-quality clinical and translational research.

Contact Information

Institute for Clinical Research Education
200 Meyran Ave, Suite 300
Pittsburgh, PA 15213
Phone: 412-586-9632
Fax: 412-586-9672
email: icre@pitt.edu

Learn more

Admissions

Admissions Criteria

Applicants must meet the following requirements before filling out an online application.

- Candidates must have completed one of the following degrees: MD, DDS, DMD, DO, ND, OD, PharmD, PhD, DNS in nursing, PhD with clinical responsibilities, or other professional degree as deemed appropriate by the selection committee.
- Candidates must have a high level of interest and potential for the pursuit of innovative clinical research as a major focus of their career plan.
- Candidates from departments who ensure 50%-75% of protected time during their pursuit of the degree.
- A minimum GPA of 3.5 on a 4.0 scale
- TOEFL, IELTS, or Duolingo scores (when applicable)
- MCAT or GRE scores are not accepted

Timeline

The PhD Program in Clinical and Translational Science accepts applications from September 1 through January 31 each year. In order to guarantee that you are considered for admission, we must receive your application and all component parts by January 31. Students will be notified via email of admission decisions approximately 1-2 months following the close of the application cycle.

Degree Requirements

The PhD in Clinical and Translational Science curriculum is organized into 4 categories of coursework: Core, Advanced Selectives, Research Specialization, and Dissertation Research. While students advance through the program they will also complete the Preliminary Evaluation, Comprehensive Exam, and Dissertation Milestone.

To view the curriculum in detail, please visit this page.

Non-credit Requirements/Milestones

Responsible Conduct of Research (RCR) Requirement

PhD in CTS students are required to attend eight 1-hour CTSI Responsible Conduct in Research workshops or enroll in the ICRE course CLRES 2050: Ethics and Responsible Conduct of Research. At the time of graduation, students must have at least 8 hours of RCR training through CTSI or have successfully completed CLRES 2050 in order to be eligible to graduate.

Comprehensive Examination

PhD in CTS students are required to complete a Comprehensive exam. This exam consists of a written examination in the form of an NIH R01-style proposal (including, at a minimum, specific research aims, background and significance, and research methods) and an oral defense of the written portion.

Doctoral Prospectus and Dissertation

PhD in CTS students must complete both a Doctoral Prospectus and successfully complete and defend a Doctoral Dissertation.

- Individuals must prepare a dissertation proposal for presentation to a doctoral dissertation committee at a formal dissertation overview meeting. At this meeting, the dissertation committee members will provide guidance in shaping the conceptualization and methodology for the individual's Doctoral Dissertation.
- The proposal, writing, and defense of a culminating research project. The written work must conform to the University of Pittsburgh style manual. The Final Oral Defense is a public defense of the Doctoral Dissertation.

More information:

Please view the PhD in CTS Program Handbook for complete program details.

Admissions

Admissions Criteria

Applicants must meet the following requirements before filling out an online application.

- Candidates must have completed one of the following degrees: MD, DDS, DMD, DO, ND, OD, PharmD, PhD, DNS in nursing, PhD with clinical responsibilities, or other professional degree as deemed appropriate by the selection committee.
- Candidates must have a high level of interest and potential for the pursuit of innovative clinical research as a major focus of their career plan.
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More information:

Please view the PhD in CTS Program Handbook for complete program details.

Computational Biology (PhD)

Computational Biology (PhD)

Computational biology is defined as the development and application of data-analytical and theoretical methods, mathematical modeling, and computational simulation techniques to the study of biological, behavioral, and social systems.* It is an interdisciplinary approach that draws from specific disciplines such as mathematics, physics, computer science and engineering, biology, and behavioral science.

The Joint Pitt-CMU PhD Program in Computational Biology is an intensive, interdisciplinary training program that provides students with a deep understanding of the current state of the art in computational biology. Students in this program acquire the quantitative background and research skills needed to advance the field of computational biology. In addition, they develop the critical thinking skills needed to appreciate the potential, strength, and limitations of computational, mathematical, and engineering tools for tackling biological problems.

*NIH Working Definition, July 17, 2000.

Contact Information

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Associate Professor

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Program Coordinator:

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Educational Programs Administrator

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kmg120@pitt.edu

Program Website:

www.compbio.pitt.edu

Admissions

The interdisciplinary character of the program is unique and distinct from many other programs that are focused toward a specific discipline. The program seeks outstanding students from the biological, physical and computational sciences, and engineering. For example, computational biology majors, or double majors in biology and quantitative sciences are ideal candidates.

Recommended Prerequisites

For students planning their undergraduate course schedules in anticipation of applying for the PhD in computational biology, prerequisites in life sciences, computer science, physical sciences, mathematics, statistics, and computational biology are recommended. Students whose background does not include these courses may be admitted with the additional requirement to take appropriate compensating classes. For more information on prerequisites, see http://www.compbio.cmu.edu/?page_id=91.

Application

REQUIRED MATERIALS - Deadline December 10, 2019

- The Online Application
- Statement of Purpose
- Three letters of Recommendation
- Unofficial Transcripts (submitted online)
- Conversion of GPA (for international students only)
- Unofficial TOEFL Scores (submitted online)
- Application Fee

Applications are reviewed by the Joint CMU-Pitt PhD Program in Computational Biology. Each admitted student is assigned an initial university of matriculation, and receives an admissions offer letter from that university. Incoming students can be placed directly in a laboratory (if mutual interest exists between a student and an advisor), or go through a period of three rotations, after which the student chooses an advisor. Students have the ability to change advisors (subject to agreement of the new advisor and availability of support) and to transfer between the two universities to reflect advisor changes.

For more information on application process, see www.compbio.pitt.edu/?page_id=163

Curriculum

The curriculum is designed to train students who will shape the next generation of discovery in computational biology in academia and industry. Students are required to complete 72 credit hours of academic work toward partial fulfillment of the requirements for completion of dissertation study. Of these, 30+ are formal coursework, and the remaining to be completed with full-time research.

All students are required to take five core graduate courses. The core courses aim at providing a strong common background in computational biology before they specialize in particular research areas

Core Courses

- Machine Learning
- Introduction to Computational Structural Biology
- Computational Genomics
- Cellular and Systems Modeling
- Laboratory Methods for Computational Biologists

In addition, all students are required to take three graduate elective courses: a life science/physical science course; an advanced interdisciplinary elective specified for the student's chosen area of specialization; and one general elective.

Specialization Areas

- Computational Genomics
- Computational Structural Biology
- Cellular and Systems Modeling
- Bioimage Informatics

For more information on the curriculum, see www.compbio.pitt.edu/?page_id=87

Other Courses

In addition to core and elective courses, students take complementing courses, if needed, and participate in program seminar, journal clubs, ethics courses and directed studies toward their dissertation projects.

Program Seminar Series

Students enrolled in the program are expected to attend scientific seminars during all years of training. Beginning in their second year and ending in the year before their thesis defense, students present their research progress to fellow students and the faculty on at least an annual basis.

CPCB Course

Effective presentation of scientific data is an invaluable aspect of graduate training. Therefore, all first- and second-year students must present a scientific article on a topic (selected by a faculty member) that introduces students to the methodology and applications of computational biology. The talk is made in a format that allows the student to develop basic presentation skills.
Students subsequently receive feedback on their talks, thereby improving their presentations skills as their graduate training advances.

Training in Ethics

Ethical conduct and scientific integrity is an essential aspect of research. This is especially important given the competitive nature of funding processes and the high demand for productivity. Hence, the program instructs students on the significance and practice of ethical conduct.

Directed Study

Credits are given for laboratory projects (wet or computer labs) under the direction of the dissertation advisor prior to admission to candidacy for the doctorate.

Scheduling

We anticipate two types of course schedules for students in the program. The default for students who have taken the prerequisites will be to take three courses in each of the first two terms (50-75% time) and spend the remaining time on research. Such students would normally take the core courses in the first year along with one additional course. The third and fourth terms would be split between taking electives and doing research.

Students who enter with some biology or computer science or physical science background but not with sufficient background to take all of the core courses would take a mix of missing prerequisites and core courses in each of the first two terms (approx. 90% time) and spend 10% time on research. These students would then take a mix of remaining core courses and electives in the third and fourth terms (along with 30% research) and finish electives in the fifth and/or sixth terms.

Comprehensive Examination

Students are required to pass a comprehensive examination after completion of their courses, prior to being officially admitted to candidacy to the PhD degree. Students are expected to complete this examination no later than the beginning of the spring term of their third year. The comprehensive examination consists of two parts: a 12-page "grant-style" written proposal of the proposed research, followed by an oral defense of the proposed research.

Post-Comprehensive Qualifying Examination

Students who have been accepted to PhD candidacy conduct research on a full time basis, and are required to complete a minimum of 40 credit hours (9-14 credits per term) of full-time dissertation study in order to meet the criteria for dissertation defense. Hence, all students will have completed at least 72 credit hours of study prior to graduation, including 29 credit hours of core + elective courses, and at least 40 credit hours of dissertation research.

Completion of Degree

The program is structured in such a way that students can finish their degree within four years of entering their dissertation laboratory. However, it is recognized that the actual time required to attain the degree depends on the specific type of research undertaken and how quickly progress is made in completing the experimental program.

Terminal Master's Degree

The Program does not admit students whose goal is to attain a MS degree. However, it might become necessary for a PhD student to transfer to an MS track for academic reasons or reasons beyond the student's control, e.g., medical circumstances or a change in family circumstances necessitating a long-distance move.

For more information on the program, such as list of training faculty, please see www.compbio.cmu.edu/?page_id=31615

Admissions

The interdisciplinary character of the program is unique and distinct from many other programs that are focused toward a specific discipline. The program seeks outstanding students from the biological, physical and computational sciences, and engineering. For example, computational biology majors, or double majors in biology and quantitative sciences are ideal candidates.

Recommended Prerequisites

For students planning their undergraduate course schedules in anticipation of applying for the PhD in computational biology, prerequisites in life sciences, computer science, physical sciences, mathematics, statistics, and computational biology are recommended. Students whose background does not include these courses may be admitted with the additional requirement to take appropriate compensating classes. For more information on prerequisites, see http://www.compbio.cmu.edu/?page_id=91.

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Curriculum

The curriculum is designed to train students who will shape the next generation of discovery in computational biology in academia and industry. Students are required to complete 72 credit hours of academic work toward partial fulfillment of the requirements for completion of dissertation study. Of these, 30+ are formal coursework, and the remaining to be completed with full-time research.

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Directed Study

Credits are given for laboratory projects (wet or computer labs) under the direction of the dissertation advisor prior to admission to candidacy for the doctorate.

Scheduling

We anticipate two types of course schedules for students in the program. The default for students who have taken the prerequisites will be to take three courses in each of the first two terms (50-75% time) and spend the remaining time on research. Such students would normally take the core courses in the first year along with one additional course. The third and fourth terms would be split between taking electives and doing research.

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Comprehensive Examination

Students are required to pass a comprehensive examination after completion of their courses, prior to being officially admitted to candidacy to the PhD degree. Students are expected to complete this examination no later than the beginning of the spring term of their third year. The comprehensive examination consists of two parts: a 12-page "grant-style" written proposal of the proposed research, followed by an oral defense of the proposed research.

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Completion of Degree

The program is structured in such a way that students can finish their degree within four years of entering their dissertation laboratory. However, it is recognized that the actual time required to attain the degree depends on the specific type of research undertaken and how quickly progress is made in completing the experimental program.

Terminal Master's Degree

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For more information on the program, such as list of training faculty, please see www.compbio.cmu.edu/?page_id=31615

Health Professions Education, PhD

Overview

The PhD in Health Professions Education (HPE) is a 72-credit interprofessional doctoral program designed to train clinician-educators and educational scholars capable of leading innovation, research, and curriculum reform across the health professions. Tailored for working professionals, the program combines rigorous foundational coursework with flexible, applied specialization and scholarly research. Designed as a flexible part- or full-time program, the program allows for individual pacing. In the program, each student will work closely with a faculty advisor and a dissertation committee to guide and support their research and professional development. A cohort model encourages peer collaboration and sustained engagement through journal clubs, teaching practicums, and professional development seminars.

Major Program Components

1. Core curriculum

- Advanced epistemology and learning theory in health professions education
- Research design and qualitative/quantitative inquiry methods
- Measurement, assessment, and program evaluation
- Leadership, organizational change, and policy in academic health professions
- Ethics, equity, and interprofessional collaboration in academia

2. Electives

- Customized with an advisor and mentor to support students' individual interests, deepen methodological expertise, and support dissertation research

- Options include advanced research methods courses in qualitative methods, logistic regression modeling, clinical trials, cost-effectiveness and decision analysis, implementation science, mixed methods, and data visualization

3. Responsible Conduct & Professional Development

- Dedicated training in educational ethics, culturally responsive teaching, mentorship, grant writing, and faculty development-structured to support scholar-practitioner growth and aligned with professional standards

4. Comprehensive qualifying review

- Midway through the program, students complete a comprehensive project demonstrating mastery of core content and readiness to engage in dissertation-level research.

5. Dissertation research

- Students complete an original, sustained research project in health professions education (e.g., curriculum implementation study, assessment validity research, leadership impact evaluation), culminating in a defended dissertation. Works may include three peer-reviewed articles.

Required Coursework

- CLRES 2021 - REGRESSION AND ANOVA
- CLRES 2022 - LOGISTIC REGRESSION
- CLRES 2050 - ETHICS & RESPONSIBLE CONDUCT OF RESEARCH (ONLINE)
- CLRES 2071 - ADVANCED GRANT WRITING PART 1
- CLRES 2072 - ADVANCED GRANT WRITING PART 2
- HPM 3010 - SEMINAR ON ORGANIZATIONAL STUDIES: HEALTHCARE ORGANIZATIONS AND ENVIRONMENTS
- MEDEDU 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH
- MEDEDU 2010 - CLINICAL RESEARCH METHODS
- MEDEDU 2020 - BIOSTATISTICS
- MEDEDU 2040 - MEASUREMENT IN CLINICAL RESEARCH
- MEDEDU 2045 - SURVEY DESIGN AND DATA ANALYSIS
- MEDEDU 2085 - HEALTH PROFESSIONS EDUCATION INDEPENDENT STUDY
- MEDEDU 2100 - ENHANCING TEACHING SKILLS
- MEDEDU 2111 - FUNDAMENTALS OF ADULT LEARNING PART 1
- MEDEDU 2125 - ASSESSMENT OF MEDICAL LEARNERS
- MEDEDU 2130 - CURRICULUM DEVELOPMENT & EVALTN
- MEDEDU 2150 - MANAGEMENT OF EDUCATIONAL PROGRAMS
- MEDEDU 2185 - STRATEGIC LEADERSHIP IN ACADEMIC MEDICINE
- MEDEDU 2325 - FUNDAMENTALS OF ADULT LEARNING IN MEDICAL EDUCATION PART 2
- MEDEDU 2400 - QUALITATIVE RESEARCH METHODS 1 : THEORY & DESIGN
- MEDEDU 2401 - QUALITATIVE RESEARCH METHODS 2: APPLICATIONS
- PHARM 3306 - INTRODUCTION TO THE UNITED STATES HEALTHCARE SYSTEM AND PHARMACEUTICALS

Integrative Systems Biology (PhD)

Integrative Systems Biology (PhD)

Print-Friendly Page (opens a new window)

ISB is an innovative program in graduate training that rapidly immerses students into a research environment, then mentors them to become independent scientific practitioners, skilled not only in the art of technical execution but in the creative multidisciplinary thinking required to address important questions in systems biology. Students receive a PhD in Integrative Systems Biology.

Integrative Systems Biology is a field of study that has emerged within the last decade as a unifying discipline that focuses on placing the molecules that comprise living systems within functional and organism contexts. The goal of ISB is to utilize all of our available resources to create a training and research environment to answer challenging questions of fundamental importance in biomedical and life sciences. The ISB faculty are drawn from cellular, developmental, molecular and systems biologists across the University of Pittsburgh campus and are distributed between research foci:

- Quantitative Biology
- Translational Medicine

Contact Information

Integrative Systems Biology Program

Shari Murphy - Program Administrator

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University of Pittsburgh

Pittsburgh, PA 15213

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E-mail: sas101@pitt.edu

http://www.isb.pitt.edu

Admission Requirements and Procedures

Students most likely to gain admittance will have a baccalaureate degree from a natural science, physical science, or engineering program, a grade point average of 3.0 (on a scale of 4), and three letters of recommendation. As this is an accelerated program, students should have prior immersive experience in research studies. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 650 (paper), IELTS score of at least 7.50 or iBT score of at least 100 is required for admission to the Program.

Additional information and a link to the online application can be found at http://www.isb.pitt.edu/how-apply

Degree Requirements

This is an accelerated program that provides the opportunity for students to complete their degrees in approximately 4 years. Students enter the program in the fall session, and after performing three rotations identify an advisor and area of research dissertation research project. Areas of research focus include Cell, Development, and Molecular Biology, Quantitative Biology, Translational Medicine, and Genes and Evolution. Required course work is completed during the first two years. After Spring of the students' second year, they take a comprehensive examination that includes the generation of a research proposal ready for submission to national fellowship programs.

Students receive career mentoring throughout their ISB training to ensure a seamless transition to the postdoctoral level. Additional information can be found in the Student Handbook: https://www.isb.pitt.edu/curriculum/student-handbook.

A minimum of 72 credits beyond the baccalaureate degree is required for the PhD degree. 32 of these credits are completed taking required and elective course work, and 40 of these credits are taken as dissertation research credits upon completing the comprehensive examination and advancing to candidacy. Required course work includes the following:

- ISB 2000 - LABORATORY RESEARCH ROTATION
- ISB 2070 - THE BEDSIDE TO BENCH
- INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS
- MSCBIO 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- ISB 2020 - SYSTEMS BIOLOGY 1
- ISB 2035 - SYSTEMS BIOLOGY II
- ISB 2060 - ISB CONFERENCE
- ISB 3090 - PHD DISSERTATION RESEARCH

Admission Requirements and Procedures

Students most likely to gain admittance will have a baccalaureate degree from a natural science, physical science, or engineering program, a grade point average of 3.0 (on a scale of 4), and three letters of recommendation. As this is an accelerated program, students should have prior immersive experience in research studies. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 650 (paper), IELTS score of at least 7.50 or iBT score of at least 100 is required for admission to the Program.

Additional information and a link to the online application can be found at http://www.isb.pitt.edu/how-apply

Degree Requirements

This is an accelerated program that provides the opportunity for students to complete their degrees in approximately 4 years. Students enter the program in the fall session, and after performing three rotations identify an advisor and area of research dissertation research project. Areas of research focus include Cell, Development, and Molecular Biology, Quantitative Biology, Translational Medicine, and Genes and Evolution. Required course work is completed during the first two years. After Spring of the students' second year, they take a comprehensive examination that includes the generation of a research proposal ready for submission to national fellowship programs. Students receive career mentoring throughout their ISB training to ensure a seamless transition to the postdoctoral level. Additional information can be found in the Student Handbook: https://www.isb.pitt.edu/sites/default/files/ISB-Handbook_4-13-21.pdf.

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- ISB 3090 - PHD DISSERTATION RESEARCH

Microbiology and Immunology (PhD)

Microbiology and Immunology (PhD)

The Program in Microbiology and Immunology (PMI) is an innovative program in graduate education that is administered through the School of Medicine of the University of Pittsburgh. The program aims to train highly motivated PhD students as self-reliant scholars in an environment where they have ready access to the breadth of expertise, approaches and sub-disciplines of microbiology and immunology. Students in this program will gain broad knowledge of diverse fields within microbiology and immunology, which is supplemented by seminars, journal clubs and laboratory rotations. The program rapidly immerses students into a research environment, and mentors them to become independent and creative scientists.

PMI brings together faculty in basic and translational sciences, including researchers from the University of Pittsburgh School of Medicine (Departments of Microbiology & Molecular Genetics and Immunology; Center for Vaccine Research; Microbiome Center), Magee-Women's Research Institute, Rangos Research Center at the Children's Hospital of Pittsburgh, and the University of Pittsburgh Cancer Center (e.g. Cancer Virology and Cancer Immunology Programs).

Faculty research interests in the PMI can be broadly divided into the following areas:

- Autoimmunity
- Basic immunological mechanisms
- Bacteriology
- Cancer immunology
- Discovery and development of novel antimicrobial therapies
- Host-pathogen interactions
- Immunology of organ transplantation
- Innate Immunity
- Parasitology
- Viral and bacterial pathogenesis
- Virology

Contact Information

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Candace Kuo

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Graduate Program Assistant:

Lexi Clifford

Email: LPC48@pitt.edu

Program Website:

www.pmi.pitt.edu

Admission Requirements and Procedures

Students with at least a baccalaureate degree in biological or physical science or in mathematics, computer science or engineering are encouraged to apply. Admissions are based upon the student's academic record, letters of recommendation, previous research experience, written statement of interest and a personal interview. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official

results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) or Duolingo. A minimum result of 100 iBT TOEFL, a minimum result of 7.0 on the IELTS or a minimum result of 120 on Duolingo is required for admission to the program. Scores must be less than two years old (24 months) from September 1st. Applicants who have earned a bachelor's degree or a higher degree from a regionally accredited institution in the United States are exempt from submitting English language proficiency test results.

Additional information and a link to the online application can be a found at https://www.pmi.pitt.edu/admissions

Degree Requirements

This is an accelerated program that provides the opportunity for students to complete their degrees in approximately 4-6 years. Students enter the program in the fall sessions and perform four research rotations during their first year. It is expected that four rotations of seven weeks each will be performed in different laboratories of members of the PMI training faculty, but there are several circumstances where the requirement for four rotations or laboratories might be relaxed. Additional information can be found in the Student Handbook on our website by clicking here.

Handbook | Microbiology and Immunology | University of Pittsburgh

A minimum of 72 credits is required for graduation with a PhD. Of these, 32 credits must come from approved courses, both required and elective course work, and 40 of these credits are taken as dissertation research credits upon completing the comprehensive examination, to be held during the fall term of the second year and advancing to candidacy. Required course work includes the following:

- MSMI 2100 - FIRST PMI LABORATORY ROTATION and
- MSMI 2110 - SECOND PMI LABORATORY ROTATION (taken during fall and spring terms of the first year)
- MSMI 2000 - PRINCIPLES OF MICROBIOLOGY AND IMMUNOLOGY (taken during the fall of the first year)
- MSMI 2200 - COMPREHENSIVE MICROBIOLOGY: MOLECULAR VIROLOGY & MOLECULAR PATHOGENESIS and/or
- MSMI 2210 - ADVANCED IMMUNOLOGY (taken during the spring of the first year)
- MSMI 2250 - TA: MEDICAL MICROBIOLOGY (taken during the spring of the second and third years)
- MSMI 2300 - SCIENTIFIC WRITING IN MICROBIOLOGY AND IMMUNOLOGY (taken during the summer of the first year)
- INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS

(taken during the summer of the first year)

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH (taken during the summer of the first year)
- MSMI 2450 - IMMUNOLOGY RESEARCH SEMINAR (taken every fall and spring term from the second year through graduation)
- MSMI 2460 - MICROBIOLOGY AND RELATED TOPICS SEMINAR SERIES (taken every fall and spring term from the second year through graduation)
- MSMI 3220 - CONTEMPORARY TOPICS - IMMUNOLOGY (taken during the fall and/or spring terms of the second and/or third years)

- MSMI 3230 - MICROBIOLOGY RESEARCH IN PROGRESS (taken every fall and spring term from the second year through graduation)

Admission Requirements and Procedures

Students with at least a baccalaureate degree in biological or physical science or in mathematics, computer science or engineering are encouraged to apply. Admissions are based upon the student's academic record, letters of recommendation, previous research experience, written statement of interest and a personal interview. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 600 (paper) or 100 (iBT), or IELTS score of at least 7.00 is required for admission to the Program. Applicants who have earned a bachelor's degree or a higher degree from a regionally accredited institution in the United States are exempt from submitting English language proficiency test results.

Additional information and a link to the online application can be a found at https://www.pmi.pitt.edu/admissions

Degree Requirements

This is an accelerated program that provides the opportunity for students to complete their degrees in approximately 4-6 years. Students enter the program in the fall sessions and perform four research rotations during their first year. It is expected that four rotations of seven weeks each will be performed in different laboratories of members of the PMI training faculty, but there are several circumstances where the requirement for four rotations or laboratories might be relaxed. Additional information can be found in the Student Handbook on our website by clicking here. https://www.pmi.pitt.edu/sites/default/files/KristinD-Files/Handbook_PMI_05.18.21.pdf

A minimum of 72 credits is required for graduation with a PhD. Of these, 32 credits must come from approved courses, both required and elective course work, and 40 of these credits are taken as dissertation research credits upon completing the comprehensive examination, to be held during the fall term of the second year and advancing to candidacy. Required course work includes the following:

- MSMI 2100 - FIRST PMI LABORATORY ROTATION and
- MSMI 2110 - SECOND PMI LABORATORY ROTATION (taken during fall and spring terms of the first year)
- MSMI 2000 - PRINCIPLES OF MICROBIOLOGY AND IMMUNOLOGY (taken during the fall of the first year)
- MSMI 2200 - COMPREHENSIVE MICROBIOLOGY: MOLECULAR VIROLOGY & MOLECULAR PATHOGENESIS and/or
- MSMI 2210 - ADVANCED IMMUNOLOGY (taken during the spring of the first year)
- MSMI 2250 - TEACHING PRACTICUM (taken during the spring of the second and third years)
- MSMI 2300 - SCIENTIFIC WRITING IN MICROBIOLOGY AND IMMUNOLOGY (taken during the summer of the first year)
- INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS (taken during the summer of the first year)
- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH (taken during the summer of the first year)
- MSMI 2450 - IMMUNOLOGY RESEARCH SEMINAR (taken every fall and spring term from the second year through graduation)
- MSMI 2460 - MICROBIOLOGY AND RELATED TOPICS SEMINAR SERIES (taken every fall and spring term from the second year through graduation)

- MSMI 3220 - CONTEMPORARY TOPICS - IMMUNOLOGY (taken during the fall and/or spring terms of the second and/or third years)
- MSMI 3230 - MICROBIOLOGY RESEARCH IN PROGRESS (taken every fall and spring term from the second year through graduation)

Molecular Biophysics and Structural Biology (PhD)

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Molecular Biophysics and Structural Biology (PhD)

The Molecular Biophysics and Structural Biology graduate program at the University of Pittsburgh and Carnegie Mellon University educates students to conduct research at the interface between biology, chemistry, and physics. The disciplines of Molecular Biophysics and Structural Biology aim to unravel and explain biological phenomena and processes in atomic and molecular detail. Research carried out by program faculty covers a diverse range of topics in Molecular Biophysics and Structural Biology. Areas of study focus on understanding fundamental principles involved in reactions and regulatory interactions in biological systems. Our research projects attempt to answer key questions, such as: How do proteins fold and can we prevent misfolding? Can we design proteins with novel functions? How does the coordinated interaction between proteins and nucleic acids lead to cellular differentiation and the formation of an organism? How do macromolecules assemble into molecular machines and viruses? How do these assemblies operate? How do signals traverse membranes?

Contact Information

University of Pittsburgh and Carnegie Mellon University
Molecular Biophysics and Structural Biology Graduate Program
Graduate Studies Office
3550 Terrace Street
M240 Scaife Hall
Pittsburgh, PA 15261
412-648-8957

Fax: 412-648-1077
E-mail: MBSBinfo@medschool.pitt.edu
www.mbsb.pitt.edu

Admission Requirements and Procedures

Students with at least a baccalaureate degree in physics, chemistry and mathematics or cellular and molecular biology are encouraged to apply. Admissions are based upon the student's academic record, CV, letters of recommendation, previous research experience, written statement of interest, and a personal interview. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS), or Duo Lingo. A minimum TOEFL score of 600 (paper) or 100 (iBT), IELTS score of at least 7.00, or a minimum Duo Lingo score of 120 is required for admission to the Program. We actively seek qualified applicants from underrepresented minorities and students with disability.

Additional information and a link to the online application can be a found at https://learn.hs.pitt.edu/portal/gr_app

Degree Requirements

All students enter the Program in the fall session and after performing three rotations identify an advisor and area of research. Areas of research focus include: Macromolecular recognition; Virus, lipid and protein structure and interactions; Principles of protein structure and dynamics; Membrane proteins; Gene regulation and signaling; Cellular biophysics; Chemical structure and dynamics. Methodologies employed comprise NMR spectroscopy, X-ray crystallography, cryo electron microscopy, atomic force microscopy, mass spectrometry, infrared spectroscopy and computational molecular biology. Required coursework is completed during the first two years. Students are required to complete the Comprehensive Exam by August 31 of their second year in the graduate program.

A minimum of 72 credits beyond the baccalaureate degree is required for the PhD degree. The 72 credits are completed by taking required and elective course work as well as dissertation research credits upon being admitted to candidacy.

- MSMBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE or
- MOLBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE -

Fall first year

- MSMBPH 2010 - Directed Study
- MOLBPH 2010 - Directed Study

Taken until 72 credits earned and admitted to Candidacy

- MSMBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS or
- MOLBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS -

Spring first year

- MSMBPH 2013 Molecular Biophysics 3: Theory and Simulation
- MOLBPH 2013 Molecular Biophysics 3: Theory and Simulation

Spring first year

- MSMBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOLOGY SEMINAR or
- MOLBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOPHYSICS SEMINAR

Every fall and spring through graduation

- MSMBPH 2030 - DATA AND LITERATURE CLUB or
- MOLBPH 2030 - DATA AND LITERATURE CLUB - beginning with the spring term of the first year, D&L Club is taken every fall and spring term through graduation

- MSMBPH 2051 - LABORATORY RESEARCH ROTATIONS or
- MOLBPH 2051- LABORATORY RESEARCH ROTATIONS

First year - 1 in fall, 2 in spring

- MSMBPH 2055 PRINCIPLES AND PRACTICES OF SOLUTION-BASED BIOMOLECULAR NMR
- MSMBPH 2050 SPECIAL TOPICS IN MBSB: CRYOEM O

One of these two classes offered alternately each spring

- MBMBPH 3000 Research and Dissertation Ph.D.
- MOLBPH 3000 Research and Dissertation Ph.D.

  Taken after 72 credits and admittance to candidacy

- 09763 - MOLECULAR MODELING AND COMPUTATIONAL CHEMISTRY (at CMU)

Spring first year

- INTP 2000 Foundations of Biomedical Science

Fall first year

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

Summer first year

- INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS

Summer first year

- INTBP 3000 Foundations of Biomedical Science
- INTBP 3005 Foundations Journal Club

fall of first year

Advanced Elective Courses (6 Credits Total)

The courses taken here will be chosen on an individual basis based on the background and interests of the individual student. Course must be related to expanding knowledge of MBSB topics and approved by Andy Hinck. During the first year, the choice will be made by the student in consultation with the First Year Advisor or Dissertation Advisor. Upon proper approval, the elective courses can be taken either at the University of Pittsburgh (both the Dietrich School of Arts & Sciences and the School of Medicine) as well as Carnegie Mellon University.

Additional information on the core curriculum can be found at http://www.mbsb.pitt.edu/index.php/training/curriculum.

Admission Requirements and Procedures

Students with at least a baccalaureate degree in physics, chemistry and mathematics or cellular and molecular biology are encouraged to apply. Admissions are based upon the student's academic record, CV, letters of recommendation, previous research experience, written statement of interest, and a personal interview. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS), or Duo Lingo. A minimum TOEFL score of 600 (paper) or 100 (iBT), IELTS score of at least 7.00, or a minimum Duo Lingo score of 120 is required for admission to the Program. We actively seek qualified applicants from underrepresented minorities and students with disability.

Additional information and a link to the online application can be a found at http://www.mbsb.pitt.edu/index.php/apply-here.

Degree Requirements

All students enter the Program in the fall session and after performing three rotations identify an advisor and area of research. Areas of research focus include: Macromolecular recognition; Virus, lipid and protein structure and interactions; Principles of protein structure and dynamics; Membrane proteins; Gene regulation and signaling; Cellular biophysics; Chemical structure and dynamics. Methodologies employed comprise NMR spectroscopy, X-ray crystallography, cryo electron microscopy, atomic force microscopy, mass spectrometry, infrared spectroscopy and computational molecular biology. Required coursework is completed during the first two years. Students are required to complete the Comprehensive Exam by August 31 of their second year in the graduate program.

A minimum of 72 credits beyond the baccalaureate degree is required for the PhD degree. The 72 credits are completed by taking required and elective course work as well as dissertation research credits upon being admitted to candidacy.

- MSMBPH 2000 - LABORATORY RESEARCH ROTATIONS or
- MSMBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE or
- MOLBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE - taken during the fall term of the first year
- MSMBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS or
- MOLBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS - taken during the spring term of the first year
- 09763 - MOLECULAR MODELING AND COMPUTATIONAL CHEMISTRY taken during the spring of the first year
- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH - taken during the summer term of the first year

- INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS - taken during the summer term of the first year

- MSMBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOLOGY SEMINAR or
- MOLBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOPHYSICS SEMINAR - taken every fall and spring term through graduation

- MSMBPH 2030 - DATA AND LITERATURE CLUB or
- MOLBPH 2030 - DATA AND LITERATURE CLUB - beginning with the spring term of the first year, D&L Club is taken every fall and spring term through graduation

Advanced Elective Courses (6 Credits Total)

The courses taken here will be chosen on an individual basis based on the background and interests of the individual student. During the first year, the choice will be made by the student in consultation with the First Year Advisor or Dissertation Advisor. Upon proper approval, the elective courses can be taken either at the University of Pittsburgh (both the Dietrich School of Arts & Sciences and the School of Medicine) as well as Carnegie Mellon University.

Additional information on the core curriculum can be found at http://www.mbsb.pitt.edu/index.php/training/curriculum.

Molecular Genetics and Developmental Biology (PhD)

The Molecular Genetics and Developmental Biology (MGDB) graduate program provides an exciting and vigorous academic environment for highly motivated and qualified students to prepare for a rewarding career in biomedical research. The MGDB program brings together faculty in both basic and translational sciences, including researchers from the Magee-Womens Research Institute, the Aging Institute, the UPMC Hillman Cancer Center, the Children's Hospital of Pittsburgh and the Department of Biological Sciences. MGDB faculty are pursuing research projects that address fundamental, contemporary issues in biology and medicine using molecular genetic, genomic and computational tools in a spectrum of models from yeasts, worms, flies and mice to human studies. MGDB research is centered at the cutting edge of evelopmental & Reproductive Biology, Geroscience & Aging Biology, Stem Cells & Regeneration, and DNA Damage & Repair. Our work has direct relevance to cancer, diabetes, heart disease, fertility/infertility, and age-related diseases and regenerative medicine. We are committed translating our bench discoveries to the bedside and graduate students are fully integrated in all aspects of our investigative work.

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses in the Molecular Genetics and Developmental Biology program:

- MSMGDB 2525 - DEVELOPMENTAL MECHANISMS OF HUMAN DISEASE

- MSMGDB 2535 - MODEL ORGANISMS

- MSMGDB 2550 - RESEARCH SEMINAR

- INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses in the Molecular Genetics and Developmental Biology program:

- MSMGDB 2525 - DEVELOPMENTAL MECHANISMS OF HUMAN DISEASE
- MSMGDB 2535 - MODEL ORGANISMS
- MSMGDB 2550 - RESEARCH SEMINAR
- INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS

Molecular Pharmacology (PhD)

Biomedical research in the Molecular Pharmacology program is focused on cutting-edge discovery of molecular and cellular mechanisms of intracellular signaling using a combination of biochemical, molecular biological, biophysical, ultrastructural, and imaging approaches. Basic research into cellular communication in health and disease is the main emphasis of the program with the added advantage of an array of translational opportunities into the development and testing of novel therapeutic agents. Applications of this common theme are directed toward research in molecular biology of cancer, neuropharmacology, cell and organ system pharmacology, signal transduction, neurodegenerative diseases and drug discovery. Formal collaborative interactions with the Pittsburgh Cancer Institute, the Center for Neuroscience, the Pittsburgh Institute for Neurodegenerative Diseases (PIND), the Division of Clinical Pharmacology, the University of Pittsburgh Drug Discovery Institute, University of Pittsburgh Structural Biology Imaging Center, the Vascular Medicine Institute and the Center for Biological Imaging provide a broad multidisciplinary approach to training in modern molecular pharmacology.

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses in the molecular pharmacology program:

- INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS
- MSMPHL 2310 - PRINCIPLES OF PHARMACOLOGY
- MSMPHL 3360 - MOLECULAR PHARMACOLOGY
- MSMPHL 2360 - BIOLOGY OF SIGNAL TRANSDUCTION
- MSMPHL 3310 - CANCER BIOLOGY AND THERAPEUTICS

OR

- MSMPHL 3375 - NEUROPHARMACOLOGY

OR

- MSMPHL 2370 - DRUG DISCOVERY

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses in the molecular pharmacology program:

- INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS
- MSMPHL 2310 - PRINCIPLES OF PHARMACOLOGY
- MSMPHL 3360 - MOLECULAR PHARMACOLOGY

- MSMPHL 2360 - BIOLOGY OF SIGNAL TRANSDUCTION
- MSMPHL 3310 - CANCER BIOLOGY AND THERAPEUTICS
  OR
- MSMPHL 3375 - NEUROPHARMACOLOGY
  OR
- MSMPHL 2370 - DRUG DISCOVERY

Neurobiology/Neuroscience (PhD)

Neurobiology/Neuroscience (PhD)

Neurobiology/Neuroscience (PhD)

Print-Friendly Page (opens a new window)

The Center for Neuroscience (CNUP) Training Program is an interschool PhD degree-granting program offered cooperatively by the School of Medicine (Neurobiology, MSNBIO) and the Dietrich School of Arts and Sciences (Neuroscience, NROSCI). The program introduces students to the fundamental issues and experimental approaches in neuroscience and trains them in the theory and practice of laboratory research. Research interests of the training faculty focus on several prominent themes, including behavioral/systems/cognitive, cell and molecular, development/plasticity/repair, and the neurobiology of disease.

CNUP is highly invested in enhancing diversity, which is expressed in multiple forms - race, ethnicity, gender and gender identity, sexual orientation, socioeconomic status, language, culture, national origin, religious commitments, age, (dis)ability status and political perspective. In addition, it strives to create a community that is equitable, so that all persons have equal opportunity, and inclusive, so that everyone feels welcome, and hopes new members share these values and goals.

This large research-based training program offers outstanding opportunities for students to pursue research in laboratories within more than 30 different departments and University centers. Major features of the program include extensive collaborative interactions among its faculty members and its affiliation with Auditory Neuroscience, the Center for the Neural Basis of Cognition (a joint program with Carnegie Mellon University), Pittsburgh Hearing Research Center, Pittsburgh Institute for Neurodegenerative Diseases, Pittsburgh Center for Pain Research, and other on-campus research centers.

Contact Information

Center for Neuroscience
E1440 Thomas E. Starzl Biomedical Science Tower
200 Lothrop Street
Pittsburgh, PA 15261

https://cnup.pitt.edu/

lmd196@pitt.edu

Admission Requirements and Procedures

Students are admitted into the CNUP training program on the assumption that they will be able to meet all requirements for the PhD degree. Those who are selected show evidence of a high level of intellectual talent, a strong interest in neuroscience, and a commitment to scholarship and research.

Admission decisions are based on many factors including the candidate's statement of interest and goals in the field of neuroscience, evidence of research experience and accomplishment, letters of recommendation, test scores, grades, and personal interviews. An outstanding record in one of these areas may compensate for poorer performance in another area. In general, successful applicants have a BS degree in biology, chemistry, computer science, mathematics, neuroscience, or psychology with a cumulative grade point average (GPA) of at least 3.40 (on a 4.00 scale). Applicants with a GPA below 3.0 will not be considered.

Additional information and a link to our on-line application can be found at:

PhD Degree Requirements

Credits: A minimum of 72 credit hours, including a 23-credit course requirement covering fundamental material in cellular and molecular neurobiology, systems neuroscience, and several elective courses.

Core courses:

- MSNBIO 2020 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 1 or
- NROSCI 2020 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 1

- MSNBIO 2021 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 2 or
- NROSCI 2021 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 2

- MSNBIO 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1 or
- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1

- MSNBIO 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2 or
- NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2

- MSNBIO 2102 - SYSTEMS NEUROBIOLOGY or
- NROSCI 2102 - SYSTEMS NEUROBIOLOGY

Other requirements:

In addition to University requirements for graduate degrees, students are also required to complete a graduate level statistics course, obtain research experience in at least two separate laboratories; participate in research seminars; pass a reprint exam following their first year of study, a comprehensive exam, and a doctoral dissertation and defense.

A list of CNUP Training Faculty may be viewed at:

A complete list of courses may be viewed at:

Admission Requirements and Procedures

Students are admitted into the CNUP training program on the assumption that they will be able to meet all requirements for the PhD degree. Those who are selected show evidence of a high level of intellectual talent, a strong interest in neuroscience, and a commitment to scholarship and research.

Admission decisions are based on many factors including the candidate's statement of interest and goals in the field of neuroscience, evidence of research experience and accomplishment, letters of recommendation, test scores, grades, and personal interviews. An outstanding record in one of these areas may compensate for poorer performance in another area. In general, successful applicants have a BS degree in biology, chemistry, computer science, mathematics, neuroscience, or psychology with a cumulative grade point average (GPA) of at least 3.40 (on a 4.00 scale). Applicants with a GPA below 3.0 will not be considered.

Additional information and a link to our on-line application can be found at:

PhD Degree Requirements

Credits: A minimum of 72 credit hours, including a 23-credit course requirement covering fundamental material in cellular and molecular neurobiology, systems neuroscience, and several elective courses.

Core courses:

- MSNBIO 2020 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 1 or
- NROSCI 2020 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 1

- MSNBIO 2021 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 2 or
- NROSCI 2021 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 2

- MSNBIO 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1 or
- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1

- MSNBIO 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2 or

- NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2

- MSNBIO 2102 - SYSTEMS NEUROBIOLOGY or
- NROSCI 2102 - SYSTEMS NEUROBIOLOGY

- Other requirements:

In addition to University requirements for graduate degrees, students are also required to complete a graduate level statistics course, obtain research experience in at least two separate laboratories; participate in and research seminars; pass a reprint exam following their first year of study, a comprehensive exam, and a doctoral dissertation and defense.

Admission Requirements and Procedures

Students are admitted into the CNUP training program on the assumption that they will be able to meet all requirements for the PhD degree. Those who are selected show evidence of a high level of intellectual talent, a strong interest in neuroscience, and a commitment to scholarship and research.

Admission decisions are based on many factors including the candidate's statement of interest and goals in the field of neuroscience, evidence of research experience and accomplishment, letters of recommendation, test scores, grades, and personal interviews. An outstanding record in one of these areas may compensate for poorer performance in another area. In general, successful applicants have a BS degree in biology, chemistry, computer science, mathematics, neuroscience, or psychology with a cumulative grade point average (GPA) of at least 3.40 (on a 4.00 scale). Applicants with a GPA below 3.0 will not be considered.

Additional information and a link to our on-line application can be found at: https://www.cnup.pitt.edu/phd-program-training/prospective-students

PhD Degree Requirements

https://www.cnup.pitt.edu/phd-program-training/current-students/phd-requirements

Credits: A minimum of 72 credit hours, including a 23-credit course requirement covering fundamental material in cellular and molecular neurobiology, systems neuroscience, and several elective courses.

Core courses:

- MSNBIO 2020 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 1 or
- NROSCI 2020 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 1

- MSNBIO 2021 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 2 or
- NROSCI 2021 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 2

- MSNBIO 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1 or
- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1

- MSNBIO 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2 or
- NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2

- MSNBIO 2102 - SYSTEMS NEUROBIOLOGY or
- NROSCI 2102 - SYSTEMS NEUROBIOLOGY

- MSNBIO 2627 - THE NEXT THREE YEARS: HOW TO DEVELOP YOUR OWN RESEARCH PROGRAM

Other requirements:

In addition to University requirements for graduate degrees, students are also required to complete a graduate level statistics course, obtain research experience in at least two separate laboratories; participate in program-wide journal clubs and research seminars; pass a reprint exam following their first year of study, a comprehensive exam, and a doctoral dissertation and defense.

A list of CNUP Training Faculty may be viewed at: https://www.cnup.pitt.edu/people/core-faculty-members

A complete list of courses may be viewed at: https://www.cnup.pitt.edu/phd-program-training/current-students/curriculum

PITT-RCSI Cooperative Degree PhD Program in Precision and Regenerative Medicine, PhD

Graduate Program in Precision and Regenerative Medicine (PRM)

The proposed PRM program will bring together faculty in basic and translational sciences from Pitt and RCSI, including researchers from the UPSOM, SSOE, McGowan Institute for Regenerative Medicine, Magee-Women's Research Institute, Institute for Precision Medicine, as well as other departments/schools at Pitt. A novel component of PRM is that it will be a cooperative PhD program with the Royal College of Surgeons in Dublin, Ireland. This will be the first such program for Pitt where the PhD degree will be granted by two institutions.

PRM will be a unique and innovative program in graduate education that aims to train highly motivated PhD students as self-reliant scholars with ready access to the breadth of expertise, approaches, and sub-disciplines that constitute the diverse fields of precision and regenerative medicine. This unique program, where students will do their research on two continents, will rapidly immerse students into diverse research environments that will train them to become independent and creative scientists.

Key features of the PRM include:

- Providing didactic, lecture-based instruction in fundamental and contemporary aspects of precision and regenerative medicine, utilizing the complementary strengths of two international institutions.
- Reinforcement of formal didactic teaching with highly interactive small group discussions facilitated by faculty experts and based on primary scientific literature in PRM.
- Providing courses at two different institutions with cohesive themes to facilitate students' understanding of the material, promoting gradual conceptual progression in the classroom with laboratory-based skill building.
- Engaging students early in laboratory research in core competencies of mentors' laboratories with emphasis on multidisciplinary approaches to important research questions.
- Annual Research Symposium alternating between Pittsburgh and Dublin where students and faculty will present their research and discuss ideas for improving the program and strengthening collaborations between the two institutions.

While the PRM program will be independent, we will be integrated with other graduate programs in the UPSOM and Bioengineering Department, and we aspire to a model wherein elective courses are shared between all programs.

Curriculum

- BIOENG 2540 - NEURAL BIOMATERIALS AND TISSUE ENGINEERING
- BIOENG 2620 - INTRODUCTION TO TISSUE ENGINEERING
- BIOENG 2810 - BIOMATERIALS & BIOCOMPATIBILITY
- BIOENG 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING
- ISB 2035 - SYSTEMS BIOLOGY II
- MSCMP 2740 - MOLECULAR PATHOBIOLOGY
- MSCMP 2760 - TISSUE ENGINEERING: FROM DESIGN TO CLINICAL TRANSLATION
- MSCMP 2820 - SYNTHETIC BIOLOGY-ENGINEERING LIVING SYSTEMS
- MSCMP 3770 - CELL THERAPY
- MSMGDB 2535 - MODEL ORGANISMS
- MSMI 2240 - INTRODUCTION TO IMMUNOBIOTHERAPEUTICS
- MSOGP 2004 - Cancer Immunology and Immunotherapy
- MSOGP 2005 - Big Data Science
- PC 02 - Biostatistics/RSCI
- PC 04 - Research Ethics and Integrity/RSCI
- PRM 01 - Fundamentals of Precision and Regenerative Medicine
- PRM 02 - Laboratory Rotation
- PRM 03 - Journal Club
- PRM 04 - Grant Writing

Joint Degree

Bioimaging Informatics Specialization, PhD

Curriculum

The curriculum is designed to train students who will shape the next generation of discovery in computational biology in academia and industry. Students are required to complete 72 credit hours of academic work toward partial fulfillment of the requirements for completion of dissertation study. Of these, 30+ are formal coursework, and the remaining to be completed with full-time research.

All students are required to take five core graduate courses. The core courses aim at providing a strong common background in computational biology before they specialize in particular research areas

Core Courses

- Machine Learning
- Intro to Computational Structural Biology
- Computational Genomics

- Cellular and Systems Modeling
- Laboratory Methods for Computational Biologists

In addition, all students are required to take five graduate elective courses: a life science/physical science course and an advanced interdisciplinary elective specified for the student's chosen area of specialization; a quantitative elective from a program-wide menu; and two general electives.

Specialization Areas

- Computational Genomics
- Computational Structural Biology
- Cellular and Systems Modeling
- Bioimage Informatics

For more information on the curriculum, see www.compbio.pitt.edu/curriculum.html.

Other Courses

In addition to core and elective courses, students take complementing courses, if needed, and participate in program seminar, journal clubs, ethics courses and directed studies toward their dissertation projects.

Program Seminar Series

Students enrolled in the program are expected to attend scientific seminars during all years of training. Beginning in their second year and ending in the year before their thesis defense, students present their research progress to fellow students and the faculty on at least an annual basis.

Journal Club

Effective presentation of scientific data is an invaluable aspect of graduate training. Therefore, all first- and second-year students must present a scientific article on a topic (selected by a faculty member) that introduces students to the methodology and applications of computational biology. The talk is made in a format that allows the student to develop basic presentation skills. Students subsequently receive feedback on their talks, thereby improving their presentations skills as their graduate training advances.

Training in Ethics

Ethical conduct and scientific integrity is an essential aspect of research. This is especially important given the competitive nature of funding processes and the high demand for productivity. Hence, the program instructs students on the significance and practice of ethical conduct.

Directed Study

Credits are given for laboratory projects (wet or computer labs) under the direction of the dissertation advisor prior to admission to candidacy for the doctorate.

Scheduling

We anticipate two types of course schedules for students in the program. The default for students who have taken the prerequisites will be to take three courses in each of the first two terms (50-75% time) and spend the remaining time on research. Such students would normally take the core courses in the first year along with one additional course. The third and fourth terms would be split between taking electives and doing research.

Students who enter with some biology or computer science or physical science background but not with sufficient background to take all of the core courses would take a mix of missing prerequisites and core courses in each of the first two terms (approx. 90% time) and spend 10% time on research. These students would then take a mix of remaining core courses and electives in the third and fourth terms (along with 30% research) and finish electives in the fifth and/or sixth terms.

Comprehensive Examination

Students are required to pass a comprehensive examination after completion of their courses, prior to being officially admitted to candidacy to the PhD degree. Students are expected to complete this examination no later than the beginning of the spring term of their third year. The comprehensive examination consists of two parts: a 12-page "grant-style" written proposal of the proposed research, followed by an oral defense of the proposed research.

Post-Comprehensive Qualifying Examination

Students who have been accepted to PhD candidacy conduct research on a full time basis, and are required to complete a minimum of 40 credit hours (9 credits per term) of full-time dissertation study in order to meet the criteria for dissertation defense. Hence, all students will have completed at least 72 credit hours of study prior to graduation, including 29 credit hours of core + elective courses, and at least 40 credit hours of dissertation research.

Completion of Degree

The program is structured in such a way that students can finish their degree within four years of entering their dissertation laboratory. However, it is recognized that the actual time required to attain the degree depends on the specific type of research undertaken and how quickly progress is made in completing the experimental program.

Terminal Masters Degree

The Program does not admit students whose goal is to attain a MS degree. However, it might become necessary for a PhD student to transfer to an MS track for academic reasons or reasons beyond the student's control, e.g., medical circumstances or a change in family circumstances necessitating a long-distance move.

Training Faculty

The program provides students with cross-disciplinary training in established as well as newly emerging fields of computational biology. Students have access to a community of faculty mentors from the University of Pittsburgh and Carnegie Mellon University, which not only provides a breadth of research areas for investigation, but also offers the technical and intellectual resources to make rapid progress toward their doctoral degree.

For a list of training faculty, see http://www.compbio.pitt.edu/?page_id=50/

Master's

Biomedical Informatics - Biosurveillance/Infectious Disease Informatics Specialization, MS

MS Degree

http://www.dbmi.pitt.edu/training-programs/degree

Credits: The Master of Science in Biomedical Informatics requires a minimum of 36 credits consisting of required biomedical informatics core Foundation Series (9 credits); required computational competency Research Methods Series (6 credits); biomedical informatics distribution Research Skills Series (7 credits minimum); electives (11 or more credits); and Master's Thesis/Project Research (BIOINF 2480 or 3 or more credits).

All required courses must be taken for a letter grade, with the exception of the Journal Clubs/Colloquiums and some independent and/or dissertation studies (to be determined by faculty advisors). A minimum "B" grade is required in all graduate courses.

Research Project or Thesis: A key element of the program is a research project with two key deliverables: (1) the writing and submission of a paper of publishable quality based upon the research and (2) the completion of an oral examination on its contents. A master's project committee will oversee the student's research progress, including the oral comprehensive examination. Students have the option of developing their projects into a formal master's thesis.

Successful completion of the oral examination on the research project satisfies the comprehensive examination requirement of the University's Committee on Graduate Studies. Final certification of the completion of the master's degree requires submission of the hard copy of the master's research project to the program coordinator.

Additional Requirements for Master's, Doctoral, and Certificate Students in Biomedical Informatics

Instruction in the Responsible Conduct of Research: This Web-based set of instructions and evaluation modules may be accessed at http://www.ctsi.pitt.edu/RCR/index.shtml.

Attendance at and participation in the Department of Biomedical Informatics' invited lectures, symposia, conferences, etc. (particularly the Annual Training Program Retreat and special departmental lectures). Such lectures are considered important educational experiences, as well as introducing students to primary researchers and their work in the field of biomedical informatics.

Biomedical Sciences (MS)

Biomedical Sciences (MS)

The Biomedical Master's Program (BMP) is designed to develop critical scientific thinking skills and train students for successful application to professional degree programs in the health sciences. Biomedicine is the centerpiece of the health sciences, interconnecting everything from medicine and dentistry, to clinical and biomedical research. The field of Biomedicine ultimately studies and advances understanding of the human body, how it works in health and how it goes awry in disease. The BMP at the University of Pittsburgh School of Medicine offers educational and experiential training in Biomedicine as preparation for successful careers in the health sciences within a faculty mentored community individualizing each student's success.

Contact Information

Biomedical Master's Program
3500 Fifth Avenue, Suite 206

Pittsburgh, PA 15213 USA

412-383-3265
Fax: 412-648-1077
Email: bmppitt@pitt.edu
www.bmp.pitt.edu

Admissions

Admissions Criteria:

The BMP welcomes candidates who are U.S. Citizens, non-citizen nationals, or lawfully admitted permanent residents of the U.S., or individuals who already hold, or can obtain a J-1, H1-B, or F1 transfer visa.

The program is designed for applicants with long-term goals of entering careers in the health sciences, or applying to DO and MD, PA, DMD/DDS, PhD, other health science degree programs or seeking a master's degree in the Biological Sciences.

Candidates must have distinguished personal qualifications of past academic ability and references. Application requirements include a bachelor's degree with at least a cumulative 3.0 GPA; a 3.3 or higher GPA is preferred. Completion of pre-requisite courses for application to future professional degree programs are required. MCAT, DAT, PCAT, or GRE scores are not required for admission, but should be reported by any applicant who has taken one of these tests. Candidates with community service, clinician shadowing, patient care, clinical or basic research experiences, and strong academic performance will be viewed very favorably.

Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) and are seeking their first degree in the United States are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 600 (paper) or 100 (iBT), an IELTS score of at least 7.00, or a Duolingo score of 120 is required for admission to the Program. We actively seek qualified applicants from underrepresented minorities and students with disabilities.

Application Process:

- The online application process starts October 1st and closes on June 1st the following year. Admissions is conducted on a rolling basis. Students matriculate for the beginning of the fall semester. A focus on ensuring student success is employed in the admissions process.

- Admissions are based upon the student's academic record, letters of recommendation, previous experience, written statement of interest, an updated resume/CV, and an interview.

The online application is available at: https://admissions.gradbiomed.pitt.edu/

Financial Assistance

Financial guidance is available through the University of Pittsburgh Office of Admissions and Financial Aid: https://financialaid.pitt.edu/graduate-students The BMP offers scholarships to select students. Awards are determined based on a holistic evaluation and amounts are based on financial need. All students are responsible for ensuring their tuition is paid.

Degree Requirements

All requirements detailed in the Regulations Governing Graduate Study at the University of Pittsburgh will be met. The MS in Biomedical Sciences requires the completion of a minimum of 32 credits with a GPA of 3.0 or higher. Maximum credits allowed per term will be 15, and a typical course load will be 15 credits for the fall and spring terms and 2 credits for the summer term.

Foundational Components:

The Curriculum: The BMP employs science-based instruction designed to improve student preparation for professional degree programs in medicine, dentistry, research, and other related health science professions. By emphasizing understanding and how to think in addition to what to know, the BMP promotes the development of study habits that enable our students to excel and thrive in the first two years of these demanding professional degree programs. These goals will be achieved through an integrated series of required core courses and elective courses and experiential training opportunities together with dedicated one-on-one advising and mentorship that will enable students to successfully apply to and perform well in their chosen professional school.

Experiential Training. The BMP affords opportunities for experiential training specifically tailored to the strengths and weaknesses of each individual student. The areas selected correspond to the typical aspects considered in the review of standard professional school applications: community service, patient volunteering, clinical shadowing, and research training.

Mentoring and Coaching. The BMP provides a multi-tiered mentoring and coaching model to all students. Each student will meet with their assigned faculty advisor during the initial phase of the program in order to identify strengths and weaknesses of the previous training received by the student. The student and faculty advisor will identify the best selection of academic courses and experiences to maximize long term student learning and success. Career and professional development coursework and access to an internal International Coaching Federation career coach will support individual growth including many of the AAMC Core Competencies. Access to an external International Coaching Federation life coach is also provided to address broader challenges such as limiting beliefs. In addition, near-peer mentoring is facilitated by the BMP Alumni Mentor Network. Students also engage in large group lectures, larger group discussions, small group discussions, and peer-to-peer writing-and-reflection coursework, with a focus on developing competencies in written and verbal professional communication skills. These activities are specifically targeted to develop the quality of students' professional program application materials.

Expanding on these three components, the BMP enables the student to differentiate with elective courses, experiential opportunities and mentoring to focus on specialized interests. These Areas of Concentration (AOCs) are in Medicine, Dentistry, or Biomedical Research. The AOCs are designed to individualize the program for students seeking future professional programs leading to the MD, DMD, or PhD degree, respectively.

Successful completion of the BMP results in conferral by the University of Pittsburgh of the Master of Science (MS) degree in the major of Biomedical Sciences. The BMP is a 12-month program. Applicants who are working may complete the program part-time over the course of two academic years

Curriculum

The BMP curriculum includes three major components: core, electives, and experiential activities. The "Core Course Requirements" have been designed to provide the foundational sciences for students who have a minimal level of basic science training as well as advanced education in health science thinking skills to serve students well into the first two years of professional degree programs. These courses are complemented by electives and experiential activities that are chosen based on each student's interests in his/her AOC.

Core Courses: Biochemistry and Physiology; Method and Logic in Biomedicine; Cell Signaling and Pharmacology; Comprehensive Analysis of Disease; Organ Systems Physiology; Professional Communications Reflections 1 and 2; Scientific Communication

Elective Courses: Human Anatomy; Histology and Cell Function in Health and Disease; Cell Biology Pathways in Treatment of Disease; Neurophysiology; Clinical Pharmacology; Biomedical Career Planning 1 & 2, Health Equity & Diversity Awareness; Experiential Learning.

Additional Elective Courses: Additional graduate level courses are available with written approval from the student's academic advisor and permission from the instructor and/or department offering the course.

Experiential Courses: The BMP provides ample opportunities for students to engage in community service, hospital volunteering, and clinical shadowing. Research training experiences are also available in a wide range of biomedical and clinical research laboratories. Students are expected to take the initiative, guided by their faculty advisor, to find suitable matches and schedule experiential education and training sessions during the Fall, Spring, and/or Summer terms.

Academic Standards

All graduate students must maintain a minimum cumulative GPA of 3.0 to stay in good academic standing and be eligible for graduation.

Admissions

Admissions Criteria:

The BMP welcomes candidates who are U.S. Citizens, non-citizen nationals, or lawfully admitted permanent residents of the U.S., or individuals who already hold, or can obtain a J-1, H1-B, or F1 transfer visa.

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Academic Standards

All graduate students must maintain a minimum cumulative GPA of 3.0 to stay in good academic standing and be eligible for graduation.

Clinical Research (MS)

Clinical Research (MS)

The Master of Science in Clinical Research Program is aligned with the mission of the Institute for Clinical Research Education to offer the highest-caliber training and education in clinical research and to enhance collaborations among trainees from multiple disciplines. This program is geared toward clinicians who are pursuing a research career, and can be completed over 2 years of part-time study.

Contact Information

Institute for Clinical Research Education
200 Meyran Ave, Suite 300
Pittsburgh, PA 15213
Phone: 412-586-9632
Fax: 412-586-9672

Email: icre@pitt.edu
Learn more.

Admissions

Admissions Criteria

- Applicants must meet the following requirements before filling out an online application.
- Candidates are encouraged, but not required, to have completed a graduate or professional degree.
- Candidates must have a high level of interest and potential for the pursuit of innovative clinical research as a major focus of their career plan.
- Candidates from departments who ensure 50%-75% of protected time during their pursuit of the degree.
- A minimum GPA of 3.2 on a 4.0 scale
- TOEFL, IELTS, and Duolingo scores (when applicable)
- GRE and MCAT scores are not accepted

Timeline

The Master of Science in Clinical Research Program accepts applications from December 15 through February 28 each year. In order to guarantee that you are considered for admission, we must receive your application and all component parts by February 28. Students will be notified via email of admission decisions approximately 1-2 months following the close of the application cycle.

Degree Requirements

Core Curriculum

The purpose of the core curriculum is to provide trainees with the basic set of skills that are required by clinical investigators in all fields of interest. These skills include an understanding of research design, epidemiologic methods, biostatistics, study and survey design, and measurement of outcomes.

The four core courses that comprise the core curriculum are offered in July and August. They are commonly taken together but can be distributed over two summer terms with the guidance of an academic advisor.

CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH

CLRES 2010 - CLINICAL RESEARCH METHODS

CLRES 2020 - BIOSTATISTICS

CLRES 2040 - MEASUREMENT IN CLINICAL RESEARCH

Advanced Grant Writing Course

This course focuses on research design and development and is a two-part course offered during the fall and spring terms. The Advanced Grant Writing course is taken by MS students during year 2.

CLRES 2071 ADVANCED GRANT WRITING PART 1

CLRES 2072 - ADVANCED GRANT WRITING PART 2

Specialty Track Requirements:

Students who enter the Master of Science in Clinical Research Program will select a curriculum track that offers specialized training in a specific clinical research area. Each specialty track offers a different curriculum of required courses, which can be viewed in the Program Handbook. The MS program has 5 specialty tracks:

- Clinical Trials Research Track
- Comparative Effectiveness Research Track
- Health Services Research Track
- Translational Research Track
- Innovation Track
- Implementation Science Track
- Data Science Track

Each of these tracks has a distinct set of required courses that allow students to specialize in an area of clinical research. All MS students will also take a selection of elective courses to reach the 30 credit minimum required for this degree.

Comprehensive Competency Review:

The Comprehensive Competency review is a program check-in completed at the midpoint of a student's degree progress. The MS in Clinical Research Program is designed to train students in the skills, knowledge, and professional norms for clinical researchers and the Comprehensive Competency Review helps students be confident that they are on track to develop competence in all key areas.

Thesis or Substantive Research Project:

The MS in Clinical Research requires each student to complete a formal thesis or substantive research project. Students are able to write a standard thesis, grant proposal, or 2 manuscripts to fulfill this requirement.

Students must successfully defend their research project to a review committee as required by the University's Committee on Graduate Studies.

Responsible Conduct in Research (RCR) Requirement

Clinical Research Master of Science students are required to attend eight 1-hour CTSI Responsible Conduct in Research workshops or enroll in the ICRE course CLRES 2050: Ethics and Responsible Conduct of Research. At the time of graduation, students must have at least 8 hours of RCR training through CTSI or have successfully completed CLRES 2050 in order to be eligible to graduate.

More Information:

For additional program details, please visit the Master of Science in Clinical Research Program page and review the Program Handbook.

Admissions

Admissions Criteria

- Applicants must meet the following requirements before filling out an online application.

- Candidates are encouraged, but not required, to have completed a graduate or professional degree.
- Candidates must have a high level of interest and potential for the pursuit of innovative clinical research as a major focus of their career plan.
- Candidates from departments who ensure 50%-75% of protected time during their pursuit of the degree.
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Degree Requirements

Core Curriculum

The purpose of the core curriculum is to provide trainees with the basic set of skills that are required by clinical investigators in all fields of interest. These skills include an understanding of research design, epidemiologic methods, biostatistics, study and survey design, and measurement of outcomes.

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Comprehensive Competency Review:

The Comprehensive Competency review is a program check-in completed at the midpoint of a student's degree progress. The MS in Clinical Research Program is designed to train students in the skills, knowledge, and professional norms for clinical researchers and the Comprehensive Competency Review helps students be confident that they are on track to develop competence in all key areas.

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More Information:

For additional program details, please visit the Master of Science in Clinical Research Program page and review the Program Handbook.

Computational Biomedicine and Biotechnology (MS)

Computational Biomedicine and Biotechnology (MS)

Computational Biomedicine and Biotechnology (MS)

Print-Friendly Page (opens a new window)

The Computational Biomedicine and Biotechnology (CoBB) Master of Science trains students in translating cutting-edge computational technologies into real-world advances in biomedicine and biotechnology. Seated in the School of Medicine's Department of Computational and Systems Biology, the program focuses on the interface between computer science and applied biology. Our courses are well-suited for students with a variety of backgrounds, such as those in biological sciences or quantitative disciplines. Students in the CoBB program will learn to develop and apply novel computational, mathematical, statistical, and in silico techniques to meet current challenges in biotechnology. Our graduates are equipped with the necessary skills for successful biomedical data science and biocomputing technology careers in the health care and biotechnology industry, government, and academia.

Executive Director:

Mert Gur, PhD

Department of Computational and Systems Biology

832 Murdoch I Building

3420 Forbes Avenue

Pittsburgh, Pennsylvania 15213-3203

412-648-3333

gurmert@pitt.edu

Master's Program Administrator:

Amanda L. Axelson, MBA

Department of Computational and Systems Biology

3420 Forbes Avenue

412-648-5657

ama251@pitt.edu

cobb@pitt.edu

Executive Committee:

Mert Gur, PhD

Joseph Ayoob, PhD

James Faeder, PhD

Frederick (Fritz) Roth, PhD

Program Website:

www.csb.pitt.edu/cobb/

Admissions

CoBB welcomes students from various backgrounds, including but not limited to life science, computer science, physical science, mathematics and statistics, and engineering majors, students with interdisciplinary or multi-disciplinary backgrounds.

Application

Required Materials:

- The Online Application
- Statement of Purpose
- Three letters of Recommendation
- Unofficial Transcripts
- Unofficial TOEFL Scores/IELTS/Duolingo Scores (for international applicants)
- Application Fee

Financial Assistance

Financial guidance is available through the University of Pittsburgh Office of Admissions and Financial Aid: https://financialaid.pitt.edu/graduate-students/. All students are responsible for their own tuition.

Degree Requirements

To receive the CoBB MS, all students are required to complete a minimum of 30 credits of masters-level coursework and to maintain an overall GPA of 3.0 or higher. Additionaly information can be found in the Student Handbook.

Curriculum

- At least four research credits of independent study with a research mentor
- A summer internship or additional directed study, worth three credits
- 3 credits of Fundamentals of Computational Biology
- A Professional Development Course and a Faculty Seminar course
- One course (taken or waived) from each of the six core areas of study

- Data Science, Programming, Probability, and Statistics
- Artificial Intelligence, Machine Learning and Bioimage Analysis
- Genomics and Precision Medicine
- Molecular and Cell Systems Modeling
- Drug Discovery and Quantitative Pharmacology
- Specialized Courses, based on the student's interests, can be selected from a wide range of offerings at the University of Pittsburgh, including the Schools of Medicine, Engineering, and Health Sciences, among others.

Directed Study

Gaining hands on experience in solving problems in computational biology is an essential part of CoBB training. Each student is therefore required to take a minimum of 4 credits of directed study with a University of Pittsburgh faculty member. Students are expected to select a research mentor for the directed study in their first semester, and to complete the research requirement in the second and/or third semesters.

Internship

To gain experience in the professional application of computational biology, students are encouraged to participate in a 2-to-3 month summer internship at a company of their choosing. Acceptable internship sites include industrial labs, biotech/pharma companies, and governmental organizations.

Students will present a written report with well-defined structure and content at the end of their internship to summarize their experience and the skills they acquired during their experiential training, and to make recommendations for future work. They will also make an oral presentation to share their experience with others.

Completion of Degree

The program is structured in such a way that students can finish their degree within 12-20 months, depending on the background of the student. To complete the degree in one year, students must demonstrate proficiency in programming, calculus and linear algebra.

For more information on the program, please visit www.csb.pitt.edu/cobb/

Admissions

CoBB welcomes students from various backgrounds, including but not limited to life science, computer science, physical science, mathematics and statistics, and engineering majors, students with interdisciplinary or multi-disciplinary backgrounds.

Application

Required Materials:

- The Online Application
- Statement of Purpose
- Three letters of Recommendation

- Unofficial Transcripts
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- Genomics and Precision Medicine
- Molecular and Cell Systems Modeling
- Drug Discovery and Quantitative Pharmacology
- Specialized Courses, based on the student's interests, can be selected from a wide range of offerings at the University of Pittsburgh, including the Schools of Medicine, Engineering, and Health Sciences, among others.

Directed Study

Gaining hands on experience in solving problems in computational biology is an essential part of CoBB training. Each student is therefore required to take a minimum of 4 credits of directed study with a University of Pittsburgh faculty member. Students are expected to select a research mentor for the directed study in their first semester, and to complete the research requirement in the second and/or third semesters.

Internship

To gain experience in the professional application of computational biology, students are encouraged to participate in a 2-to-3 month summer internship at a company of their choosing. Acceptable internship sites include industrial labs, biotech/pharma companies, and governmental organizations.

Students will present a written report with well-defined structure and content at the end of their internship to summarize their experience and the skills they acquired during their experiential training, and to make recommendations for future work. They will also make an oral presentation to share their experience with others.

Completion of Degree

The program is structured in such a way that students can finish their degree within 12-20 months, depending on the background of the student. To complete the degree in one year, students must demonstrate proficiency in programming, calculus and linear algebra.

For more information on the program, please visit www.csb.pitt.edu/cobb/

Admissions

CoBB welcomes students from various backgrounds, including but not limited to life science, computer science, physical science, mathematics and statistics, and engineering majors, students with interdisciplinary or multi-disciplinary backgrounds.

Application

Required Materials:

- The Online Application
- Statement of Purpose
- Three letters of Recommendation
- Unofficial Transcripts
- Unofficial TOEFL Scores/IELTS/Duolingo Scores (for international applicants)
- Application Fee

Financial Assistance

Financial guidance is available through the University of Pittsburgh Office of Admissions and Financial Aid: https://financialaid.pitt.edu/graduate-students/. All students are responsible for their own tuition**.**

Degree Requirements

To receive the CoBB MS, all students are required to complete a minimum of 30 credits of masters-level coursework and to maintain an overall GPA of 3.0 or higher. Additionaly information can be found in the Student Handbook.

Curriculum

- At least four research credits of independent study with a research mentor
- A summer internship or additional directed study, worth three credits
- 3 credits of Fundamentals of Computational Biology
- A Professional Development Course and a Faculty Seminar course
- One course (taken or waived) from each of the six core areas of study
    1. Data Science, Programming, Probability, and Statistics
    2. Artificial Intelligence, Machine Learning and Bioimage Analysis
    3. Genomics and Precision Medicine
    4. Molecular and Cell Systems Modeling
    5. Drug Discovery and Quantitative Pharmacology
    6. Specialized Courses, based on the student's interests, can be selected from a wide range of offerings at the University of Pittsburgh, including the Schools of Medicine, Engineering, and Health Sciences, among others.

Directed Study

Gaining hands on experience in solving problems in computational biology is an essential part of CoBB training. Each student is therefore required to take a minimum of 4 credits of directed study with a University of Pittsburgh faculty member. Students are expected to select a research mentor for the directed study in their first semester, and to complete the research requirement in the second and/or third semesters.

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Health Professions Education, MS

Health Professions Education, MS

The Master of Science in Medical Education Program is designed to help academically oriented health care professionals enhance their education, strengthen their teaching skills, and expand their ability to facilitate the learning process of students and residents in a variety of clinical teaching environments. This program is typically completed over 2 years of part-time study. Alumni of this program have gone on to make valuable contributions to the field of medical education, many of them through leadership positions in top training programs across the country.

Institute for Clinical Research Education
200 Meyran Ave., Suite 300

412-586-9632
Fax: 412-586-9672

Email: icre@pitt.edu
Learn more.

Admissions

Admissions Criteria

- Candidates must have completed one of the following degrees: MD, DDS, DMD, DO, ND, OD, PharmD, PhD, DNS in nursing, PhD with clinical responsibilities, or other professional degree as deemed appropriate by the selection committee.
- Candidates must have a clinical appointment within UPMC (faculty, fellow, or resident) and/or an academic appointment within a University of Pittsburgh Health Sciences school, since successful participation in and completion of our courses depend on having clinical and classroom environments in which to teach, concurrent with the program.
- Candidates must have a high level of interest in and potential for the pursuit of innovative medical education as a major focus of their career plan.
- Candidates must be based in departments that ensure adequate protected time to participate in courses and complete a research project during their pursuit of the degree.
- A minimum GPA of 3.2 on a 4.0 scale
- TOEFL, IELTS, or Duolingo scores (when applicable)
- GRE and MCAT scores not accepted

Timeline

The Master of Science in Medical Education Program has two application cycles per year. The application period for the Spring Term occurs from September 1 through October 31. The application period for the Summer Term occurs from December 15 through February 28. In order to guarantee that you are considered for admission, we must receive your application and all component parts by the last day of the admission cycle. Students will be notified via email of admission decisions 1-2 months following the close of the application cycle.

Financial Assistance

The Institute for Clinical Research Education does not provide financial aid. Unless students have other funding sources, they are responsible for covering the tuition costs, taxes, and fees associated with their course enrollment.

Degree Requirements

The University requires the successful fulfillment of a minimum of 30 credits for awarding a Master of Science in Medical Education. The degree is granted upon the completion of a tightly integrated curriculum with three components: (1) coursework plus observed teaching activities focusing on adult learning, classroom and clinical teaching skills, curriculum development, innovation in medical education, professional development, and medical administration; (2) additional courses to provide trainees with fundamental research skills; and (3) a project on curriculum development or a mentored research project.

Core Curriculum

All Master of Science trainees in the Medical Education Program enroll in 11 required courses that cover the fundamental aspects of the field of medical education. Below are the required courses:

MEDEDU 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH

MEDEDU 2010 - CLINICAL RESEARCH METHODS

MEDEDU 2020 - BIOSTATISTICS

MEDEDU 2040 - MEASUREMENT IN CLINICAL RESEARCH

MEDEDU 2080 - MASTERS RESEARCH

MEDEDU 2100 - ENHANCING TEACHING SKILLS

MEDEDU 2111 - FUNDAMENTALS OF ADULT LEARNING PART 1

MEDEDU 2120 - PROFESSIONAL DEVELOPMENT

MEDEDU 2125 - ASSESSMENT OF MEDICAL LEARNERS

MEDEDU 2130 - CURRICULUM DEVELOPMENT & EVALTN

MEDEDU 2140 - SCIENTIFIC WRITING & PRESENTATION SKILLS (ONLINE)

Electives

Trainees choose elective coursework to reach the required 30 credits. These courses may be offered through the Medical Education or Clinical Research program.

Independent Research Project

Trainees pursuing the Master of Science in Medical Education are required to complete a substantive research project. This thesis requirement can take the form of a curriculum development project, survey research, qualitative research, or other type of research project. The trainee must be the principal investigator for their thesis project and plan to publish their research in a peer-reviewed journal.

More Information

To learn more about the Medical Education Academic Programs, please visit the program page and review the program handbook

Admissions

Admissions Criteria

- Candidates must have completed one of the following degrees: MD, DDS, DMD, DO, ND, OD, PharmD, PhD, DNS in nursing, PhD with clinical responsibilities, or other professional degree as deemed appropriate by the selection committee.
- Candidates must have a high level of interest in and potential for the pursuit of innovative medical education as a major focus of their career plan.
- Candidates must be based in departments that ensure adequate protected time to participate in courses and complete a research project during their pursuit of the degree.
- A minimum GPA of 3.2 on a 4.0 scale
- TOEFL, IELTS, or Duolingo scores (when applicable)

- GRE and MCAT scores not accepted

Timeline

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Degree Requirements

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MEDEDU 2020 - BIOSTATISTICS

MEDEDU 2040 - MEASUREMENT IN CLINICAL RESEARCH

MEDEDU 2080 - MASTERS RESEARCH

MEDEDU 2100 - ENHANCING TEACHING SKILLS

MEDEDU 2111 - FUNDAMENTALS OF ADULT LEARNING PART 1

MEDEDU 2120 - PROFESSIONAL DEVELOPMENT

MEDEDU 2125 - ASSESSMENT OF MEDICAL LEARNERS

MEDEDU 2130 - CURRICULUM DEVELOPMENT & EVALTN

MEDEDU 2140 - SCIENTIFIC WRITING & PRESENTATION SKILLS (ONLINE)

Electives

Trainees choose elective coursework to reach the required 30 credits. These courses may be offered through the Medical Education or Clinical Research program.

Independent Research Project

Trainees pursuing the Master of Science in Medical Education are required to complete a substantive research project. This thesis requirement can take the form of a curriculum development project, survey research, qualitative research, or other type of research project. The trainee must be the principal investigator for their thesis project and plan to publish their research in a peer-reviewed journal.

More Information

To learn more about the Medical Education Academic Programs, please visit the program page and review the program handbook

Non-Degree

Institute for Clinical Research Education

The Institute for Clinical Research Education (ICRE) is the home for the University of Pittsburgh's premier clinical and translational research training programs. The ICRE offers a variety of educational, training, and career development programs for researchers in clinical and translational science as well as medical education. The degree programs of the ICRE emphasize the multidisciplinary nature of clinical research, translational science, and medical education while engaging adult learners through the use of applied approaches to build skills. Learn more.

Graduate Training Programs:

- **Clinical and Translational Science (PhD)**
- **Clinical Research (MS)**
- **Clinical Research (Certificate)**
- **Health Professions Education, MS**
- **Health Professions Education, Certificate**
- **Certificate in Clinical and Translational Science for Doctoral Students in the Health Sciences**

PhD

Cancer Biology and Oncology, PhD

Oncology Graduate Program (OGP)

The OGP is led by Hillman Faculty in Hillman Cancer Center and the newly refurbished Ford Assembly Building (5KB) at 5051 Centre Avenue in Shadyside. On a student's diploma it will be a PhD with a major in Cancer Biology and Oncology. The OGP is used to market the cancer focus of the program to students, faculty, and the public.

The OGP is an innovative program in graduate education that aims to train highly motivated PhD students as self-reliant scholars in an environment with ready access to the breadth of expertise, approaches, and sub-disciplines that constitute the diverse fields of Oncology. This unique program rapidly immerses students into a research environment that will train them to become independent and creative scientists.

Key features of the OGP include:

- Providing didactic, lecture-based instruction in fundamental and contemporary aspects of Oncology.
- Reinforcement of formal didactic teaching with informal small group discussions led by faculty experts and based on primary scientific literature.

- Providing courses with cohesive themes to facilitate students' understanding of the material, promoting gradual conceptual progression in the classroom with laboratory-based skill building.
- Engaging students early in laboratory research in core competencies of mentors' laboratories with emphasis on multidisciplinary approaches to important research questions.

Faculty research interests in the proposed OGP can be broadly divided into the following areas:

- Cancer Biology Program (CBP)
- Cancer Epidemiology and Prevention Program (CEPP)
- Cancer Immunology and Immunotherapy Program (CIIP)
- Cancer Therapeutics Program (CTP)
- Cancer Virology Program (CVP)
- Genome Stability Program (GSP)

Admission Requirements

1. A baccalaureate degree in a biological or physical science or in mathematics, computer science or engineering.
2. A minimum grade point average of 3.2 (on a scale of 4) or its equivalent from an accredited institution.
3. A minimum of three letters of recommendation. Letters from faculty familiar with the applicant's research accomplishments are of particular value to the evaluation process.
4. A personal statement.
5. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS), or Duo Lingo. A minimum overall TOEFL score of 90 (within a minimum score of 22 in each section), 100 iBT, 7.0 on the IELTS, or 120 on Duo Lingo is required for admission to the program. Scores must be less than two years old. To submit TOEFL scores, use Institution Code 2927 and Department Code 45. Applicants who have earned a bachelor's degree or higher from a regionally accredited institution in the United States are exempt from submitting English language proficiency test results.

Course Curriculum

In line with University requirements, students will be required to earn 32 course credits and 40 PhD dissertation credits in order to be eligible for graduation from the program.

Laboratory Rotations

Laboratory rotations are important for helping to ensure a good fit between a student and PhD mentor. Rotations in the OGP will run for 12 weeks. This is sufficient time for the student and potential mentor (and the mentor's lab personnel) to interact, while still allowing time to perform a short-term research project. Each student is required to complete three lab rotations. Students will be expected to complete a short rotation report (2-3 pages), to be turned in within 1 week of the end of the rotation, detailing the goal(s) of the project and its rationale, as well as any results obtained and potential future directions. At the end of each rotation, students will be evaluated by the faculty member supervising the rotation; these evaluations will be forwarded to the Program Directors and will become part of the student's academic record. Rotations will be graded, and each rotation will receive 3 credits.

Course Instruction

Courses will be taught by Oncology Graduate Program Faculty who will be chosen from existing Hillman Cancer Center members. This will fulfill their existing teaching requirement and therefore have no workload impact.

First Year

Fall

All first year OGP students will take a newly developed common courses in the fall semester, to be titled "Fundamentals in Biology" to be directed by Dr. Katherine Aird as well as "Cancer Biology & Therapeutics" an existing course directed by Drs. Laura Stabile and Roderick O'Sullivan (MSCMP3710). These will be three credit courses.

All first-year students will be offered a newly developed common course "Classic Manuscripts in Cancer Biology and Oncology. In this course, students will be taught how to read and analyze scientific literature, with an emphasis on current and classic papers in Oncology. This will be a two-credit course.

Students will also attend one of HCC's research program's work-in-progress conferences where they will learn how to present state-of-the-art research in Oncology.

Finally, students in the fall of year 1 will complete a laboratory rotation of 12 weeks each (three credits).

- MSOGP 2000 - FUNDAMENTALS IN CANCER BIOLOGY
- MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS
- MSOGP 2060 - ONCOLOGY GRADUATE PROGRAM JOURNAL CLUB

Spring

All first-year students will be required to take a newly developed common course "Fundamentals of Clinical Oncology" to be directed by Dr. Chris Bakkenist. This will be a three-credit course.

All first-year students will be required to take three elective courses in the Spring of the first year (two or three credits). These may be electives offered by OGP or other Graduate Programs. For example, we imagine that some OGP students will elect to take an existing course, Comprehensive Immunology MSMI 2210 with PMI (two credits) prior to taking a new course, Cancer Immunology and Immunotherapy (three credits) in the summer of their first year. Some OGP students may take an existing course, Principles of Pharmacology MSMPHL 2310 (two credits) and/or Drug Discovery MSMPHL 2370 (two credits) prior to a new course, Women's Cancer (three credits) in the summer of their first year. While the OGP will be an innovative, contemporary, and comprehensive Graduate Program to train the next generation of cancer researchers, we do not propose that it be exclusive. We will integrate with existing Graduate Programs who offer electives that interest our students, and our electives will be open to Graduate Students in other programs. Students will also complete a second laboratory rotation.

- MSOGP 3000 - FUNDAMENTALS OF CLINICAL ONCOLOGY
- MSMI 2210 - COMPREHENSIVE IMMUNOLOGY
- MSMPHL 2310 - PRINCIPLES OF PHARMACOLOGY
- MSMPHL 2370 - DRUG DISCOVERY

Summer

In the summer concluding their first year in the Program, OGP students will take the same Scientific Ethics (one credit) and Statistics (three credits) courses currently required of all students in the IBGP and other SOM PhD programs. Many of the faculty who will participate in OGP have participated in the aforementioned courses and will continue to do so once the OGP is established. OGP students will also take an elective (two or three credits).

Students will also complete a third laboratory rotation.

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH
- STATISTICS COURSE

Second Year

Fall

Upon completion of rotations, students will confer with their first-year advisor, rotation mentors, and/or the members of the OGP executive committee to identify a mentor and laboratory in which to conduct their thesis research. Students will commence or continue work in their chosen thesis laboratory, depending on when their laboratory rotations were completed.

If a thesis laboratory is not chosen at the end of the third rotation, a fourth rotation may be offered at the discretion of the Program Directors. These situations will be reviewed on a case by case basis.

- MSMPHL 2300 - MS THESIS RESEARCH

Spring

All second-year students will be required to take a course in scientific writing (one credit). Our experience examining written comprehensive exams is that some students need intensive training in scientific writing as they start working on their comprehensive exams.

- MSOGP 2003 - SCIENTIFIC WRITING

OGP Electives

To be completed during the first two years of study.

OGP students will be required to complete 6 credits of Cancer elective courses based upon their particular area of interest. We anticipate that these will generally be of the following:

- MSMPHL 3330 - GENOME INSTABILITY AND HUMAN DISEASE
- MSOGP 2004 - CANCER IMMUNOLOGY AND IMMUNOTHERAPY
- MSOGP 2005 - BIG DATA SCIENCE
- MSOGP 2006 - WOMEN'S CANCER

Research Credits

Lab Rotations (Fall/Spring/Summer First Year, 9 credits): Students will be required to complete three lab rotations of 12 weeks each for 3 credits per rotation. These rotations will commence in early September. After the rotations, students will sign up for Directed Study (Spring/Summer/Fall First/Second Year, 23/24 credits) or Dissertation Study (after completion of the qualifying exam and advancing to candidacy; until graduation).

Total Credits: 72

Admission Requirements

1. A baccalaureate degree in a biological or physical science or in mathematics, computer science or engineering.
2. A minimum grade point average of 3.2 (on a scale of 4) or its equivalent from an accredited institution.
3. A minimum of three letters of recommendation. Letters from faculty familiar with the applicant's research accomplishments are of particular value to the evaluation process.
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Students will also attend one of HCC's research program's work-in-progress conferences where they will learn how to present state-of-the-art research in Oncology.

Finally, students in the fall of year 1 will complete a laboratory rotation of 12 weeks each (three credits).

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- MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS
- MSOGP 2001 - CLASSIC MANUSCRIPTS IN CANCER BIOLOGY AND ONCOLOGY

Spring

All first-year students will be required to take a newly developed common course "Fundamentals of Clinical Oncology" to be directed by Dr. Chris Bakkenist. This will be a three-credit course.

All first-year students will be required to take three elective courses in the Spring of the first year (two or three credits). These may be electives offered by OGP or other Graduate Programs. For example, we imagine that some OGP students will elect to take an existing course, Comprehensive Immunology MSMI 2210 with PMI (two credits) prior to taking a new course, Cancer Immunology and Immunotherapy (three credits) in the summer of their first year. Some OGP students may take an existing course, Principles of Pharmacology MSMPHL 2310 (two credits) and/or Drug Discovery MSMPHL 2370 (two credits) prior to a new course, Women's Cancer (three credits) in the summer of their first year. While the OGP will be an innovative, contemporary, and comprehensive Graduate Program to train the next generation of cancer researchers, we do not propose that it be exclusive. We will integrate with existing Graduate Programs who offer electives that interest our students, and our electives will be open to Graduate Students in other programs. Students will also complete a second laboratory rotation.

- MSOGP 2002 - FUNDAMENTALS OF CLINICAL ONCOLOGY
- MSMI 2210 - ADVANCED IMMUNOLOGY
- MSMPHL 2310 - PRINCIPLES OF PHARMACOLOGY
- MSMPHL 2370 - DRUG DISCOVERY

Summer

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Students will also complete a third laboratory rotation.

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH
- STATISTICS COURSE

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Total Credits: 72

Interdisciplinary Biomedical Graduate Program

Interdisciplinary Biomedical Graduate Program

Interdisciplinary Biomedical Graduate Program

Through the Interdisciplinary Biomedical Graduate Program, students may be admitted into one of the following 2 PhD degree-granting programs in the School of Medicine:

- Cellular and Molecular Pathology (PhD)
- Molecular Pharmacology (PhD)

Students will not be admitted to pursue a master's degree. However, students who cannot complete the PhD program due to extenuating personal, financial, academic, or medical reasons may be awarded a master's degree.

The Interdisciplinary Biomedical Graduate Program is flexible and accommodates students whose research interests are still evolving by introducing them to a variety of fields through interdisciplinary courses and laboratory experiences. For those students who have a clearly defined research interest, the program offers the opportunity to move quickly into a laboratory and accelerate their study.

For more information on Admissions, Financial Assistance, Training Faculty, etc. please visit www.gradbiomed.pitt.edu

Contact Information

Aliya Khan, IBGP Coordinator

Office of Graduate Studies

M240 Scaife Hall

3550 Terrace Street, Pittsburgh PA 15261

412-383-4879

Fax: 412-648-1077

E-mail: ibgp.som@pitt.edu

www.gradbiomed.pitt.edu

Academic Standards

Students must maintain a minimum overall cumulative GPA of 3.00. In addition, a minimum of a B grade must be earned in each of the required courses and in each of the degree-granting program core courses.

General Degree Requirements - All Interdisciplinary Biomedical Graduate Students

The first term core course, Foundations of Biomedical Science, is required of all students and is followed by increasingly specialized course work in the discipline-specific program the student has chosen. A course in biomedical experimental design and analysis and a course in research ethics are also required of all students. The first year includes three laboratory research rotations. (See listing of Required Courses below.) Students are guided through their first year of graduate study by a faculty mentor assigned by the program.

The mentor helps to identify rotation laboratories, provides advice on classes, and ensures that students reach appropriate milestones in the first year of the program. At the end of the first year, a preliminary student performance evaluation is conducted by the Program Steering Committee. When a student has successfully completed the preliminary evaluation and chosen a dissertation advisor, the student transfers into one of the degree-granting programs.

Evaluation following the first year is undertaken by the degree-granting program and includes course performance and a comprehensive exam at the end of the second year of study. The comprehensive exam is in the form of an original research proposal followed by an oral examination before a faculty committee. Upon successful completion of the comprehensive exam, the student nominates a dissertation advisory committee composed of a minimum of 5 members. A majority of the committee (including the major advisor) must have graduate faculty status. The student then presents a dissertation proposal to the committee and is admitted to candidacy. The training program is completed by execution of an original and independent research project and defending a dissertation. Please see Regulations Pertaining to Doctoral Degrees.

Required Courses-All Students

The following courses are required of all students in the Interdisciplinary Biomedical Graduate Program:

INTBP 3000 - FOUNDTNS OF BIOMEDICAL SCIENCE

INTBP 3005 - FOUNDATIONS JOURNAL CLUB

MSCMP 2280 BASIC UNDERSTANDING OF PROFESSIONALISM AS RELATED TO GRADUATE EDUCATION

INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS

INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

INTBP 3010 - LABORATORY RESEARCH ROTATION

A minimum of 72 credits (32 course credits and 40 PhD dissertation research credits) beyond the baccalaureate degree is required for the PhD degree.

Cellular and Molecular Pathology (PhD)

Core Courses

The Cellular and Molecular Pathology graduate program offers an exciting, interdisciplinary training environment at the intersection of cell biology, molecular biology, immunology, and artificial intelligence, all focused on understanding human disease. With a strong emphasis on translational research and regenerative medicine, CMP bridges basic science and clinical investigation to address fundamental questions about tissue development and homeostasis, disease mechanisms, and innovative therapeutic strategies. Students engage in cutting-edge research using the latest technologies, exploring topics such as cellular reprogramming at the Center for Transcriptional Medicine (CTM); liver development, disease, and therapy; developmental neuroscience; gene regulation; cancer biology; angiogenesis and the vasculature; pulmonary disease; inflammation and autoimmunity; genetics; and molecular diagnostics. The integration of computational tools and machine learning through the Computational Pathology & AI Center of Excellence (CPACE) further expands the scope of discovery. Research takes place in state-of-the-art laboratories across the medical center campus, fostering collaboration between basic scientists and clinician-investigators (MD's, PhD's, and MD/PhD's), preparing students to become leaders in biomedical research.

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses for the Cellular and Molecular Pathology program:

- INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS
- MSCMP 2280 - BASIC UNDERSTANDING OF PROFESSIONALISM AS RELATED TO GRADUATE EDUCATION
- MSCMP 2730 - MOLEC MECHS TIS GROWTH & DIFFRN and EITHER
- MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS OR
- MSCMP 2740 - MOLECULAR PATHOBIOLOGY OR
- MSCMP 3790 - BASICS OF PERSONALIZED MEDICINE

Additionally, we require at least 5 terms of:

- MSCMP 2750 - RESEARCH SEMINAR

As well as two electives of your choice

from either the above electives or from courses throughout the School of Medicine on diverse topics of interest to students such as the following CMP-sponsored courses (partial listing):

- MSCMP 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING
- MSCMP 3740 - STEM CELLS
- MSCMP 3750 - ANGIOGENESIS
- MSCMP 3770 - CELL THERAPY

Molecular Pharmacology (PhD)

Biomedical research in the Molecular Pharmacology program is focused on cutting-edge discovery of molecular and cellular mechanisms of intracellular signaling using a combination of biochemical, molecular biological, biophysical, ultrastructural, and imaging approaches. Basic research into cellular communication in health and disease is the main emphasis of the program with the added advantage of an array of translational opportunities into the development and testing of novel therapeutic agents. Applications of this common theme are directed toward research in molecular biology of cancer, neuropharmacology, cell and organ system pharmacology, signal transduction, neurodegenerative diseases and drug discovery. Formal collaborative interactions with the Pittsburgh Cancer Institute, the Center for Neuroscience, the Pittsburgh Institute for Neurodegenerative Diseases (PIND), the Division of Clinical Pharmacology, the University of Pittsburgh Drug Discovery Institute, University of Pittsburgh Structural Biology Imaging Center, the Vascular Medicine Institute and the Center for Biological Imaging provide a broad multidisciplinary approach to training in modern molecular pharmacology.

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses in the molecular pharmacology program:

- INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS
- MSMPHL 2310 - PRINCIPLES OF PHARMACOLOGY
- MSMPHL 3360 - MOLECULAR PHARMACOLOGY
- MSMPHL 2360 - BIOLOGY OF SIGNAL TRANSDUCTION
- MSMPHL 3310 - CANCER BIOLOGY AND THERAPEUTICS
- OR
- MSMPHL 3375 - NEUROPHARMACOLOGY
- OR
- MSMPHL 2370 - DRUG DISCOVERY
- OR
- MSMPHL 3330 GENOME INSTABILITY AND HUMAN DISEASE

Additionally, we require MSMPHL 2350 (F & Sp) 1 Cr. RESEARCH SEMINAR and MSMPHL 3320 (F & Sp) 1 Cr. JOURNAL CLUB

Admission Requirements and Procedures

Students with at least a baccalaureate degree in biological or physical science or in mathematics, computer science or engineering are encouraged to apply. Admissions are based upon the student's academic record, letters of recommendation, previous research experience, written statement of interest, and a personal interview. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 600 (paper) or 100 (iBT), IELTS score of at least 7.00, or a minimum score of 120 on the Duolingo is required for admission to the IBGP. Applicants who have earned a bachelor's degree or a higher degree from a regionally accredited institution in the United States are exempt from submitting English language proficiency test results.

Additional information and a link to the online application can be a found at

https://www.gradbiomed.pitt.edu/

Financial Assistance

All full-time students receive a stipend, educational enrichment fund, computing and network service, and individual health insurance (with option to purchase additional family coverage) during their graduate training.

Academic Standards

Students must maintain a minimum overall cumulative GPA of 3.00. In addition, a minimum of a B grade must be earned in each of the required courses and in each of the degree-granting program core courses.

General Degree Requirements - All Interdisciplinary Biomedical Graduate Students

The first term core course, Foundations of Biomedical Science, is required of all students and is followed by increasingly specialized course work in the discipline-specific program the student has chosen. A course in biomedical experimental design and analysis and a course in research ethics are also required of all students. The first year includes three laboratory research rotations. (*See listing of Required Courses below*.) Students are guided through their first year of graduate study by a faculty mentor assigned by the program.

The mentor helps to identify rotation laboratories, provides advice on classes, and ensures that students reach appropriate milestones in the first year of the program. At the end of the first year, a preliminary student performance evaluation is conducted by the Program Steering Committee. When a student has successfully completed the preliminary evaluation and chosen a dissertation advisor, the student transfers into one of the degree-granting programs.

Evaluation following the first year is undertaken by the degree-granting program and includes course performance and a comprehensive exam at the end of the second year of study. The comprehensive exam is in the form of an original research proposal followed by an oral examination before a faculty committee. Upon successful completion of the comprehensive exam, the student nominates a dissertation advisory committee composed of a minimum of 5 members. A majority of the committee (including the major advisor) must have graduate faculty status. The student then presents a dissertation proposal to the committee and is admitted to candidacy. The training program is completed by execution of an original and independent research project and defending a dissertation. *Please see Regulations Pertaining to Doctoral Degrees*.

Required Courses-All Students

The following courses are required of all students in the Interdisciplinary Biomedical Graduate Program:

INTBP 2000 - FOUNDTNS OF BIOMEDICAL SCIENCE

INTBP 2005 - FOUNDATIONS CONFERENCE

INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS

INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

INTBP 2010 - LABORATORY RESEARCH ROTATION

A minimum of 72 credits (32 course credits and 40 PhD dissertation research credits) beyond the baccalaureate degree is required for the PhD degree.

School of Nursing

School of Nursing

The School of Nursing was established as an independent school of the University by action of the Board of Trustees in April 1939 and was opened in September of the same year. The University conferred the degree Bachelor of Science in Nursing Education for the first time in August 1939. The University conferred the first Bachelor of Science in Nursing degrees in February 1942.

The first Master's degree was awarded in 1944, and the first Doctor of Philosophy degree in 1957. The first Doctorate of Nursing Practice degree was awarded in 2008.

Mission

The University of Pittsburgh School of Nursing, founded in 1939, is one of the oldest programs in baccalaureate and doctoral education in nursing in the United States. As one of the nation's distinguished schools of nursing, the resources of the School of Nursing constitute an invaluable asset for the intellectual, scientific, and economic enrichment of health care in Pennsylvania, the nation, and throughout the world.

The School of Nursing's mission is to:

- provide high-quality undergraduate education in nursing;
- maintain and develop superior graduate programs in nursing that respond to the needs of health care in general and nursing in particular within Pennsylvania, the nation, and the world;
- engage in research and other scholarly activities that advance learning through the extension of the frontiers of knowledge in health care;
- cooperate with health care, governmental, and related institutions to transfer knowledge in health sciences and health care;
- offer continuing education programs adapted to the professional upgrading and career advancement interests and needs of nurses in Pennsylvania; and
- make available to local communities and public agencies the expertise of the School of Nursing in ways that are consistent with the primary teaching and research functions and contribute to the intellectual and economic development in health care within the commonwealth, the nation, and the world.

Contact Information

University of Pittsburgh
School of Nursing
Student Affairs
240 Victoria Building
Pittsburgh, PA 15261
412-624-4586 or 1-888-747-0794
Email: PittNursing@pitt.edu
www.nursing.pitt.edu

Master's Program Admission Process and Admission Criteria

Applications are available on our website. Admission criteria and application deadlines are also provided on the school's website. Complete applications will be reviewed, and interviews may be conducted (virtual) prior to an admission decision. Applicants must apply online.

Applications to the Master of Science in Nursing Program are reviewed using a standardized process. Applicants must meet the criteria listed below. Qualified applicants are considered without regard to race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, disability, or status as a disabled veteran or a veteran of the Vietnam era.

Applicants must have:

- Official transcripts for all undergraduate and graduate work
    - A baccalaureate degree in nursing from an ACEN, NLN, or CCNE-accredited program
    - International applicants must provide evidence of a degree comparable to an American baccalaureate degree.
- Current RN license in a U.S. state/territory or location where the student will complete clinical requirements
- GPA of 3.0 or higher from a previous nursing degree
- Pre-admission interview (pre-admission interviews may be conducted virtually)
- Three letters of recommendation attesting to the applicant's capacity and potential for master's study from each of the following:
    - the director or a faculty member from the most recent academic program attended (if the applicant has been a nursing student in the last 5 years)
    - a recent employer
    - a person who can speak to the applicant's professional work.
- Personal essay (limit to 2-3 pages, single-spaced)
- Completed applicant survey
- Current CV or resume
- Non-refundable application fee.

Doctor of Nursing Practice (DNP) Program Admission Process and Admission Criteria

Application Instructions

Pitt Nursing accepts applications for admission to all areas of the DNP Program. Each applicant must complete and submit the following:

1. Application form
2. Non-refundable application fee
3. Complete official transcripts of all undergraduate and graduate education
4. Admission test scores, if applicable
5. Three letters of professional recommendation indicating the reviewer's support of the student's ability to successfully complete a demanding graduate-level academic and clinical program.
   At least one recommendation should come from a current or recent direct supervisor. These letters will be submitted by the reviewer through the application software.
6. Personal essay (limit to 2-3 pages, single-spaced)
7. Current CV or resume.

All completed applications must be submitted to the SON Admissions Office, which will forward them to the SON Admissions Committee or Nurse Anesthesia Admissions Committee for review and appropriate action.

The SON Admissions Committee or the Nurse Anesthesia Admissions Committee completes the decision assignment in the online system and submits it to the SON Admissions Office, which will notify applicants of the admission decision. Applicants who do not qualify for admission to full graduate status may be considered for provisional status except for international applicants.

Admission Criteria

You may apply to the DNP program at various points in your educational career. The school offers both **BSN to DNP** and **MSN to DNP** pathways; your choice will depend on the degrees you previously earned and the majors/concentrations you select.

Students currently enrolled in their final year of a BSN program may apply to the BSN-to-DNP focus areas that do not require clinical experience beyond the BSN program. If offered admission, it would be contingent on the student's (1) successful completion of the BSN and (2) obtaining the RN license.

BSN-prepared students, who are currently enrolled in their last year of an MSN or master's program in a related focus, may apply to the MSN to DNP pathway. If offered admission, it would be contingent on the student's (1) successful completion of the MSN or master's program in a related focus and (2) fulfillment of all admission criteria.

The University of Pittsburgh School of Nursing only admits a **Fall Term Cohort** to all DNP Program majors/concentration except the Nurse Anesthesia BSN to DNP major, which only admits a **Spring Term Cohort**, which can matriculate in Fall Term if desired. Application deadlines are provided on the school's website.

Applicants must apply online.

Admission to the DNP Program

The DNP Program admits BSN graduates, advanced practice nurses, and nursing administrators who have completed a nursing degree from a ACEN, NLN, or CCNE-accredited program.

BSN to DNP

- Current RN license in a U.S. State/Territory or location where the student will complete clinical requirements
- GPA ≥ 3.0 in BSN or entry-level MSN from an ACEN, NLN, or CCNE-accredited program
- Applicants for the DNP program must satisfy a statistics prerequisite. There are two ways in which the requirement can be satisfied:
    - Applicants who have completed a relevant course and earned a grade of B or higher within five (5) years of starting their studies will be considered as having met this requirement.
    - Applicants who have been admitted into the program but finished their coursework more than five (5) years ago and/or earned below a B will need to complete the School of Nursing-developed Statistics Modules prior to beginning the program. These modules cover essential foundational concepts that our faculty identified as critical to success.
    - Separately, any admitted student who has already satisfied the prerequisite but would like additional preparation may also opt to complete the modules as a refresher.
- Clinical experience for select focus areas** (*required or preferred for selected majors and concentrations*)
- Pre-admission interview (if the applicant resides at a great distance, a virtual interview may be conducted)
- Evidence of ability to communicate in writing through the required personal essay

MSN to DNP

- Current RN license in a U.S. State/Territory or location where student the will complete clinical requirements
- GPA ≥ 3.0 in MSN from an accredited program or master's in a related field (must have BSN from an ACEN, NLN, or CCNE-accredited program)
- Applicants for the DNP program must satisfy a statistics prerequisite. There are two ways in which the requirement can be satisfied:
    - Applicants who have completed a relevant course and earned a grade of B or higher within five (5) years of starting their studies will be considered as having met this requirement.
    - Applicants who have been admitted into the program but finished their coursework more than five (5) years ago and/or earned below a B will need to complete the School of Nursing-developed Statistics Modules prior to beginning the program. These modules cover essential foundational concepts that our faculty identified as critical for success.
    - Separately, any admitted student who has already satisfied the prerequisite but would like additional preparation may also opt to complete the modules as a refresher.
- Clinical experience for select focus areas** (*required or preferred for selected majors and concentrations*)
- Pre-admission interview (if the applicant resides at a great distance, a virtual interview may be conducted)
- Evidence of ability to communicate in writing through the required personal essay
- Nurse Anesthesia MSN to DNP (*additional requirements*)

- Current Nurse Anesthetist certification in a U.S. State/Territory or location where the student will complete the DNP Scholarly Project
- Minimum of 3.0 GPA in MSN or MS in Nurse Anesthesia from an accredited program

****Clinical Experience for Select Focus Areas**

- **Neonatal NP**: Equivalent of 2 years full time (within last 5 years) nursing experience in the care of critically ill newborns, infants, and children in critical care inpatient settings (preferably Level III NICU). Students may enroll in pre-clinical courses while obtaining practice experience.
- **Health Systems Executive Leadership:** a minimum of 2 years of leadership or management experience.
- **Nurse Anesthesia BSN to DNP:** Minimum 1-year full-time ICU/critical care nursing experience (within last 5 years) by start of program (may apply if employed in ICU/critical care and will have required experience before admission term). Taking the GRE is optional but may be considered supplemental information in the holistic admission process.

Doctor of Philosophy (PhD) Admission Process and Admission Criteria

The Doctor of Philosophy (PhD) program follows a **Fall Term Cohort Only** admissions process. Applications to the PhD program are accepted as a cohort. Application decisions will be communicated electronically by email. See Application Deadlines for more information. Applicants must apply online.

The School of Nursing offers BSN-PhD and MSN-PhD options. The School of Nursing offers BSN-PhD and MSN-PhD options. A baccalaureate or a master's degree in nursing is preferred. Applicants who do not have a baccalaureate or master's degree in nursing as their first professional degree will be considered on an individual basis. The School of Nursing also offers a currently matriculating BSN to PhD option, in which a student who has not yet completed the BSN can be admitted conditionally into the PhD program pending successful completion of their BSN. Interested applicants should contact the Center for Student Success at 412-624-4586 or PittNursing@pitt.edu for further information.

Admission to the PhD Program

Admission to the PhD program is assessed through interviews, references, and an essay that provides a written statement of goals, a research focus, and implications for global health. Documentation of academic success is required.

The doctoral faculty strongly recommends that students develop knowledge of and experience with word processing, database management, and computerized literature searches prior to applying to the PhD program.

Length of Program

The post-master's full-time curriculum (MSN to PhD) comprises a minimum of 48 credits, and students may complete the program in approximately 2.5 years, depending on the nature and complexity of their dissertation research. Twenty-four credits are granted from the prior master's program. For prior courses taken elsewhere, an evaluation of the course content must be approved by the Director of the PhD Program to determine its comparability with the coursework at the University of Pittsburgh. Students entering the MSN to PhD program will work with their academic advisor to conduct a gap analysis of prior research-related coursework to determine whether additional research core coursework is needed beyond that specified in the MSN to PhD curriculum plan. The part-time student may complete the program in three to four years. The statute of limitations for completing the MSN to PhD track is eight (8) consecutive calendar years from the first term of registration for credits in the required curriculum plan for the doctoral degree.

The BSN to PhD program requires a minimum of 72 credits. Students admitted to the BSN to PhD track are expected to enroll full-time, and the program can be completed in a minimum of three years, depending on the complexity of the dissertation research. Students are also encouraged to consider obtaining a simultaneous master's degree. The statute of limitations for completing the BSN to PhD track is ten (10) consecutive calendar years from the first term of registration for credits in the required curriculum plan for the doctoral degree.

For more information, see Policy 208.

Doctor of Philosophy (PhD)

The Doctor of Philosophy (PhD) program prepares nurse scholars who will discover and extend scientific knowledge that advances the science and practice of nursing and contributes to other disciplines. Graduates can assume leadership roles in research teams, health care systems, industry, and nursing schools within academic institutions.

The PhD program of study provides a coherent series of courses, seminars, and discussions designed to develop in the student a mature understanding of content, methods, and values of the discipline of nursing and its relation to other fields. The curriculum includes courses on the philosophical underpinnings and theoretical foundations of research, as well as research design, measurement, and intervention development. Courses also include advanced statistics, advanced quantitative methods, the responsibilities and activities of scientists, and the art and science of teaching and learning. Students work closely with research faculty members from nursing and other disciplines. Each student also participates in two mentored research experiences. The first is the Apprenticeship Practica, wherein students affiliate with a mentor's established research team over time to explore the scientific literature, develop, plan, and implement an apprenticeship research project, and disseminate findings. This experience provides the opportunity to acquire individualized, tangible research skills within a mentored application environment, which is additive to and precedes the dissertation experience. The second mentored research experience is the students' development and implementation of their independent dissertation project, culminating in a dissertation defense. Students prepare and submit applications for competitive research funding.

Admission of International Students (MSN, DNP, and PhD)

Students who reside outside the United States and are applying to the School of Nursing should use the same admissions process and criteria described above. The application should be completed in English and be accompanied by official academic credentials with notarized English translations. Applicants must successfully complete the TOEFL, IELTS, or Duolingo English Test (DET) if English is a second language.

Applicants must also have a professional nursing license in Pennsylvania or a compact state. The following links specify the licensure requirements for the MSN, DNP, and PhD programs. Applicants seeking a professional nursing license are encouraged to visit the Pennsylvania State Board website, which provides information for internationally educated nurses applying to take the NCLEX-RN examination.

Insurance and Health Care Requirements

All admitted students are required to submit a School of Nursing Initial Health Form with documentation of health insurance, COVID-19 vaccination or completion of exemption request form, and Act 33, 34, and 73 clearances prior to beginning their program of study. Once enrolled, students must submit the School of Nursing's annual health insurance verification and obtain an annual influenza vaccination (unless a requested exemption is approved). Individual students must meet additional health requirements of clinical agencies, such as TB screening and drug testing. Current CPR certification is required prior to enrollment or teaching in all clinical courses.

Students are required to maintain health insurance for the duration of their studies to cover treatment and follow-up for injuries or medical problems incurred during graduate study. The University of Pittsburgh offers insurance programs to graduate students (see: https://www.hr.pitt.edu/students).

Financial Assistance

The sources of awards and aid may include professional nurse traineeships, school scholarships, federal Stafford Loans, private loans, and emergency aid. See Scholarships & Financial Aid for more information.

Academic Policies

All students in the School of Nursing are governed by the School of Nursing and University policies. Therefore, it is essential that students regularly review and familiarize themselves with both general and graduate policies. Questions about policies should be directed to the academic advisor or to the director or coordinator for the program, major, or area of concentration. Policies of particular importance address admission criteria, registration processes, credit transfer, clinical requirements, acceptable academic status, warnings and probation, readmission, degree completion requirements, academic integrity, unsafe clinical performance, and impaired clinical performance. View the School of Nursing Policies.

Advising

Each new student admitted to the graduate program is assigned a faculty advisor from the specific program, major, or area of concentration to which the student is admitted. The faculty advisor provides initial orientation to the school, the University, and the program requirements. Each student is required to meet with their advisor prior to course selection and enrollment for each term. It is also recommended that they meet with their advisor at least once during the term to review their academic progress and address any questions or concerns about their program of study. The advisor is actively involved if there are academic concerns.

Students also have access to a professional staff advisor in the Center for Student Success in the School of Nursing. The staff advisor should be consulted for information about sources of financial aid, scholarships, school policies, registration, course availability, expected graduation dates and requirements, University and School resources, and community resources for help with personal issues. A general orientation program is mandatory for all new students.

General Degree Requirements

To earn the Master of Science in Nursing (MSN), the Doctor of Nursing Practice (DNP), and the Doctor of Philosophy (PhD), the student must demonstrate satisfactory academic achievement in required coursework prescribed by the curriculum with an overall academic achievement of a minimum Grade Point Average (GPA) of 3.00. Successful completion of a comprehensive examination is also required for the MSN, BSN-to-DNP, and PhD in nursing. The DNP requires successful completion of a DNP project, and the PhD requires successful defense of a dissertation.

Application for Graduation

Each candidate for graduation must file an official Application for Graduation with the professional staff advisor in the School of Nursing Center for Student Success at least three months before the degree is to be completed. A fee will be assessed after the application deadline. All students must be registered for at least one credit during the 12 months prior to graduation and for at least one credit in the term in which they take their preliminary and comprehensive examinations. International students must be registered in accordance with the conditions of their visas.

Major and Degree Options

The School of Nursing offers the following graduate degrees:

- The Master of Science in Nursing (MSN) with majors and areas of concentration in the following areas:
    - Nurse Practitioner
        - Adult-Gerontology Acute Care Nurse Practitioner
        - Family (Individual Across the Lifespan) Nurse Practitioner
        - Neonatal Nurse Practitioner
        - Psychiatric Mental Health Nurse Practitioner
    - Nurse Specialty Role
        - Nursing Informatics *(not currently accepting admissions)*
        - School Nursing *(not currently accepting admissions)*
- The Doctor of Nursing Practice (DNP)

    - MSN to DNP Options
        - Nurse Practitioner *(not currently accepting admissions)*
            - Adult-Gerontology Acute Care Nurse Practitioner
            - Adult-Gerontology Primary Care Nurse Practitioner
            - Family (Individual Across the Lifespan) Nurse Practitioner
            - Pediatric Acute Care Nurse Practitioner
            - Pediatric Primary Care Nurse Practitioner
            - Neonatal Nurse Practitioner
            - Psychiatric Mental Health Nurse Practitioner
        - Clinical Nurse Specialist *(not currently accepting admissions)*
            - Adult-Gerontology (CNS)
        - Nurse Specialty Role
            - Health Systems Executive Leadership
        - Nurse Anesthesia
    - BSN to DNP Options
        - Nurse Practitioner *(not currently accepting admissions)*
            - Adult-Gerontology Acute Care Nurse Practitioner
            - Adult Gerontology Primary Care Nurse Practitioner
            - Family (Individual Across the Lifespan) Nurse Practitioner
            - Pediatric Primary Care Nurse Practitioner
            - Neonatal Nurse Practitioner
            - Psychiatric Mental Health Nurse Practitioner
        - Clinical Nurse Specialist *(not currently accepting admissions)*
            - Adult-Gerontology (CNS)
        - Nurse Anesthesia
- The Doctor of Philosophy (PhD) in Nursing
    - BSN to PhD option
    - MSN to PhD option
    - Doctor of Nursing Practice and Doctor of Philosophy (PhD) Dual program *(not currently accepting admissions)*
        - Adult-Gerontology Clinical Nurse Specialist

Special Academic Opportunities/Programs

The School of Nursing offers a variety of special programs within its master's and doctoral programs:

Minors

Students in the master's program, the DNP program, and the PhD program have the option of completing a minor in:

- Nursing Informatics
- Nursing Administration
- Gerontology for Nurse Practitioners
- Health Care Genetics

The minimum number of credits required to obtain a minor is 8-12.

Post-Professional Certificates

Post-professional certificates are available in:

- School Nursing
- Health Care Genetics

- Nursing Informatics
- Gerontology for Nurse Practitioners
- Adult-Gerontology Acute Care Nurse Practitioner
- Pediatric Acute Care Nurse Practitioner
- Neonatal Nurse Practitioner
- Psychiatric Mental Health Nurse Practitioner

The certificate options require a minimum of 10 credits; additional credits may be required depending on the certificate program and previous graduate course work. All students admitted to a nurse practitioner certificate program must meet the full graduate degree program's curriculum requirements, either through prior coursework or credits earned during the certificate program. Individual review of transcripts will determine the exact number of credits needed to meet curriculum requirements.

Admission criteria for master's level certificate programs include:

- Evidence of successful completion of MSN, DNP, or other relevant first professional degree
- Relevant work experience
- Satisfactory interview with program faculty
- Current RN license if the certificate program includes clinical experiences.

School of Nursing Faculty

School of Nursing Faculty

Program and Course Offerings

Certificate

Adult-Gerontology Acute Care Nurse Practitioner Certificate

Full-Time Curriculum

- NURNP 2100 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
  OR
- NURNP 2100D - MANAGEMENT OF ADULT WITH EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
- NURNP 2101 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE CLINICAL
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURNP 2104 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
  OR
- NURNP 2104D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
  OR
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NURNP 2028 - ROLE PRACTICUM *
- NURNP 2102 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITCALLY ILL ADULT 2

OR

- NURNP 2102D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT 2
- NURNP 2109 - CLINICAL EMPHASIS - DIRECTED STUDY

Notes

Successful completion of the AG-ACNP Specialty Comprehensive Exam is required.

*Dependent on the individual's previous role, population of patients, and years of experience as a nurse practitioner in an acute or critical care setting with adult/gerontology patients, up to 300 clinical hours may be completed through the option of credit by course examination.

The total credits required will vary based on evaluation of the student's previous coursework. Applicants must have completed courses in their prior MS, MSN, or DNP NP or CNS program that meet the core course requirements to sit for the AG-ACNP certification examination (Advanced Pathophysiology across the Lifespan, Advanced Pharmacology across the Lifespan, Advanced Health Assessment across the Lifespan, and Health Promotion). Additional coursework may be required and/or credit may be given for previous coursework that meets the core curriculum requirements.

Total Credits: 24

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

Certificate in Gerontology for Nurse Practitioners

Curriculum

Core Advance Nursing Practice (Required): 5 Credits

- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
  OR
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NURNP 2527 - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES
  OR
- NURNP 2527D - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES

Electives: 6 Credits

Choose two courses from the following:

- GERON 2001 - ETHICS AND AGING
- GERON 2002 - PREVENTION AND HEALTHY AGING
- GERON 2004 - MENTAL HEALTH AND MENTAL ILLNESS IN LATE-LIFE
- GERON 2005 - PERSPECTIVES IN AGING
- GERON 2006 - MULTI-DISCIPLINARY ASPECTS OF DEMENTIA
- GERON 2008 - HUMAN PERFORMANCE, NUTRITION AND AGING
- GERON 2009 - AGING AND COMMUNICATION
- NURNP 2529 - GERONTOLOGY CLINICAL PRACTICUM

Total Credits: 11

*Courses with a "**D**" can be delivered synchronously via distance technology. Such courses are open only to qualified onsite students as per Policy 438.

Certificate in Health Care Genetics

Curriculum

- Electives (per approval of Coordinator) - **9 cr.**
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NUR 2681 - ADV TOPICS IN HUMAN GENETICS

Total Credits: 15

Neonatal Nurse Practitioner Certificate

Curriculum

- NURNP 2570 - COMPREHENSIVE NEONATAL ASSESSMENT THEORY
- NURNP 2571 - GENERAL MANAGEMENT OF THE SICK NEONATE - THEORY
- NURNP 2572 - GENERAL ASSESSMENT AND MANAGEMENT OF THE SICK NEONATE - CLINICAL
- NURNP 2028 - ROLE PRACTICUM
- NURNP 2573 - NEONATAL DISEASE PROCESS 1 - THEORY
- NURNP 2574 - NEONATAL DISEASE PROCESS 2 - THEORY
- NNP Clinical Specialty Comprehensive Exam is required.

Total Credits: 25 (minimum)**

**Additional coursework may be required depending upon previous education.

Nursing Informatics Certificate

Curriculum

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2076 - CLINICAL INFORMATION SYSTEMS
- NURSP 2070 - INFORMATION TECHNOLOGY PROJECT MANAGEMENT
- NURSP 2085 - NURSING INFORMTCS PRACTICUM 1
- NURSP 2086 - NURSING INFORMTCS PRACTICUM 2

Total Credits: 15

Pediatric Acute Care Nurse Practitioner Certificate

Full-Time Curriculum

- NURNP 2531 - PEDIATRIC ACUTE CARE 1
  OR
- NURNP 2531D - PEDIATRIC ACUTE CARE 1
- NURNP 2533 - MANAGEMENT: PEDIATRIC ACUTE CARE CLINICAL 1
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURNP 2532 - PEDIATRIC ACUTE CARE 2
  OR
- NURNP 2532D - PEDIATRIC ACUTE CARE 2
- NURNP 2534 - MANAGEMENT: PEDIATRIC ACUTE CARE CLINICAL 2
- NURNP 2028 - ROLE PRACTICUM

Notes:

The Pediatric Acute Care Nurse Practitioner Clinical Specialty Comprehensive Exam is required.

Additional coursework may be required depending upon previous education.

Total Credits: 18-21

*Courses with a "**D**" can be delivered synchronously via distance technology for qualified onsite students as per Policy 438.

Psychiatric-Mental Health Nurse Practitioner Graduate Certificate

The Psychiatric-Mental Health Nurse Practitioner (PMHNP) is prepared to treat individuals with psychiatric disorders across the lifespan in a variety of settings. In this role, the PMHNP assumes responsibility for diagnosing mental health problems, and treating mental health problems with a combination of psychotherapy and psychopharmacological interventions. Our PMHNP graduates work in collaboration with other healthcare professionals in a variety of settings, spanning from outpatient to inpatient settings.

We currently offer a full-time plan of study. This innovative hybrid program is presented in a hybrid format, with online learning activities and intermittent on-campus immersive activities. A sample program plan for full-time study is provided below.

Graduates are eligible for national certification offered by the American Nurses Credentialing Center (ANCC) or the American Academy of Nurse Practitioners Certification Board (AANPCB),and for licensure as a nurse practitioner and prescriptive authority through State Boards of Nursing

Psychiatric Mental Health NP

Year 1 - Fall

- NURNP 2330 - PSYCHIATRIC DIAGNOSIS THEORY
- NURNP 2331 - PSYCHIATRIC DIAGNOSIS PRACTICUM
- NURNP 2028 - ROLE PRACTICUM
- NURNP 2325 - PSYCHOPHARMACOLOGY

Year 1 - Spring

- NURNP 2340 - MANAGEMENT OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2341 - MANAGEMENT PRACTICUM OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2320 - NEUROBIOLOGY OF PSYCHIATRIC DISORDERS

- NURNP 2318 - CHILD AND ADOLESCENT PSYCHIATRIC MANAGEMENT
- NURNP 2327 - PRINCIPLES OF SUBSTANCE USE TREATMENT
- NURNP 2305 - PSYCHOTHERAPEUTIC INTERVENTION

Year 1 - Spring

- NURNP 2345 - MANAGEMENT OF CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2346 - MANAGEMENT PRACTICUM CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2028 - ROLE PRACTICUM

School Nurse PK-12 Certificate

Curriculum

Fall Term

- NUR 2176 - SEMINAR SCHOOL NURSE
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
  OR
- NUR 2010D - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

Spring Term

- NUR 2174 - LEADERSHIP IN SCHOOL NURSING
- NUR 2179 - PRACTICUM SCHOOL NURSE
- NUR 3120 - DIVERSITY, EQUITY, AND INCLUSION IN HEALTHCARE

Summer Term

- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
  OR
- NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

Total Credits: 15

*Courses with a "**D**" can be delivered synchronously via distance technology for qualified onsite students as per Policy 438.

Doctoral

Adult-Gerontology Acute Care Nurse Practitioner BSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE

OR

- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NURNP 2026 - ROLE SEMINAR 1
  OR
- NURNP 2026D - ROLE SEMINAR 1

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
  OR
- NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Summer Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN *
- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
  OR
- NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS
- NURSP 2092 - LEADERSHIP DEVELOPMENT
  *NOTE: (NUR 2031 is not offered as a Distance Education Course)

Fall Term (YR 2)

- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL
  OR
- NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL
- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
  OR
- NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2388 - DATABASE MANAGEMENT
  OR

- NURSP 2388D - DATABASE MANAGEMENT

Spring Term (YR 2)

- NURNP 2100 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
  OR
- NURNP 2100D - MANAGEMENT OF ADULT WITH EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
- NURNP 2101 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE CLINICAL
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS

Summer Term (YR 2)

- NURNP 2104 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
  OR
- NURNP 2104D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
  OR
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NUR 3013 - ETHICS IN HEALTHCARE

Fall Term (YR 3)

- NUR 2865 - FUNDAMENTALS OF DISASTER AND MASS CASUALTY CARE
  OR
- NUR 2865D - FUNDAMENTALS OF DISASTER AND MASS CASUALTY CARE
- NURNP 2102 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITCALLY ILL ADULT 2
  OR
- NURNP 2102D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT 2
- NUR 3037 - DNP PROJECT CLINICAL
- NURNP 2109 - CLINICAL EMPHASIS - DIRECTED STUDY

Spring Term (YR 3)

- NURNP 3038 - DNP NP ROLE PRACTICUM
- NURNP 2029 - ROLE SEMINAR 2
  OR
- NURNP 2029D - ROLE SEMINAR 2
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- The three components of the DNP Comprehensive Exam are required (DNP Scholarly Project, DNP Portfolio, and Clinical Comprehensive Exam).

Total Credits: 79

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

BSN to DNP AG-ACNP Curriculum

Total Didactic Credits: 62
Total Clinical Credits: 17 (1020 hours)
Total Credits: 79

Adult-Gerontology Acute Care Nurse Practitioner MSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS

Summer Term (YR 1)

- NURSP 2092 - LEADERSHIP DEVELOPMENT
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS
- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT
- NUR 3013 - ETHICS IN HEALTHCARE

Fall Term (YR 2)

- NURNP 3038 - DNP NP ROLE PRACTICUM **(1-4 credits)

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS

Spring Term (YR 2)

- NUR 3037 - DNP PROJECT CLINICAL
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- Two components of the DNP Comprehensive Exam are required (DNP Scholarly Project and DNP Portfolio).

Total Credits: 32-35**

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

Adult-Gerontology CNS BSN to DNP Major

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3013 - ETHICS IN HEALTHCARE

Spring Term (YR 1)

- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
  OR
- NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NURSP 2098 - HEALTHCARE QUALITY
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY

- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS

Summer Term (YR 1)

- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
  OR
- NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS
- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NURCNS 2850 - CNS ROLE IMPLEMENTATION

Fall Term (YR 2)

- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
  OR
- NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NURCNS 2851 - CNS CLINICAL PRACTICUM 1

Spring Term (YR 2)

- NURNP 2100 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
  OR
- NURNP 2100D - MANAGEMENT OF ADULT WITH EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NURCNS 2852 - CNS CLINICAL PRACTICUM 2

Summer Term (YR 2)

- NURNP 2104 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
  OR
- NURNP 2104D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
  OR
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NURSP 3096 - DATA ANALYTICS AND CLINICAL SYSTEMS DESIGN

Fall Term (YR 3)

- NURCNS 2853 - CLINICAL EMPHASIS SPECIALTY
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT
- NURCNS 3039 - DNP-CNS ROLE PRACTICUM

Spring Term (YR 3)

- NUR 3037 - DNP PROJECT CLINICAL
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS
- NURCNS 3039 - DNP-CNS ROLE PRACTICUM
- The three components of the DNP Comprehensive Exam are required (DNP Scholarly Project, DNP Portfolio, and Clinical Comprehensive Exam).

Total Credits: 78

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

Adult-Gerontology CNS MSN to DNP Major

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3013 - ETHICS IN HEALTHCARE
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY

Spring Term (YR 1)

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS
- NURCNS 3039 - DNP-CNS ROLE PRACTICUM
  OR
- NURCNS 2852 - CNS CLINICAL PRACTICUM 2

Summer Term (YR 1)

- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
  OR
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NURSP 3096 - DATA ANALYTICS AND CLINICAL SYSTEMS DESIGN
- NURSP 2388 - DATABASE MANAGEMENT

OR

- NURSP 2388D - DATABASE MANAGEMENT
- NURCNS 3039 - DNP-CNS ROLE PRACTICUM
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS

Fall Term (YR 2)

- NUR 3037 - DNP PROJECT CLINICAL
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NURCNS 3039 - DNP-CNS ROLE PRACTICUM
- Two components of the DNP Comprehensive Exam are required (DNP Scholarly Project and DNP Portfolio). Clinical Specialty Comprehensive Exam is required if original degree is not as a CNS.

Total Credits: 39

*Courses with a "**D**" are delivered synchronously via distance education for qualified onsite students per Policy 438.

Adult-Gerontology Primary Care Nurse Practitioner BSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
  OR
- NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NURNP 2026 - ROLE SEMINAR 1
  OR
- NURNP 2026D - ROLE SEMINAR 1

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
  OR

- NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
  OR
- NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN

Summer Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NURSP 2092 - LEADERSHIP DEVELOPMENT
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS

Fall Term (YR 2)

- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
  OR
- NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL
  OR
- NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL
- NURNP 2523 - MANAGEMENT: WOMEN'S HEALTH 1
  OR
- NURNP 2523D - MANAGEMENT: WOMEN'S HEALTH 1
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3013 - ETHICS IN HEALTHCARE
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS

Spring Term (YR 2)

- NURNP 2505 - MANAGEMENT: ADULT ACUTE/CHRONIC ILLNESS CLINICAL
  OR
- NURNP 2505D - MANAGEMENT: ADULT ACUTE/CHRONIC ILLNESS CLINICAL
- NURNP 2515 - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY
  OR
- NURNP 2515D - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY
- NURNP 2546 - MANAGEMENT: ADOLESCENT HEALTH AND YOUNG ADULT THEORY
  OR
- NURNP 2546D - MGT: ADOLESCENT HEALTH THEORY
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS

Summer Term (YR 2)

- NUR 2078 - CLINICAL DIAGNOSTICS
  OR
- NUR 2078D - CLINICAL DIAGNOSTICS
- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
  OR
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NURNP 3038 - DNP NP ROLE PRACTICUM
- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
  OR
- NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

Fall Term (YR 3)

- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NURNP 2527 - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES
  OR
- NURNP 2527D - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES
- NURNP 2529 - GERONTOLOGY CLINICAL PRACTICUM
- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT

Spring Term (YR 3)

- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS
- NURNP 3038 - DNP NP ROLE PRACTICUM *
- NUR 3037 - DNP PROJECT CLINICAL
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Summer Term (YR 3)

- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NURNP 2029 - ROLE SEMINAR 2
  OR
- NURNP 2029D - ROLE SEMINAR 2
- NURNP 3038 - DNP NP ROLE PRACTICUM *
- The three components of the DNP Comprehensive Exam are required (DNP Scholarly Project, DNP Portfolio, and Clinical Comprehensive Exam).

Note:

* NURNP 3038 - - Minimum of 7 credits required

Total Credits: 88

*Courses with a "**D**" can be delivered synchronously via distance technology for qualified onsite students as per Policy 438.

BSN to DNP AG-PCNP Curriculum

Total Didactic Credits: 71
Total Clinical Credits: 17
Total Credits: 88

Adult-Gerontology Primary Care Nurse Practitioner MSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

Spring Term (YR 1)

- NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
  OR
- NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS

Summer Term (YR 1)

- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
  OR
- NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
- NURSP 2092 - LEADERSHIP DEVELOPMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR

- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS

Fall Term (YR 2)

- NURNP 3038 - DNP NP ROLE PRACTICUM **
- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3013 - ETHICS IN HEALTHCARE

Spring Term (YR 2)

- NURNP 2546 - MANAGEMENT: ADOLESCENT HEALTH AND YOUNG ADULT THEORY
  OR
- NURNP 2546D - MGT: ADOLESCENT HEALTH THEORY
- NUR 3037 - DNP PROJECT CLINICAL
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NURNP 3038 - DNP NP ROLE PRACTICUM **
- Two components of the DNP Comprehensive Exam are required (DNP Scholarly Project and DNP Portfolio).

Total Credits: 41 (minimum)

Additional coursework may be required depending upon previous education.

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

**Must take at least 1 credit of NURNP 3038 in curriculum.

DNP

- Clinical Nurse Specialist
- Nurse Practitioner
- Nurse Specialty Role
- Nursing Anesthesia

Family Individual Across the Lifespan Nurse Practitioner BSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR

- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
  OR
- NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NURNP 2026 - ROLE SEMINAR 1
  OR
- NURNP 2026D - ROLE SEMINAR 1
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
  OR
- NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY
  OR
- NURNP 2540D - PEDIATRIC WELL CHILD CARE THEORY
- NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
  OR
- NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN

Summer Term (YR 1)

- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS
- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NURSP 2092 - LEADERSHIP DEVELOPMENT

Fall Term (YR 2)

- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
  OR
- NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL
  OR
- NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3013 - ETHICS IN HEALTHCARE
- NURNP 2523 - MANAGEMENT: WOMEN'S HEALTH 1
  OR
- NURNP 2523D - MANAGEMENT: WOMEN'S HEALTH 1

Spring Term (YR 2)

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURNP 2515 - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY
  OR
- NURNP 2515D - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY
- NURNP 2546 - MANAGEMENT: ADOLESCENT HEALTH AND YOUNG ADULT THEORY
  OR
- NURNP 2546D - MGT: ADOLESCENT HEALTH THEORY
- NURNP 2505 - MANAGEMENT: ADULT ACUTE/CHRONIC ILLNESS CLINICAL
  OR
- NURNP 2505D - MANAGEMENT: ADULT ACUTE/CHRONIC ILLNESS CLINICAL

Summer Term (YR 2)

- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
  OR
- NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
  OR
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NUR 2078 - CLINICAL DIAGNOSTICS
  OR
- NUR 2078D - CLINICAL DIAGNOSTICS

Fall Term (YR 3)

- NURNP 2520 - MGT: PEDIATRIC HEALTH THEORY
  OR
- NURNP 2520D - MGT: PEDIATRIC HEALTH THEORY
- NURNP 2521 - MANAGEMENT: PEDIATRIC HEALTH CLINICAL
  OR
- NURNP 2521D - MANAGEMENT: PEDIATRIC HEALTH CLINICAL
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS

Spring Term (YR 3)

- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NURNP 3038 - DNP NP ROLE PRACTICUM
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

- NUR 3037 - DNP PROJECT CLINICAL

Summer (YR 3)

- NURNP 2029 - ROLE SEMINAR 2
  OR
- NURNP 2029D - ROLE SEMINAR 2
- NURNP 3038 - DNP NP ROLE PRACTICUM
- The three components of the DNP Comprehensive Exam are required (DNP Scholarly Project, DNP Portfolio, and Clinical Comprehensive Exam).

Total Credits: 92

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

Total Didactic credits: 74 credits

Total Clinical credits: 18 credits

Family Individual Across the Lifespan Nurse Practitioner MSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 3013 - ETHICS IN HEALTHCARE

Spring Term (YR 1)

- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS
- NURNP 2546 - MANAGEMENT: ADOLESCENT HEALTH AND YOUNG ADULT THEORY
  OR
- NURNP 2546D - MGT: ADOLESCENT HEALTH THEORY
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Summer Term (YR 1)

- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
  OR
- NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

- NURSP 2092 - LEADERSHIP DEVELOPMENT
- NUR 2078 - CLINICAL DIAGNOSTICS
  OR
- NUR 2078D - CLINICAL DIAGNOSTICS
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS

Fall Term (YR 2)

- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3037 - DNP PROJECT CLINICAL
- NURNP 3038 - DNP NP ROLE PRACTICUM *** (1-10 credits)

Spring Term (YR 2)

- NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
  OR
- NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- Two components of the DNP Comprehensive Exam are required (DNP Scholarly Project and DNP Portfolio).

Total Credits: 41

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

***Must take at least 1 credit.

Total Credits (41 credits + NURNP 3038)

Total Didactic Hours - 600 hours (40 credits)

Total Clinical Hours - 120 (from 2 required credits, 1 credit NURNP 3038 and 1 credit NUR 3037) plus NP MSN clinical hours up to 700 + NURNP 3038 sufficient to total 1,000 clinical hours.

Additional coursework may be required depending upon previous education. Post-master's NP DNP students must earn a minimum of 36 new credits, enroll for a minimum of three terms, and complete graduate academic credits for 1000 clinical hours including hours completed during their MSN program.

Health Systems Executive Leadership MSN to DNP Major

Full-Time Curriculum

Fall Term (YR1)

- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
- NURSP 3092 - LEADERSHIP IN COMPLEX SYSTEMS

Summer Term (YR 1)

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2388 - DATABASE MANAGEMENT
- NURSP 3097 - DNP RESIDENCY: ADMINISTRATION **(120 clinical hours)

Fall Term (YR 2)

- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NURSP 3094 - EVIDENCE-BASED MANAGEMENT AND QUALITY IMPROVEMENT
- NUR 3013 - ETHICS IN HEALTHCARE
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

Spring Term (YR 2)

- NURSP 3097 - DNP RESIDENCY: ADMINISTRATION **(120 clinical hours)
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Summer Term (YR 2)

- NURSP 3096 - DATA ANALYTICS AND CLINICAL SYSTEMS DESIGN ***(120 clinical hours)
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NUR 3037 - DNP PROJECT CLINICAL **(60 clinical hours)
- Two components of the DNP Comprehensive Exam are required (DNP Scholarly Project and DNP Portfolio).

Total Credits: 41

Note:

**Clinical courses

***2 credits are clinical: 1 is didactic

Neonatal Nurse Practitioner BSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
  OR
- NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NURNP 2026 - ROLE SEMINAR 1
  OR
- NURNP 2026D - ROLE SEMINAR 1

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
  OR
- NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY
  OR
- NURNP 2540D - PEDIATRIC WELL CHILD CARE THEORY

Summer Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NURSP 2092 - LEADERSHIP DEVELOPMENT
- NURNP 2570 - COMPREHENSIVE NEONATAL ASSESSMENT THEORY
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS

Fall Term (YR 2)

- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
  OR
- NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL
  OR
- NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL
- NURNP 2571 - GENERAL MANAGEMENT OF THE SICK NEONATE - THEORY
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS

Spring Term (YR 2)

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS

OR

- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURNP 2573 - NEONATAL DISEASE PROCESS 1 - THEORY
- NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN

OR

- NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN

Summer Term (YR 2)

- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

OR

- NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
- NURNP 2574 - NEONATAL DISEASE PROCESS 2 - THEORY
- NUR 3037 - DNP PROJECT CLINICAL

Fall Term (YR 3)

- NURSP 2388 - DATABASE MANAGEMENT

OR

- NURSP 2388D - DATABASE MANAGEMENT
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS

OR

- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3013 - ETHICS IN HEALTHCARE
- NURNP 2572 - GENERAL ASSESSMENT AND MANAGEMENT OF THE SICK NEONATE - CLINICAL

Spring Term (YR 3)

- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NURNP 3038 - DNP NP ROLE PRACTICUM
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS

OR

- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS

Summer Term (YR 3)

- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NURNP 2029 - ROLE SEMINAR 2

OR

- NURNP 2029D - ROLE SEMINAR 2
- NURNP 3038 - DNP NP ROLE PRACTICUM
- NUR 2078 - CLINICAL DIAGNOSTICS

OR

- NUR 2078D - CLINICAL DIAGNOSTICS

The three components of the DNP Comprehensive Exam are required (DNP Scholarly Project, DNP Portfolio, and Clinical Comprehensive Exam).

Total Credits: 93

*Courses with a "**D**" are delivered synchronously via distance education for qualified onsite students per Policy 438.

Neonatal Nurse Practitioner MSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 3013 - ETHICS IN HEALTHCARE

Spring Term (YR 1)

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
  OR
- NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS

Summer Term (YR 1)

- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
  OR
- NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
- NUR 2078 - CLINICAL DIAGNOSTICS
  OR
- NUR 2078D - CLINICAL DIAGNOSTICS
- NURSP 2092 - LEADERSHIP DEVELOPMENT

Fall Term (YR 2)

- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NUR 3037 - DNP PROJECT CLINICAL

- NURNP 3038 - DNP NP ROLE PRACTICUM **variable credits

Spring Term (YR 2)

- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- Two components of the DNP Comprehensive Exam are required (DNP Scholarly Project and DNP Portfolio).

Total Credits: 40 minimum

*Courses with a "**D**" are delivered synchronously via distance education for qualified onsite students per Policy 438.

**Must take at least one credit.

Nurse Anesthesia BSN to DNP Major

Full-Time Curriculum

Spring Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURSAN 3785 - INTRODUCTION TO THE NURSE ANESTHETIST ROLE
- NURSAN 3808 - Health and Wellness for the Nurse Anesthetist

Summer Term (YR 1)

- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NUR 3013 - ETHICS IN HEALTHCARE
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
- NURSAN 3753 - INTRODUCTION TO IMPLEMENTING SCHOLARLY PROJECTS FOR THE NURSE ANESTHETIST

Fall Term (YR 1)

- NURSP 2175 - APPLICATION OF HEALTH INFORMATICS IN HEALTH CARE
- NURSAN 3786 - BASIC PRINCIPLES OF ANESTHESIA
- NURSAN 3787 - BASIC PRINCIPLES OF ANESTHESIA LAB
- NURSAN 3788 - CHEMISTRY AND PHYSICS IN ANESTHESIA
- NURSAN 3789 - PHYSICAL DIAGNOSIS- ANESTHESIA
- NURSAN 3790 - BASIC CLINICAL CARE 1: INTRO TO TECHNOLOGY, MONITORING, AND PRACTICE

Spring Term (YR 2)

- NUR 3137 - DNP PROJECT PROPOSAL DEVELOPMENT
- NURSAN 3793 - ADVANCED PRINCIPLES OF ANESTHESIA 1

- NURSAN 3752 - TEAM TRAINING IN PATIENT SAFTEY IN ANESTHESIA
- NURSAN 3791 - ADVANCED PRINCIPLES ANATOMY, PHYSIOLOGY & PATHOPHYSIOLOGY 1
- NURSAN 3792 - BASIC CLINICAL CARE 2: BASIC PRE-OPERATIVE, INTRAOPERATIVE, AND POST-OPERATIVE CARE

Summer Term (YR 2)

- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NURSAN 3796 - ADVANCED PHARMACOLOGY FOR NURSE ANESTHETISTS
- NURSAN 3795 - ADVANCED PRINCIPLES OF ANATOMY, PHYSIOLOGY, AND PATHOPHYSIOLOGY 2
- NURSAN 3797 - ADVANCED CLINICAL CARE 1: PAIN MANAGEMENT, ULTRASOUND, REGIONAL ANESTHESIA, PEDIATRICS, & OBSTERIC

Fall Term (YR 2)

- NUR 3138 - DNP PROJECT IMPLEMENTATION
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NURSP 2388 - DATABASE MANAGEMENT
- NURSAN 3798 - ADVANCED PRINCIPLES OF ANESTHESIA 2
- NURSAN 3801 - ADVANCED CLINICAL CARE 2: CARDIOTHORACIC, CARDIOVASCULAR AND VASCULAR

Spring Term (YR 3)

- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
- NUR 3139 - DNP PROJECT SYNTHESIS
- NURSAN 3802 - ADVANCED PRINCIPLES OF ANESTHESIA 3
- NURSAN 3803 - ADVANCED CLINICAL CARE 3: NEUROSURGICAL, TRAUMA, AND EMREGENCY

Summer Term (YR 3)

- NURSAN 3800 - NURSE ANESTHETIST ROLE SEMINAR
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NURSAN 3804 - ADVANCED CLINICAL CARE 4: SYNTHESIS OF PERIOPERATIVE CARE

Fall Term (YR 3)

- NURSAN 3805 - COMPREHENSIVE ANESTHESIA REVIEW SEMINAR
- NURSAN 3807 - TRANSITION TO CLINICAL PRACTICE

Total Credits: 85.5

Nurse Anesthesia MSN to DNP Major

Full-Time Curriculum

Fall Term (YR 1)

- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
- NURSP 2175 - APPLICATION OF HEALTH INFORMATICS IN HEALTH CARE

Spring Term (YR 1)

- NURSP 2388 - DATABASE MANAGEMENT
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS

Summer Term (YR 1)

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURSP 2092 - LEADERSHIP DEVELOPMENT

Fall Term (YR 2)

- NUR 3013 - ETHICS IN HEALTHCARE
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS

Spring Term (YR 2)

- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Summer Term (Year 2)

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSAN 3783 - REGULATION AND REIMBURSEMENT IN NURSE ANESTHESIA PRACTICE
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS

Fall Term (Year 3)

- NURSAN 3784 - CURRICULUM, INSTRUCTION AND EVALUATION IN NURSE ANESTHESIA EDUCATION
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE

Spring Term (Year 3)

- NUR 3037 - DNP PROJECT CLINICAL
- NUR 3052 - MANUSCRIPT DEVELOPMENT

Total Credits: 36

*If the MSN was earned at the University of Pittsburgh and these courses were taken during that program they will be replaced by NURSP 2092 Leadership Development (3 cr) and a 1 credit cognate.

Nurse Practitioner

BSN to MSN

- Neonatal Nurse Practitioner BSN to MSN Concentration

BSN to DNP

- Adult-Gerontology Acute Care Nurse Practitioner BSN to DNP Concentration
- Adult-Gerontology Primary Care Nurse Practitioner BSN to DNP Concentration
- Family Individual Across the Lifespan Nurse Practitioner BSN to DNP Concentration
- Neonatal Nurse Practitioner BSN to DNP Concentration
- Pediatric Primary Care Nurse Practitioner BSN to DNP Concentration
- Psychiatric Mental Health Nurse Practitioner BSN to DNP Concentration

MSN to DNP

- Adult-Gerontology Acute Care Nurse Practitioner MSN to DNP Concentration
- Adult-Gerontology Primary Care Nurse Practitioner MSN to DNP Concentration
- Family Individual Across the Lifespan Nurse Practitioner MSN to DNP Concentration
- Neonatal Nurse Practitioner MSN to DNP Concentration
- Pediatric Acute Care Nurse Practitioner MSN to DNP Concentration
- Pediatric Primary Care Nurse Practitioner MSN to DNP Concentration
- Psychiatric Mental Health Nurse Practitioner MSN to DNP Concentration

Pediatric Acute Care Nurse Practitioner MSN to DNP Concentration

Full-Time Curriculum

Fall Term (Year 1)

- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NUR 3013 - ETHICS IN HEALTHCARE

Spring Term (Year 1)

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
  OR
- NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS

Summer Term (Year 1)

- NURSP 2092 - LEADERSHIP DEVELOPMENT

- NUR 2078 - CLINICAL DIAGNOSTICS
  OR
- NUR 2078D - CLINICAL DIAGNOSTICS

Fall Term (Year 2)

- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3037 - DNP PROJECT CLINICAL
- NURNP 3038 - DNP NP ROLE PRACTICUM **

Spring Term (Year 2)

- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- Two components of the DNP Comprehensive Exam are required (DNP Scholarly Project and DNP Portfolio).

Total Credits: 37

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

**Must take at least one credit.

Pediatric Primary Care Nurse Practitioner BSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
  OR
- NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NURNP 2026 - ROLE SEMINAR 1
  OR
- NURNP 2026D - ROLE SEMINAR 1

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
  OR
- NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
  OR
- NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
- NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY
  OR
- NURNP 2540D - PEDIATRIC WELL CHILD CARE THEORY

Summer Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NURSP 2092 - LEADERSHIP DEVELOPMENT
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS

Fall Term (YR 2)

- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
  OR
- NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL
  OR
- NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL
- NURNP 2520 - MGT: PEDIATRIC HEALTH THEORY
  OR
- NURNP 2520D - MGT: PEDIATRIC HEALTH THEORY
- NURNP 2521 - MANAGEMENT: PEDIATRIC HEALTH CLINICAL
  OR
- NURNP 2521D - MANAGEMENT: PEDIATRIC HEALTH CLINICAL
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS

Spring Term (YR 2)

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURNP 2546 - MANAGEMENT: ADOLESCENT HEALTH AND YOUNG ADULT THEORY
  OR
- NURNP 2546D - MGT: ADOLESCENT HEALTH THEORY
- NURNP 2550 - MANAGEMENT: ADVANCED PEDIATRIC HEALTH PROBLEMS CLINICAL
- NURNP 2549 - MANAGEMENT: ADVANCED PEDIATRIC HEALTH PROBLEMS THEORY

Summer Term (YR 2)

- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
  OR

- NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
- NURNP 3546 - MANAGEMENT: ADOLESCENT HEALTH AND YOUNG ADULT CLINICAL
- NUR 2078 - CLINICAL DIAGNOSTICS
  OR
- NUR 2078D - CLINICAL DIAGNOSTICS
- NURNP 3038 - DNP NP ROLE PRACTICUM

Fall Term (YR 3)

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3013 - ETHICS IN HEALTHCARE
- NURNP 3038 - DNP NP ROLE PRACTICUM
- NUR 3037 - DNP PROJECT CLINICAL
- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT

Spring Term (YR 3)

- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NURNP 3038 - DNP NP ROLE PRACTICUM

Summer Term (YR 3)

- NURNP 2029 - ROLE SEMINAR 2
  OR
- NURNP 2029D - ROLE SEMINAR 2
- NURNP 3038 - DNP NP ROLE PRACTICUM
- The three components of the DNP Comprehensive Exam are required (DNP Scholarly Project, DNP Portfolio, and Clinical Comprehensive Exam).

Total Credits: 84

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

Pediatric Primary Care Nurse Practitioner MSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR

- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NUR 3013 - ETHICS IN HEALTHCARE

Spring Term (YR 1)

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
  OR
- NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS

Summer Term (YR 1)

- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
  OR
- NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
- NURSP 2092 - LEADERSHIP DEVELOPMENT
- NUR 2078 - CLINICAL DIAGNOSTICS
  OR
- NUR 2078D - CLINICAL DIAGNOSTICS

Fall Term (YR 2)

- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NURSP 2388 - DATABASE MANAGEMENT
- NURSP 2388D - DATABASE MANAGEMENT
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3037 - DNP PROJECT CLINICAL
- NURNP 3038 - DNP NP ROLE PRACTICUM **

Spring Term (YR 2)

- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS
- Two components of the DNP Comprehensive Exam are required (DNP Scholarly Project and DNP Portfolio).

Total Credits: 40

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

**Must take at least one credit.

PhD

- Nursing - BSN to PhD Track
- Nursing - Post-MSN to PhD Track

Psychiatric Mental Health Nurse Practitioner BSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
  OR
- NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NURNP 2026 - ROLE SEMINAR 1
  OR
- NURNP 2026D - ROLE SEMINAR 1
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS

13 Credits

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
  OR
- NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY
  OR
- NURNP 2540D - PEDIATRIC WELL CHILD CARE THEORY

14 Credits

Summer Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS
- NURSP 2092 - LEADERSHIP DEVELOPMENT

8 Credits

Fall Term (YR 2)

- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL
  OR
- NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL
- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
  OR
- NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NURNP 2320 - NEUROBIOLOGY OF PSYCHIATRIC DISORDERS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS

10 Credits

Spring Term (YR 2)

- NURNP 2330 - PSYCHIATRIC DIAGNOSIS THEORY
  OR
- NURNP 2330D - PSYCHIATRIC DIAGNOSIS THEORY
- NURNP 2331 - PSYCHIATRIC DIAGNOSIS PRACTICUM
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NURNP 2321 - HEALTH TOPICS CONCERNING PSYCHIATRIC MANAGEMENT
- NURNP 2325 - PSYCHOPHARMACOLOGY
  OR
- NURNP 2325D - PSYCHOPHARMACOLOGY

10 Credits

Summer Term (YR 2)

- NURCNS 2354 - INDIVIDUAL PSYCHOTHERAPY THEORY
  OR
- NURCNS 2354D - INDIVIDUAL PSYCHOTHERAPY THEORY
- NURCNS 2355 - INDIVIDUAL PSYCHOTHERAPY PRACTCM
- NURNP 2340 - MANAGEMENT OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
  OR
- NURNP 2340D - MANAGEMENT OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2341 - MANAGEMENT PRACTICUM OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

9 Credits

Fall Term (YR 3)

- NUR 3013 - ETHICS IN HEALTHCARE
- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT
- NURNP 2345 - MANAGEMENT OF CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2346 - MANAGEMENT PRACTICUM CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2327 - PRINCIPLES OF SUBSTANCE USE TREATMENT
- NURNP 3038 - DNP NP ROLE PRACTICUM
- NUR 3037 - DNP PROJECT CLINICAL

9 Credits

Spring Term (YR 3)

- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS
- NURNP 2318 - CHILD AND ADOLESCENT PSYCHIATRIC MANAGEMENT
- NURCNS 2352 - FAMILY THEORY/THERAPY TECHNIQUES
  OR
- NURCNS 2352D - FAMILY THEORY/THERAPY TECHNIQUES
- NURCNS 2353 - FAMILY THERAPY ROLE SEMINAR AND CLINICAL PRACTICUM
- NURNP 3038 - DNP NP ROLE PRACTICUM
- NURNP 2029 - ROLE SEMINAR 2
  OR
- NURNP 2029D - ROLE SEMINAR 2

10 Credits

Summer Term (YR 3)

- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NURNP 3038 - DNP NP ROLE PRACTICUM
- The three components of the DNP Comprehensive Exam are required (DNP Scholarly Project, DNP Portfolio, and Clinical Comprehensive Exam).

6 Credits

Total Credits: 89

*Courses with a "**D**" are delivered synchronously via distance education for qualified students per Policy 438.

Psychiatric Mental Health Nurse Practitioner MSN to DNP Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
  OR
- NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 3013 - ETHICS IN HEALTHCARE

Spring Term (YR 1)

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
  OR
- NUR 3031D - METHODOLOGIES FOR DNP PROJECTS
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Summer Term (YR 1)

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
  OR
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2092 - LEADERSHIP DEVELOPMENT

Fall Term (YR 2)

- NURSP 2388 - DATABASE MANAGEMENT
  OR
- NURSP 2388D - DATABASE MANAGEMENT
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- Cognate - 3 cr.

Spring Term (YR 2)

- NUR 3037 - DNP PROJECT CLINICAL
- NURNP 3038 - DNP NP ROLE PRACTICUM
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
  OR
- NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS
- Two components of the DNP Comprehensive Exam are required (DNP Scholarly Project and DNP Portfolio).

Total Credits 36-45

*Courses with a "**D**" are delivered synchronously via distance education for qualified onsite students per Policy 438.

Dual

Doctor of Nursing Practice (DNP) and Doctor of Philosophy (PhD) Dual Program

Curriculum

BSN-DNP/PhD for AG-CNS Concentration

Students are expected to enroll Full Time.

The BSN Track consists of a minimum of 121 credits (cr):

- 104 cr. of Didactic courses from the Nursing PhD and AG-CNS DNP Curriculum
- 17 cr. of Clinical Hours (1020 hours)

Fall Term (YR 1)

- NUR 3285 - PHILOSOPHICAL UNDERPINNINGS OF NURSING RESEARCH
- NUR 3291 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 1
- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- NUR 3112 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 1

Spring Term (YR 1)

- NUR 3113 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 2
- NUR 3286 - THEORETICAL FOUNDATIONS FOR RESEARCH
- NUR 3287 - RESEARCH DESIGN & METHODS
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- NUR 3010 - PHD DISSERTATION

Summer Term (YR 1)

- NUR 3114 - APPLIED REGRESSION FOR HEALTH SCIENCE RESEARCH
- NUR 3288 - RESEARCH MEASUREMENT
- NUR 3289 - INTERVENTION DEVELOPMENT
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- NUR 3010 - PHD DISSERTATION

Fall Term (YR 2)

- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NUR 3290 - ADVANCED QUANTITATIVE ANALYTIC METHODS SEMINAR
- CLRES 2107 - COMPARATIVE EFFECTIVENESS RESEARCH AND PCOR
- CLRES 2120 - COST EFFCTVNS ANAL HLTH CARE
- NUR 3010 - PHD DISSERTATION

Spring Term (YR 2)

- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
- NURSP 2098 - HEALTHCARE QUALITY
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NUR 3292 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 2
- Clinical Research Cognate (CLRES)

Summer Term (YR 2)

- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
- NURCNS 2850 - CNS ROLE IMPLEMENTATION
- NUR 3010 - PHD DISSERTATION

Fall Term (YR 3)

- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NURCNS 2851 - CNS CLINICAL PRACTICUM 1
- NUR 3010 - PHD DISSERTATION

Spring Term (YR 3)

- NURNP 2100 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
- NURCNS 2852 - CNS CLINICAL PRACTICUM 2
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 3293 - ART AND SCIENCE OF TEACHING AND LEARNING
- NUR 3010 - PHD DISSERTATION

Summer Term (YR 3)

- NURNP 2104 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
- NURSP 3096 - DATA ANALYTICS AND CLINICAL SYSTEMS DESIGN
- NUR 3010 - PHD DISSERTATION

Fall Term (YR 4)

- NURSP 2388 - DATABASE MANAGEMENT
- NURCNS 2853 - CLINICAL EMPHASIS SPECIALTY
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURCNS 3039 - DNP-CNS ROLE PRACTICUM
- NUR 3010 - PHD DISSERTATION

Spring Term (YR 4)

- NURCNS 3039 - DNP-CNS ROLE PRACTICUM
- NUR 3037 - DNP PROJECT CLINICAL

- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS
- NUR 3010 - PHD DISSERTATION

Optional Breakout

YR 04 OPTIONAL breakout for Full-Time Dissertation (FTDS). If so, insert last 2 Dissertation Credits scheduled for YR 04 into YR 03.

PhD MILESTONE ORAL DEFENSE IN SUMMER TERM. Clinical practice clerkship - 1 day per week

Total Credits: Minimum of 121 Credits

Preliminary and Comprehensive Examinations

The preliminary examination is taken after completing the following required courses.

- NUR 3285 - PHILOSOPHICAL UNDERPINNINGS OF NURSING RESEARCH
- NUR 3286 - THEORETICAL FOUNDATIONS FOR RESEARCH
- NUR 3287 - RESEARCH DESIGN & METHODS
- and Statistics Courses
- NUR 3112 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 1
- NUR 3113 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 2

By following the established curriculum plan, all full-time students should sit for their Preliminary Examination in their third term of study. The examination is designed to assess the student's breadth of knowledge of the discipline of nursing and potential ability to apply research methods independently. Remediation work may be required if deficiencies are identified that may impede the student's success in program completion. See School of Nursing Policy 230.

The comprehensive examination assesses the student's mastery of the general field of doctoral study, acquisition of depth and breadth of knowledge in a focused area of study, and the ability to use the research methods of the discipline. The comprehensive examination is taken after completion of all required course work and concurrent with the dissertation overview. See School of Nursing Policy 235.

Master's

Neonatal Nurse Practitioner BSN to MSN Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
  OR
- NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NURSP 2175 - APPLICATION OF HEALTH INFORMATICS IN HEALTH CARE
  OR
- NURSP 2175D - APPLICATION OF HEALTH INFORMATICS IN HEALTH CARE
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
  OR
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NURNP 2026 - ROLE SEMINAR 1
  OR
- NURNP 2026D - ROLE SEMINAR 1

- NUR 3012 - PUBLIC POLICY IN HEALTH CARE

Credits: 12

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
  OR
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
  OR
- NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY
  OR
- NURNP 2540D - PEDIATRIC WELL CHILD CARE THEORY
- NURSP 2098 - HEALTHCARE QUALITY

Credits: 10

Summer Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NURNP 2570 - COMPREHENSIVE NEONATAL ASSESSMENT THEORY
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NURSP 2092 - LEADERSHIP DEVELOPMENT

Credits: 11

Fall Term (YR 2)

- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL
  OR
- NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL
- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
  OR
- NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NURNP 2571 - GENERAL MANAGEMENT OF THE SICK NEONATE - THEORY
- NURNP 2572 - GENERAL ASSESSMENT AND MANAGEMENT OF THE SICK NEONATE - CLINICAL

Credits: 13

Spring Term (YR 2)

- NURNP 2028 - ROLE PRACTICUM
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NURNP 2573 - NEONATAL DISEASE PROCESS 1 - THEORY

Credits: 9

Summer Term (YR 2)

- NURNP 2028 - ROLE PRACTICUM
- NURNP 2029 - ROLE SEMINAR 2
  OR
- NURNP 2029D - ROLE SEMINAR 2
- NURNP 2574 - NEONATAL DISEASE PROCESS 2 - THEORY
- NUR 3013 - ETHICS IN HEALTHCARE

Credits: 10

Total Credits: 65

Master of Science in Nursing Comprehensive Exam is required.

Clinical Hours: 780

*Courses with a "**D**" are delivered synchronously via distance education for qualified students per Policy 438.

Nurse Specialty Role

- Nursing Informatics Concentration
- School Nursing, MSN

Nursing Informatics Concentration

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2383 - METHODS IN TECHNOLOGY EVALUATION & USABILITY

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NURSP 2070 - INFORMATION TECHNOLOGY PROJECT MANAGEMENT
- NURSP 2076 - CLINICAL INFORMATION SYSTEMS
- NURSP 2098 - HEALTHCARE QUALITY
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Summer Term (YR 1)

- NURSP 2388 - DATABASE MANAGEMENT
- NURSP 2082 - INFORMATICS THEORIES AND ISSUES
- NURSP 2092 - LEADERSHIP DEVELOPMENT

- NUR 2218 - STUDIES IN ADVANCED NURSING ETHICS
- NURSP 2085 - NURSING INFORMTCS PRACTICUM 1

Fall Term (YR 2)

Part-time (or you can take elective credits to increase the credits to meet the full-time requirements of 9 credits/term)

- NURSP 2086 - NURSING INFORMTCS PRACTICUM 2
- Comprehensive Exam

Total Credits: 39.5

School Nursing, MSN

Full-Time Curriculum

Fall Term

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NUR 2176 - SEMINAR SCHOOL NURSE

Credits: 11

Spring Term

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NURSP 2098 - HEALTHCARE QUALITY
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NUR 2179 - PRACTICUM SCHOOL NURSE

Credits: 8

Summer Term

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2092 - LEADERSHIP DEVELOPMENT
- NUR 2218 - STUDIES IN ADVANCED NURSING ETHICS
- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
- Comprehensive Exam

Credits: 14

Total Credits: 33

Minor

Gerontology Minor for Nurse Practitioners

Curriculum

- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
  OR
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NURNP 2527 - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES
  OR
- NURNP 2527D - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES
- NURNP 2529 - GERONTOLOGY CLINICAL PRACTICUM

Total Credits: 8

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

Health Care Genetics Minor

Curriculum

- Electives (per approval of Coordinator) **6 cr.**
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
  OR
- NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NUR 2681 - ADV TOPICS IN HUMAN GENETICS

Total Credits: 12

Nursing Administration Minor

Curriculum

- NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
  OR
- NURSP 2062D - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS
- NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
  OR
- NURSP 2099D - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT
- NURSP 2092 - LEADERSHIP DEVELOPMENT
  OR
- NURSP 2092D - LEADERSHIP DEVELOPMENT
- NURSP 2064 - NURSING ADMINISTRATION SEMINAR AND PRACTICUM

Total Credits: 10

*Courses with a "**D**" are delivered synchronously via distance technology for qualified onsite students as per Policy 438.

Nursing Informatics Minor

Curriculum

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2388 - DATABASE MANAGEMENT
- NURSP 2076 - CLINICAL INFORMATION SYSTEMS
- NURSP 2070 - INFORMATION TECHNOLOGY PROJECT MANAGEMENT

Total Credits: 11

PhD

Nursing - BSN to PhD Track, PhD

Curriculum

Students are expected to enroll full time.

The BSN to PhD Track consists of a minimum of 72 credits (cr.):

- 22 cr. from the Research Core
- 9 cr. from the Statistics Core
- 41 cr. for Personalized Scientific Inquiry (PSI) courses (PSI consists of 12 cr. Dissertation, 6 cr. Apprenticeship Practicum, and 23 cr. additional PSI credits, which foster knowledge and skills in the students research focus area and are chosen by the student in conjunction with the academic adviser.)

Fall Term (YR 1)

- NUR 3112 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 1
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- NUR 3285 - PHILOSOPHICAL UNDERPINNINGS OF NURSING RESEARCH
- NUR 3291 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 1
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- Personalized Scientific Inquiry (2 cr)

Spring Term (YR 1)

- NUR 3113 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 2
  OR
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
- NUR 3286 - THEORETICAL FOUNDATIONS FOR RESEARCH
- NUR 3287 - RESEARCH DESIGN & METHODS
- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- Personalized Scientific Inquiry: (2-4 cr)

Summer Term (YR 1)

- NUR 3114 - APPLIED REGRESSION FOR HEALTH SCIENCE RESEARCH
- NUR 3288 - RESEARCH MEASUREMENT
- NUR 3289 - INTERVENTION DEVELOPMENT
- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- Personalized Scientific Inquiry: (2-4 cr)

Fall Term (YR 2)

- NUR 3290 - ADVANCED QUANTITATIVE ANALYTIC METHODS SEMINAR
- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- Personalized Scientific Inquiry (3-6 cr)

Spring Term (YR 2)

- NUR 3292 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 2
- NUR 3293 - ART AND SCIENCE OF TEACHING AND LEARNING
- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- Personalized Scientific Inquiry (4 cr)

Summer Term (YR 2)

- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- Personalized Scientific Inquiry (6 cr)

Fall Term (YR 3)

- NUR 3010 - PHD DISSERTATION
- Personalized Scientific Inquiry as needed

Spring Term (YR 3)

- FTDP Full Time Dissertation

Summer Term (YR 3)

- FTDP Full Time Dissertation

Fall, Spring and Summer Term (YR 4)

- FTDP Full Time Dissertation as needed to complete dissertation

Total Credits: Minimum of 72 Credits

Note:

- See School of Nursing Policy 230 regarding the taking of the Preliminary Examination and School of Nursing Policy 235 regarding the Comprehensive Examination/Overview
- FTDP (full-time dissertation 0 credits) can only be taken after passing the Comprehensive Examination, the Dissertation Overview, and completing the minimum 12 credits of NUR 3010 - PHD DISSERTATION

Preliminary and Comprehensive Examinations and Dissertation Overview

The preliminary examination is taken after completing the following required courses.

- NUR 3285 Philosophical Underpinnings (3 cr)
- NUR 3286 Theoretical Foundations for Research (3 cr)
- NUR 3287 Research Design & Methods (3 cr) **
- NUR 3071 Apprenticeship Practicum (2 cr)
- NUR 3288 Research Measurement (2 cr) **
- NUR 3289 Intervention Development (2 cr)
- and Statistics Courses
- NUR 3112 Applied Parametric and Non-Parametric Statistics for the Health Sciences 1
- NUR 3113 Applied Parametric and Non-Parametric Statistics for the Health Sciences 2

**MSN-PhD students may have completed these courses in their prior degree program

By following the established curriculum plan, all full-time students should sit for their Preliminary Examination early in their fourth term of study. The examination is designed to assess the student's breadth of knowledge of the discipline of nursing and potential ability to apply research methods independently. Remediation work may be required if deficiencies are identified that may impede the student's success in program completion. See School of Nursing Policy 230.

The *comprehensive examination* assesses the student's mastery of the general field of doctoral study, acquisition of depth and breadth of knowledge in a focused area of study, and the ability to use the research methods of the discipline. The comprehensive examination is taken after completion of all required course work and concurrent with the dissertation overview. See School of Nursing Policy 235.

The *dissertation overview* requires the student to formulate a research plan and to justify the selected approach for studying the topic before the student's dissertation committee.

Dissertation Committee

Prior to the comprehensive examination and the dissertation overview, the student and research advisor propose, subject to approval by the director of the PhD program and the Dean, a committee of four or more members, one of whom must be from another school within the University and the majority of whom must be from the School of Nursing. A majority, including the major advisor, must also be full members of the Graduate Faculty of the University.

See Doctoral Committee under Regulations Pertaining to Doctoral Degrees of the University bulletin.

Admission to Candidacy for the Doctor of Philosophy

Admission to candidacy for the Doctor of Philosophy degree constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to the research and the writing of the dissertation. To qualify for admission to candidacy, students must be in full graduate status, have satisfied the requirement of the preliminary examination, have completed formal courses and the minimum dissertation credit requirements with a minimum grade point average of 3.00, have passed the comprehensive examination, and have received approval of the proposed dissertation research by the dissertation committee. Admission to candidacy is granted by the Dean.

Residency Requirement

Students seeking the PhD degree are required to engage in a minimum of one term of full-time doctoral study (nine credits), which excludes any other employment except as approved. The doctoral student must notify the PhD program director in writing the term that this occurs.

Dissertation and Abstract

The date and title of the dissertation defense must be submitted to the PhD program director one month prior to the final defense. *For definitions and detail on what constitutes an acceptable dissertation, please see Dissertation and Abstract under Regulations Pertaining to Doctoral Degrees of this bulletin.*

Personalized Scientific Inquiry (BSN to PhD)

The University of Pittsburgh values personalization of students' educational experiences. To that end, the PhD program allows students to develop a personalized approach to choosing additional coursework congruent with knowledge and skill development in their chosen areas of focal research concentration.

Students are encouraged to take Personalized Scientific Inquiry (PSI) courses to develop an understanding of essential knowledge to a focused area of study in nursing.

- Consists of a minimum of 23 credits in the BSN to PhD track.
- Students are encouraged to take PSI courses outside of the School of Nursing and outside of the nursing discipline.
- It is suggested that one PSI course be an advanced statistics or research methods course.
- No more than one of the PSI courses is recommended to be taken as NUR 3060 Independent Study, so as to provide for a richer experience in the presence of other students and other disciplines.

Research Apprenticeship Model

The PhD program includes an apprenticeship model of research training that combines rigorous coursework and an apprenticeship with successful research mentors. This model includes a formalized series of Apprenticeship Practica (minimum of 6 credits under the direction of a research mentor), with recommended experiences and a series of defined deliverables. This experience allows for the opportunity to acquire individualized and tangible research skills within a mentored research application environment, which is additive to and precedes the dissertation experience.

All mentors are experienced nurse researchers. During their apprenticeships, students acquire tangible skills in research methodology, grantsmanship, professional skills, the responsible conduct of research, and dissemination of research findings through publications and presentations. Students receive an intense and comprehensive research experience resulting in publications and pilot data to support applications for independent research funding and dissertation work.

Nursing - Post-MSN to PhD Track, PhD

Curriculum

The MSN to PhD Track consists of a minimum of 48 credits (cr.):

- 13 cr. from the Research Core
- 9 cr. from the Statistics Core
- 26 cr. for Personalized Scientific Inquiry (PSI) courses (PSI consists of 12 cr. Dissertation, 6 cr. Apprenticeship Practicum, and minimum 8 cr. additional PSI credits)

The advisor and MSN to PhD Track student will, upon admission to the program, prepare a gap analysis based on review of the prior master's program to determine the nature of the 8 additional PSI credits (and possibly more if necessary), and also if additional Research Core coursework is needed. The student's prior preparation in their master's program (research focused or clinically focused) will drive the gap analysis.

Fall Term (YR 1)

- NUR 2112 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 1
  OR
- NUR 3112 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 1
- NUR 3285 - PHILOSOPHICAL UNDERPINNINGS OF NURSING RESEARCH
- NUR 3291 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 1
- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- Personalized Scientific Inquiry: (2 cr)

Spring Term (YR 1)

- NUR 2113 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 2
  OR
- NUR 3113 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 2
- NUR 3286 - THEORETICAL FOUNDATIONS FOR RESEARCH
- NUR 3292 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 2
- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP

Summer Term (YR 1)

- NUR 2114 - APPLIED REGRESSION FOR HEALTH SCIENCE RESEARCH
  OR
- NUR 3114 - APPLIED REGRESSION FOR HEALTH SCIENCE RESEARCH
- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- Personalized Scientific Inquiry: Intensive Methods (2 cr)
- Cognate (3 cr)

Fall Term (YR 2)

- NUR 3290 - ADVANCED QUANTITATIVE ANALYTIC METHODS SEMINAR
- NUR 3010 - PHD DISSERTATION
- NUR 3071 - PHD RESEARCH APPRENTICESHIP
- Personalized Scientific Inquiry: Intensive Methods (2 cr)
- Personalized Scientific Inquiry: (2 cr)

Spring Term (YR 2)

- FTDP Full Term Dissertation

Summer Term (YR 2)

- FTDP Full Time Dissertation

Fall Term (YR 3)

- FTDP Full Time Dissertation

Total Credits: Minimum of 48 Credits

(in addition to 24 credits from master's degree)

Note:

- See Policy 230 regarding the taking of the Preliminary Examination and Policy 235 regarding the Comprehensive Examination/Overview.
- FTDP (full-time dissertation, 0 credits) can only be taken after completing the minimum 12 credits of NUR 3010 - PHD DISSERTATION

Preliminary and Comprehensive Examinations and Dissertation Overview

The preliminary examination is taken after completing the following required courses.

- NUR 3285 Philosophical Underpinnings (3 cr)
- NUR 3286 Theoretical Foundations for Research (3 cr)
- NUR 3287 Research Design & Methods (3 cr) **
- NUR 3071 Apprenticeship Practicum (2 cr)
- and Statistics Courses
- NUR 2112 Applied Parametric and Non-Parametric Statistics for the Health Sciences 1

OR

- NUR 3112 Applied Parametric and Non-Parametric Statistics for the Health Sciences 1
- NUR 2113 Applied Parametric and Non-Parametric Statistics for the Health Sciences 2

OR

- NUR 3113 Applied Parametric and Non-Parametric Statistics for the Health Sciences 2

**MSN-PhD students should have completed this course in their prior degree program

By following the established curriculum plan, all full-time students should sit for their Preliminary Examination in their third term of study. The examination is designed to assess the student's breadth of knowledge of the discipline of nursing and potential ability to apply research methods independently. Remediation work may be required if deficiencies are identified that may impede the student's success in program completion. See School of Nursing Policy 230.

The *comprehensive examination* assesses the student's mastery of the general field of doctoral study, acquisition of depth and breadth of knowledge in a focused area of study, and the ability to use the research methods of the discipline. The comprehensive examination is taken after completion of all required course work and concurrent with the dissertation overview. See School of Nursing Policy 235.

The *dissertation overview* requires the student to formulate a research plan and to justify the selected approach for studying the topic before the student's dissertation committee.

Dissertation Committee

Prior to the comprehensive examination and the dissertation overview, the student and research advisor propose, subject to approval by the director of the PhD program and the Dean, a committee of four or more members, one of whom must be from another school within the University and the majority of whom must be from the School of Nursing. A majority, including the major advisor, must also be full members of the Graduate Faculty of the University.

See Doctoral Committee under Regulations Pertaining to Doctoral Degrees of the University bulletin.

Admission to Candidacy for the Doctor of Philosophy

Admission to candidacy for the Doctor of Philosophy degree constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to the research and the writing of the dissertation. To qualify for admission to candidacy, students must be in full graduate status, have satisfied the requirement of the preliminary examination, have completed formal courses and the minimum dissertation credit requirements with a minimum grade point average of 3.00, have passed the comprehensive examination, and have received approval of the proposed dissertation research by the dissertation committee. Admission to candidacy is granted by the Dean.

Residency Requirement

Students seeking the PhD degree are required to engage in a minimum of one term of full-time doctoral study (nine credits), which excludes any other employment except as approved. The doctoral student must notify the PhD program director in writing the term that this occurs.

Dissertation and Abstract

The date and title of the dissertation defense must be submitted to the PhD program director one month prior to the final defense. *For definitions and detail on what constitutes an acceptable dissertation, please see Dissertation and Abstract under Regulations Pertaining to Doctoral Degrees of this bulletin.*

Personalized Scientific Inquiry (Post-MSN to PhD)

The University of Pittsburgh values personalization of students' educational experiences. To that end, the PhD program allows students to develop a personalized approach to choosing additional coursework congruent with knowledge and skill development in their chosen areas of focal research concentration.

Students are encouraged to take Personalized Scientific Inquiry (PSI) courses to develop an understanding of essential knowledge to a focused area of study in nursing.

- Consists of a minimum of 8 credits in the MSN to PhD track.
- Students are encouraged to take PSI courses outside of the School of Nursing and outside of the nursing discipline.
- It is suggested that one PSI course be an advanced statistics/research methods course.
- No more than one of the PSI courses is recommended to be taken as NUR 3060 Independent Study, so as to provide for a richer experience in the presence of other students and other disciplines.

Research Apprenticeship Model

The PhD program includes an apprenticeship model of research training that combines rigorous coursework and an apprenticeship with successful research mentors. This model includes a formalized series of Apprenticeship Practica (minimum of 6 credits under the direction of a research mentor), with recommended experiences and a series of defined deliverables. This experience allows for the opportunity to acquire individualized and tangible research skills within a mentored research application environment, which is additive to and precedes the dissertation experience.

All mentors are experienced nurse researchers. During their apprenticeships, students acquire tangible skills in research methodology, grantsmanship, professional skills, the responsible conduct of research, and dissemination of research findings through publications and presentations. Students receive an intense and comprehensive research experience resulting in publications and pilot data to support applications for independent research funding and dissertation work.

Phd Program

Department of Acute and Tertiary Care

Graduate Certificate

Palliative and End-of-Life Care and Communication Certificate Program

This certificate will provide a theoretical grounding in the principles of patient- and family-centered care for individuals with serious illness across the illness trajectory and at end-of-life, including a general overview of various aspects of EOL care, including pain and symptom management, social and spiritual support, communication skills, basic insurance coverage information, and legal aspects of end-of-life care.

Fall Term

- NUR 2220 - PRINCIPLES OF PALLIATIVE AND END-OF-LIFE CARE

Spring Term

- NUR 2221 - PROMOTING COMFORT THROUGH PAIN AND SYMPTOM MANAGEMENT
- SWINT 2004 - GRIEF AND LOSS: INTERVENTIONS, IMPLICATIONS & UNDERSTANDING

Summer Term

- NUR 2222 - CONVERSATION & COLLABORATION: COMMUNICATION WITH PATIENTS, FAMILIES, AND COLLEAGUES
- SWINT 2004 - GRIEF AND LOSS: INTERVENTIONS, IMPLICATIONS & UNDERSTANDING

Fall Term

- SWINT 2004 - GRIEF AND LOSS: INTERVENTIONS, IMPLICATIONS & UNDERSTANDING

Total Credits: 12

Note: SWINT 2004 - Grief and Loss: Interventions, Implications & Understanding is offered every term in-person but it is also offered hybrid in Spring and Summer term. To complete the certificate students will complete this course once after taking NUR 2220 - Principles of Palliative and End-of-Life Care, totaling 12 credits.

Major

Adult-Gerontology Acute Care Nurse Practitioner MSN

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NURNP 2041 - NURSE PRACTITIONER ROLE SEMINAR 1

Spring Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS

Summer Term (YR 1)

- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL - 120 clinical hours
- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

Fall Term (YR 2)

- NURNP 2100 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
- NURNP 2101 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE CLINICAL - 180 clinical hours
- NURNP 2042 - NURSE PRACTITIONER ROLE SEMINAR 2

Spring Term (YR 2)

- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
- NURNP 2104 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
- NURNP 2028 - ROLE PRACTICUM - 300 clinical hours

Summer Term (YR 2)

- NURNP 2102 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITCALLY ILL ADULT 2
- NURNP 2109 - CLINICAL EMPHASIS - DIRECTED STUDY - 180 clinical hours
- Comprehensive Exam

Total Credits: 51

Department of Health and Community Systems

Major

Psychiatric-Mental Health Nurse Practitioner MSN

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NURNP 2041 - NURSE PRACTITIONER ROLE SEMINAR 1

Spring Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS
- NURNP 2320 - NEUROBIOLOGY OF PSYCHIATRIC DISORDERS

Summer Term (YR 1)

- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL - 120 clinical hours
- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

Fall Term (YR 2)

- NURNP 2330 - PSYCHIATRIC DIAGNOSIS THEORY
- NURNP 2331 - PSYCHIATRIC DIAGNOSIS PRACTICUM - 120 clinical hours
- NURNP 2042 - NURSE PRACTITIONER ROLE SEMINAR 2
- NURNP 2321 - HEALTH TOPICS CONCERNING PSYCHIATRIC MANAGEMENT
- NURNP 2325 - PSYCHOPHARMACOLOGY
- NURNP 2028 - ROLE PRACTICUM - 60 clinical hours

Spring Term (YR 2)

- NURNP 2340 - MANAGEMENT OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2341 - MANAGEMENT PRACTICUM OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS - 120 clinical hours
- NURNP 2028 - ROLE PRACTICUM - 120 clinical hours
- NURNP 2318 - CHILD AND ADOLESCENT PSYCHIATRIC MANAGEMENT
- NURNP 2327 - PRINCIPLES OF SUBSTANCE USE TREATMENT
- NURNP 2305 - PSYCHOTHERAPEUTIC INTERVENTION

Summer Term (YR 2)

- NURNP 2345 - MANAGEMENT OF CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2346 - MANAGEMENT PRACTICUM CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS - 120 clinical hours
- NURNP 2028 - ROLE PRACTICUM - 120 clinical hours
- Comprehensive Exam

Total Credits: 57

Department of Health Promotion and Development

Certificate

Family Nurse Practitioner Graduate Certificate

Graduates from the Family (Individual Across the Lifespan) Nurse Practitioner (FNP) Post-Professional Certificate are prepared as generalist, principal providers of primary health care across the lifespan. In this role, the FNP assumes responsibility for promoting, maintaining, and restoring health to individuals across the lifespan, from newborns through older adults. This role involves identifying health risks, promoting wellness, diagnosing and managing acute and chronic illnesses, and referring patients to specialty services as needed. Our FNP graduates work in collaboration with other health care professionals in a variety of primary care and subspecialty settings.

We currently offer a full-time plan of study. This innovative hybrid program is presented in a hybrid format, with online learning activities and intermittent on-campus immersive activities. A sample program plan for full-time study is provided below.

Graduates are eligible for national certification offered by the American Nurses Credentialing Center (ANCC) or the American Academy of Nurse Practitioners Certification Board (AANPCB) and for licensure as a nurse practitioner and prescriptive authority through State Boards of Nursing

Family NP Certificate Program

Year 1 - Fall

- NURNP 2520 - MGT: PEDIATRIC HEALTH THEORY
- NURNP 2521 - MANAGEMENT: PEDIATRIC HEALTH CLINICAL
- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
- NURNP 2523 - MANAGEMENT: WOMEN'S HEALTH 1
- NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY

Year 1 - Spring

- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
- NURNP 2515 - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY
- NURNP 2505 - MANAGEMENT: ADULT ACUTE/CHRONIC ILLNESS CLINICAL

Year 1 - Summer

- NURNP 2028 - ROLE PRACTICUM
- NUR 2078 - CLINICAL DIAGNOSTICS

Major

Family (Individual Across the Lifespan) Nurse Practitioner MSN

Full-Time Curriculum

Fall Term (YR 1)

- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NURNP 2041 - NURSE PRACTITIONER ROLE SEMINAR 1
- NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY

Spring Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN

- NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS

Summer Term (YR 1)

- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL - 120 clinical hours
- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

Fall Term (YR 2)

- NURNP 2520 - MGT: PEDIATRIC HEALTH THEORY
- NURNP 2521 - MANAGEMENT: PEDIATRIC HEALTH CLINICAL
- NURNP 2042 - NURSE PRACTITIONER ROLE SEMINAR 2
- NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE
- NURNP 2523 - MANAGEMENT: WOMEN'S HEALTH 1

Spring Term (YR 2)

- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
- NURNP 2515 - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY
- NURNP 2028 - ROLE PRACTICUM - 120 clinical hours
- NURNP 2505 - MANAGEMENT: ADULT ACUTE/CHRONIC ILLNESS CLINICAL - 180 clinical hours

Summer Term (YR 2)

- NURNP 2028 - ROLE PRACTICUM - 240 clinical hours
- NUR 2078 - CLINICAL DIAGNOSTICS ** in-person intensive
- Comprehensive Exam

Total Credits: 59

Department of Nurse Anesthesia

School of Pharmacy

School of Pharmacy

Chartered in 1878, the School of Pharmacy has a tradition of developing leaders and innovators that drive the future of pharmacy. We investigate, discover, and create ways to improve patient health and, through partnerships, change practice and improve efficiency of care. We also use computational and bench research methods to discover and develop drugs and drug delivery, systems, and other novel approaches to optimize therapy. The School of Pharmacy (Pitt Pharmacy) leads the way in education, encouraging learners to personalize their education. Pitt Pharmacy is among the oldest pharmacy schools in the country. Pitt Pharmacy is in the top tier of schools of pharmacy in US News & World Report rankings and NIH-funded research.

Mission

The School of Pharmacy develops pharmacists and pharmaceutical scientists as innovators and leaders to improve the health and well-being of the world around us.

Through inclusive excellence, innovation, and leadership, **we achieve pioneering and exemplary:**

- Pharmacy and pharmaceutical sciences education,
- Research and scholarship, and
- Patient care and service.

Vision

To be an outstanding school of pharmacy renowned for excellence in the discovery and advancement of science-based use of medicines and other interventions to enhance the vitality and quality of life.

Values

Integrity guides our daily work. We foster:

Professionalism
Integrity
Teamwork
Trust
Passion
Health Equity
Accountability
Responsibility
Mutual Respect

Program Contact Information

School of Pharmacy
John P. & Constance A. Curran Center for Pharmacy Students
3501 Terrace St
Salk Hall 5th Floor
Pittsburgh, PA 15261
Phone: 412-383-2587
www.pharmacy.pitt.edu

Doctor of Pharmacy (PharmD) Program

Mission
The Pitt Pharmacy Doctor of Pharmacy Program inspires students to personalize their education and become medication experts, interprofessional collaborators, and leaders who advocate, champion, and act to improve health, well-being, and quality of life for individuals and communities.

The Doctor of Pharmacy Program emphasizes a problem-based approach to learning from the design of our curriculum to teaching and assessment strategies so that knowledge deepens the real world problem solving abilities of our students. This encourages our students to seek out those pharmacy roles and develop needed expertise that is most meaningful to them, while also providing them with a thorough understanding of generalized pharmacy.

Our innovative curriculum integrates science and practice, emphasizes student-centered learning, and gives our students the best possible preparation for pharmacy practice in any setting they choose.

The professional curriculum is composed of a course of study requiring sixty-two (62) credits of pre-professional study followed by four years of professional courses. The four-year professional curriculum blends active learning in large group classrooms, small group team-based activities, and laboratories with "hands on" experiential learning in diverse practice settings.

Experiential Learning is a foundation of the curriculum, beginning within the first weeks of the first professional (P1) year and sequentially building practice experiences and culminating in eight "full-time" five-week advanced practice experiences in the fourth professional (P4) year. Students progress from early stages of meaningful connections with patients to caring for complex patients with acute and chronic diseases. Practice activities occur in communities, in hospitals and health care settings, and in many unique learning environments that encourage students to personalize their professional development towards career goals.

Accreditation Council for Pharmacy Education (ACPE)

The University of Pittsburgh School of Pharmacy's Doctor of Pharmacy program is accredited by the Accreditation Council for Pharmacy Education, 190 South LaSalle Street, Suite 3000, Chicago, IL 60603-3446, 312/664-3575; FAX 866/228-2631, web site www.acpe-accredit.org.

The University of Pittsburgh Doctor of Pharmacy Program received ACPE accreditation status for 8 years, the maximum period allowable, through June 30, 2033.

Special Academic Opportunities

Pitt Pharmacy provides opportunities for students to personalize their education and achieve personal and professional goals and careers.

Areas of Concentration
Areas of Concentration (ARCOs) provide structured paths for students to focus personal and professional interests while developing specialized knowledge and skills in practice areas. During pharmacy school, students may competitively apply for admission to an ARCO, completing specialized coursework, a scholarly project, and practice experiences, while receiving individualized mentoring by faculty experts in the practice area. Current ARCO specialties include:

- Community Leadership, Innovation, and Practice
- Geriatrics and Palliative Care
- Global Health
- PharmacoAnalytics
- Pharmacotherapy Scholars
- Pharmacy Business Administration
- Research

International Pharmacy Travel
Pitt student pharmacists have opportunities to gain exposure to diverse practices of pharmacy and global cultures through coursework and international practice experiences in countries including Germany, Ireland, Italy, Namibia, and others.

Student-Driven Independent Study
Students have the opportunity to work directly with a faculty member to design an elective Mentored Research or Mentored Inquiry course experience, completing a specific project or inquiry. Students assume active roles in establishing project goals and methods, generating a quality product at its conclusion, such as a research presentation, poster, or other creative scholarly work.

Selecting Experiential Rotations
Students are able to design an individualized program of introductory and advanced pharmacy practice choosing from over 1,800 local, national or international rotations including but not limited to focus areas in health system and ambulatory patient care, community and health system practice, pharmacy administration/management, managed care, and industry.

Contact Information

School of Pharmacy
3501 Terrace St
Pittsburgh, PA 15261
Admissions: 412-383-9000
E-mail: PharmDAdmissions@pitt.edu
www.pharmacy.pitt.edu

Admissions

The Pitt Pharmacy PharmD program admits students to PharmD programs through one of two pathways - guarantee or open. Those two admission pathways are detailed below:

Pharmacy Guarantee First Year Admission

The School of Pharmacy does not directly admit first year students to the professional program. All high school students should first submit an application to the University of Pittsburgh Office of Admissions and Financial Aid. The School offers a guaranteed acceptance to a number of high school seniors who enroll at one of the University of Pittsburgh campuses.

Applicants to the Pittsburgh campus should select the Dietrich School of Arts and Sciences as the first-year admitting school. All applicants can select pharmacy in the Guaranteed Admissions drop-down box on the Application for Undergraduate Admissions to be considered for the guarantee as part of the comprehensive individual review for admissions conducted by the University of Pittsburgh Office of Admissions. Students who receive the guarantee are expected to perform well in the pre-professional courses in the Dietrich School of Arts and Sciences or regional campus. To secure a seat in the PharmD Program, students must earn:

- a letter grade of a C or better in all preprofessional courses
- a combined 3.25 or greater overall GPA in PharmD preprofessional courses
- a combined 3.25 or greater GPA in the required math and science preprofessional courses

NOTE: Required math and science courses must be taken at the University of Pittsburgh. AP, dual enrollment, and college in high school credits may be used to fulfill preprofessional credits.

Test optional applicants are eligible for the pharmacy guarantee.

To exercise the Pharmacy guarantee, all applicants must complete the pharmacy admissions process and requirements typically in the second year of study in the Dietrich School of Arts and Sciences or at the regional campus:

- submit a completed application and fee in the Pharmacy College Application System (PharmCAS)
- The PharmCAS application must include three letters of evaluation with two from college faculty in any subject area, math and science are recommended. Letters are NOT accepted from graduate students. The third letter can be from any employer, faculty advisor, pharmacist, health care professional, or supervisor.
- participate in a satisfactory interview, when invited, during the admissions process

- complete standardized writing assessment, when invited

Pharmacy guarantee students who meet these criteria will be admitted into the PharmD Program. Those not meeting these criteria will be considered as part of the open admissions pool that is holistically reviewed by the PharmD Admissions Committee. More information about PharmCAS and application deadlines can be found at www.pharmcas.org.

Open Admission

Students admitted to the program through the open admission pathway compete for remaining spaces in the class. The requirements to be considered a competitive applicant for the Pitt Pharmacy PharmD program are:

- completion of the pre-professional requirements
- Applicants can apply while courses are in progress
- competitive math and science GPA of 3.0 in preprofessional courses
- submission of a verified PharmCAS application and fee
- The PharmCAS application must include three letters of evaluation with two from college faculty in any subject area, math and science are recommended. Letters are NOT accepted from graduate students. The third letter can be from any employer, faculty advisor, pharmacist, health care professional, or supervisor.
- selected applicants will be required to participate in a satisfactory interview (interviews are by invitation only)
- complete standardized writing assessment (selected applicants who are invited for an interview)

More information about PharmCAS and deadlines for application can be found at www.pharmcas.org.

Visit the School of Pharmacy Web site.

Application Procedures and Deadlines

PharmCAS (Pharmacy College Application Service): This service enables students to generate one primary application that can be submitted to multiple PharmD degree programs. All applicants must file an application through PharmCAS, www.pharmcas.org by the application deadline.

The application process, application deadlines, and other admission requirements are summarized on the School of Pharmacy Web site.

Throughout the application process, it is the student's responsibility to follow all instructions and meet all deadlines. Failure to do so might result in their application being canceled. It is highly recommended that students apply early to ensure that all application materials are received by the deadline.

Preparing to Complete the Application

Pitt Pharmacy recommends that students thoroughly review the application process before entering data or filling out forms so that they are aware of all the information they will need to gather and how much time the entire process will take. Visit the PharmCAS Web site at www.pharmcas.org and review the "Preparing to Apply" tab. Then review the Checklist, PharmCAS Instructions, and the Applicant Code of Conduct links. Review the time line for the application process: Admissions Calendar

Complete Preprofessional Courses and Minimum Eligibility Requirements: All required math & science courses must be completed by the end of Spring term of the year of entry in the professional program. All remaining courses should be completed by the end of the Spring term and must be completed prior to the Fall term entry into the professional program.

Tuition and Financial Aid

Tuition rates and fees for the current academic year for the Pittsburgh campus can be found on the University's site at www.tuition.pitt.edu with details for Pennsylvania residents and out-of-state residents. Those without a previous college degree should view information for undergraduates and those who have earned a previous college degree should view the information for graduate students.

The University also offers a wide range of financial support through the Office of Financial Aid and the Financial Wellness Center, where students can receive coaching and advice on financial needs. We encourage all students to explore these options as well.

Pitt Pharmacy is grateful to the many donors who make our scholarships possible each year. The School of Pharmacy has an appointed committee who reviews each individual applicant each year. Scholarships are awarded based on financial need with consideration of merit and service. The needs of the applicant pool change annually, and scholarships are awarded based on an individual's application with regard to the overall needs of the entire applicant pool.

Pitt Pharmacy also provides additional mechanisms to support student achievement by supporting student organizations and student travel.

Academic and Professional Standards

Academic Integrity

School of Pharmacy students are responsible for upholding the standards of behavior outlined in the University's Guidelines on Academic Integrity, the University's policy on sexual harassment, and other policies related to student behavior.

Enrollment in the School of Pharmacy carries with it obligations of conduct within and outside of the classroom. Professional students are expected to maintain the highest standards of personal integrity and conduct themselves in a manner that is a credit to themselves, the school, and the profession. Students must review and affirm their commitment to ethical and professional behavior to meet the School of Pharmacy Professional Code of Conduct each year.

Academic Standing

Pitt Pharmacy complies with the University Policy regarding Academic Standing Graduate and Professional Students. An exception was granted by the Office of the Provost to allow at least a 2.00 grade point average (GPA) and making satisfactory progress towards the degree to denote students enrolled in the PharmD program are in good academic standing.

The School's policy PharmD Academic Progression of Students governs the academic progression of each PharmD student. Students must review and affirm their understanding of this, and other, policies each year. Good Academic Standing in the program is determined by term and cumulative GPA as well as progress toward a degree, which is defined as successful completion of program requirements such as milestones, clinical experiences and lab/research experiences.

At the end of each term, GPA calculations will be made, including all required professional courses and approved professional electives taken while enrolled in the PharmD program. Students must maintain both term and cumulative GPA of 2.00. Students who fail to maintain a term or cumulative GPA of 2.00 or above will be placed on academic notice and must participate in an academic intervention plan developed by the Academic Performance Committee and PharmD Program Director. Students failing to achieve a term or cumulative GPA of 2.00 or above by the specified deadline or fail to successfully complete the Academic Intervention Plan may be dismissed from the PharmD program. Academic dismissal is a final action within the School.

It is the responsibility of students to monitor their academic progress and become familiar with the program degree requirements and academic regulations.

Clearance and Immunization Policy

The Office of Experiential Learning manages learning experiences in communities and professional practice environments that are embedded across all four years of the PharmD program. Because these experiences involve direct patient contact, the practice sites where students are placed require proof of immunization to communicable diseases, fingerprinting, background checks, select training programs, and drug screens. Students who fail to complete these prerequisites no later than two weeks prior to the start of classes will not be able to fulfill their experiential learning requirements. Pitt Pharmacy works with DISA Healthcare, a background screening and compliance tracking solutions company, to collect and manage the documentation of all such prerequisites. Each student has access to his or her

information through the secure DISA Healthcare web site both as a student and after graduation. The site is a secure site to which only the Office of Experiential Learning Office and the student have access.

A positive criminal history and/or positive drug screen may disqualify a student from completing required experiential learning and may prevent successful completion of the PharmD program. All sites used for experiential learning require students to meet certain prerequisites. These prerequisites may include showing proof of immunization to communicable diseases, undergoing criminal background checks, and drug screening. Failure to meet these prerequisites can result in students being unable to complete their experiential learning requirements.

Additionally, in order to become a licensed pharmacist, many states will inquire as to whether the applicant has been convicted of any misdemeanor, felony, or any illegal act associated with alcohol and/or substance abuse. A criminal history may delay or prevent licensure.

Pharmacy Intern License

Students must obtain their Pennsylvania (PA) Pharmacy Intern License to participate in our Experiential Learning Program. Students may need to obtain their home state intern license if they choose to complete rotations outside of PA. Students also will obtain their PA Authorization to Administer Injectables (aka "Student Immunizer License") in the Spring of the first academic year.

Combined Programs

Pitt Pharmacy offers combined degree pathways for students in the PharmD program who are committed to extending their education to pursue graduate studies. See full details for Doctor of Philosophy (PhD) and Master of Science (MS) programs below.

PharmD/PhD in Pharmaceutical Sciences*

For students interested in pursuing a professional PharmD degree and a research-based PhD degree in pharmaceutical sciences, we offer a combined PharmD/PhD option.

The average time to complete a PhD is 5 years. Students in the combined PharmD/PhD program can reduce this time to 1 year by taking required PhD courses during their PharmD training.

- Students complete the 4-year PharmD professional degree as outlined above.
- Students may apply for the PhD program in the fall of the third professional (P3) year via PharmGRAD. See application instructions outlined below.
- Admission to the PhD program is not guaranteed
- Students in a combined program will begin working with graduate Research Faculty Advisors and become immersed in the research environment during their PharmD training

PharmD/MS in Pharmaceutical Sciences*

For students interested in pursuing a professional PharmD degree and a research-based MS degree in pharmaceutical sciences, we offer a combined PharmD/MS option.

The average time to complete a Thesis MS is 2 years and a non-thesis MS is 3 semesters. By committing to a PharmD/MS, the time to complete the MS can be reduced by up to a year.

- Students complete the 4-year PharmD professional degree as outlined above.
- Students may apply for the Thesis or non-thesis MS program in the fall of the second or third professional (P2 or P3) year via PharmGRAD. See application instructions outlined below.
- Admission to the MS program is not guaranteed
- Students in a combined program will begin working with graduate Research Faculty Advisors and become immersed in the research environment during their PharmD training

*PharmD/PhD or PharmD/MS Pharmaceutical Sciences students can choose between 6 different research focus areas (or tracks): 1) Medicinal chemistry, 2) Biochemical Pharmacology, 3) Pharmaceutics, 4) Clinical Pharmaceutical Science, 5) Pharmacometrics and Systems Pharmacology (PSP), and 6) Pharmaceutical Outcomes Policy and Research.

Some specific courses taken in the PharmD program that can meet credit requirements in the MS and PhD programs, but are not limited to:

- PHARM 3040 Statistical Methods
- PHARM 5218 Pharmacokinetics and Drug Response
- PHARM 3042 Research Practicum
- Journal clubs: examples PHARM 3048 Drug Design and Development Journal Club and PHARM 3072 Topics in Pharmacokinetics/Pharmacodynamics Journal Club
- PHARM 3074 Intro to Regulatory Aspects of Drug Development
- PHARM 3002 Advanced Pharmacokinetics
- PHARM 2003 Pharmacoepidemiology
- PHARM 3049 Scientific Writing Skills

PharmD/MS and non-thesis MS in PharmacoAnalytics - Pharmaceutical Outcomes Research (PA-POR):

For students interested in pursuing a professional PharmD degree and a research-based MS degree in Pharmacoanalytics - Pharmaceutical Outcomes Research, we offer a combined PharmD/MS PA-POR option.

The average time to complete a Thesis MS is 2 years and a non-thesis MS is 3 semesters. By committing to a PharmD/MS PA-POR, the time to complete the MS can be reduced by up to a year.

- Flexible, self-paced and 100% online courses
- Hybrid of synchronous and asynchronous content
- Students complete the 4-year PharmD professional degree as outlined above.
- Students may apply for the Thesis or non-thesis MS program in the fall of the second or third professional (P2 or P3) year via PharmGRAD. See application instructions outlined below.
- Admission to MS program is not guaranteed

Doctor of Philosophy (PhD) or Master of Science (MS) in Pharmaceutical Sciences

The School of Pharmacy offers graduate level training to highly motivated individuals. Our mission is to prepare students to be scientists, leaders, and innovators who think critically, solve complex problems, and advance science and healthcare. Major strengths include highly accomplished, well-funded research faculty, multidisciplinary training opportunities, and cutting-edge technologies.

Training consists of required core courses, elective courses, journal clubs, research presentations, and an original faculty-advised research project leading to a final thesis or dissertation. Students may select to enroll in six focus areas (tracks): 1) Medicinal chemistry, 2) Biochemical Pharmacology, 3) Pharmaceutics, 4) Clinical Pharmaceutical Science, 5) Pharmacometrics and Systems Pharmacology (PSP), and 6) Pharmaceutical Outcomes Policy and Research.

Contact Information

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Application Process

Applications must be submitted electronically at the Pharmacy College Application Service for Graduate Programs (PharmGrad). An application fee of $50.00 is required and to cover the cost of the application platform - application fees cannot be waived.

Applications for the Fall term must be submitted no later than January 3, 2026. Visit the School of Pharmacy application page for additional application deadline information, request information link, and other application details.

- Applications require 3 letters of reference written on official letterhead and signed.
- In lieu of personal statements, applicants must answer specific questions within the application.
- Applicants must indicate in which of the six research focus areas (tracks) they are most interested.
- Completed applications submitted before the deadline will be reviewed by faculty within the selected track(s).
- Applicants are strongly encouraged to submit applications as early as possible and email the faculty members whose research aligns with their interests.
- Completed applicants will be invited for virtual interviews, at which time official transcripts will also be required.
- Competitive PhD applicants have research experience and a published research manuscript and/or a MS, PharmD or MD degree
- Competitive thesis MS applicants have some research experience
- Applicants without research experience but want to explore a research career in pharmaceutical sciences are best suited for the non-thesis MS degree
- **IMPORTANT: WE DO NOT ACCEPT ANY DOCUMENTS SENT VIA MAIL TO OUR DEPARTMENT.**
- All applicants are for fall term admission only.

International Students

If English is the official language of your country or if you have graduated from a U.S. institution, proof of English proficiency is not required. For all other students, the Test of English as a Foreign Language (TOEFL) is required. The minimum score for consideration for admission is a 100+ composite score with subscores of 20+. The new TOEFL scale as of January 2026 is a 5.0+ composite score with subscores of 4.0+. For IELTS the minimum acceptable score is a 7.0+ composite score with subscores of 6.0+. We are now accepting Duolingo scores if you are not able to take the TOEFL or IELTS. The minimum score for Duolingo is 130 and the test can be found https://englishtest.duolingo.com/applicants Any application with a lesser score will not be reviewed. You must submit TOEFL (or IELTS) scores to PharmGRAD; institution code is 2927.

Tuition

Tuition Rates and Fees can be found at www.tuition.pitt.edu. Visit the School of Pharmacy Scholarships and Awards for more information on financial support offerings.

Length of Programs

The PhD Program requires a minimum of 72 credits. Most students complete the PhD degree within five years. Visit Regulations Governing Graduate Studies for more information on credit requirements, Statute of Limitations, Transfer credits, and Leaves of Absence.

The Thesis-based MS program requires a minimum of 40 credits. Most students complete the MS degree in two academic years. Visit Regulations Governing Graduate Studies for more information on credit requirements, Statute of Limitations, Transfer credits, and Leaves of Absence.

The non-thesis MS program requires a minimum of 34 credits and is usually completed within one calendar year (three semesters). Visit Regulations Governing Graduate Studies for more information on credit requirements, Statute of Limitations, Transfer credits, and Leaves of Absence.

Academic Standards

School of Pharmacy students are responsible for upholding the standards of behavior outlined in the University's Guidelines on Academic Integrity, the University's policy on sexual harassment, and other policies related to student behavior.

MS in PharmacoAnalytics and Pharmaceutical Outcomes Research

This MS program in PharmacoAnalytics-Pharmaceutical Outcomes Research provides students the opportunity to develop expertise in the application of data science and technology to optimize pharmaceutical use and enhance patient care and outcomes. The program will provide students with the tools and knowledge necessary to analyze trends from large data sets and then interpret these trends in a way that allows them to improve their daily practice. Students will be competent with identifying big data sources, managing data, using various data analytic techniques from experience with statistical and analytics software to apply towards decision-making processes in the pharmacy field, including drug development, drug pricing and acquisition, and patient care outcomes. Students will work directly with highly accomplished, well-funded research faculty; will have multidisciplinary training opportunities; and gain experience with cutting-edge technologies.

Knowledge of data manipulation in some platform (STATA, SAS, Python, R, Tableau); secondary data sources, methods and tools are preferred prior to enrollment.

Contact Information

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Application Process

Applications must be submitted electronically at the Pharmacy College Application Service for Graduate Programs (PharmGrad). An application fee of $50.00 is required and to cover the cost of the application platform - application fees cannot be waived.

Applications for the Fall term must be submitted no later than January 3, 2026. Visit the School of Pharmacy application page for additional application deadline information, request information link, and other application details.

- Applications require 3 letters of reference written on official letterhead and signed.
- In lieu of personal statements, applicants must answer specific questions within the application.
- Applicants are strongly encouraged to submit applications as early as possible and email the faculty members whose research aligns with their interests.
- Completed applicants will be invited for virtual interviews, at which time official transcripts will also be required.
- Competitive thesis MS applicants have some research experience
- Applicants without research experience but want to explore a research career in pharmaceutical sciences are best suited for the non-thesis MS degree
- **IMPORTANT: WE DO NOT ACCEPT ANY DOCUMENTS SENT VIA MAIL TO OUR DEPARTMENT.**

International Students

If English is the official language of your country or if you have graduated from a U.S. institution, proof of English proficiency is not required. For all other students, the Test of English as a Foreign Language (TOEFL) is required. The minimum score for consideration for admission is a 100+ composite score with subscores of 20+. The new TOEFL scale as of January 2026 is a 5.0+ composite score with

subscores of 4.0+. For IELTS the minimum acceptable score is a 7.0+ composite score with subscores of 6.0+. We are now accepting Duolingo scores if you are not able to take the TOEFL or IELTS. The minimum score for Duolingo is 130 and the test can be found https://englishtest.duolingo.com/applicants Any application with a lesser score will not be reviewed. You must submit TOEFL (or IELTS) scores to PharmGRAD; institution code is 2927.

Financial Assistance and Tuition

Tuition Rates and Fees can be found at www.tuition.pitt.edu. Visit the School of Pharmacy Scholarships and Awards for more information on financial support offerings.

Length of Programs

The MS in PharmacoAnalytics-Pharmaceutical Outcomes Research program requires a minimum of 30 credits. Most students complete the MS degree in one academic year (three semesters). Visit Regulations Governing Graduate Studies for more information on credit requirements, Statute of Limitations, Transfer credits, and Leaves of Absence.

Academic Standards

School of Pharmacy students are responsible for upholding the standards of behavior outlined in the University's Guidelines on Academic Integrity, the University's policy on sexual harassment, and other policies related to student behavior.

School of Pharmacy Faculty

School of Pharmacy Faculty

Program and Course Offerings

Concentration

Doctor of Pharmacy - Community Leadership, Innovation, and Practice ARCO

The Area of Concentration in Community Leadership, Innovation, and Practice (ARCO-CLIP) provides students with mentoring and learning experiences to cultivate advanced patient care, develop health service innovations, acquire leadership and management skills, and enhance community health. Students completing the ARCO-CLIP will be well prepared to enter leadership and patient care roles in community practice and will be highly competitive for residencies and other advanced practice training opportunities.

ARCO-CLIP Academic Requirements

The ARCO-CLIP consists of six (6) credits of approved elective classroom-based courses, four Advanced Pharmacy Practice Experiences (APPEs), and an approved project conducted under the guidance of an advisor. A minimum of 21 credits of coursework and rotations in the ARCO-CLIP are required. It does not require the student to take additional credits, but rather is a way for students to concentrate their classroom and experiential learning experiences in a focused way to meet the intent of the area of concentration.

Choose six credits from pre-approved courses inside and outside of the School of Pharmacy:

- PHARM 5819 - COMMUNITY LEADERSHIP INNOVATION & PRACTICE (CLIP)
- PHARM 5845 - COMMUNITY PHARMACY LEADERSHIP AND MANAGEMENT

OR Additional courses inside or outside the School of Pharmacy may also be accepted on a case-by-case basis with prior approval of the oversight group, the course instructor, and the School of Pharmacy Curriculum Committee

Doctor of Pharmacy - Geriatrics & Palliative Care ARCO

The purpose of the Area of Concentration in Geriatrics and Palliative Care (ARCO-GPC) is to allow students to pursue an area of emphasis with geriatrics and palliative care consistent with their professional interests during their Doctor of Pharmacy (PharmD) education. The ARCO-GPC is intended to give students an in-depth exposure to geriatrics and palliative care pharmacy practice.

ARCO-GPC Academic Requirements

The ARCO-GPC consists of six (6) credits of approved elective classroom-based courses, two Advanced Pharmacy Practice Experiences (APPEs), and an approved project conducted under the guidance of an advisor. A minimum of 16 credits of coursework and rotations in the ARCO-GPC are required. It does not require the student to take additional credits, but rather is a way for students to concentrate their classroom and experiential learning experiences in a focused way to meet the intent of the area of concentration.

Choose six credits from pre-approved courses inside and outside of the School of Pharmacy:

- BCHS 2532 - DIMENSIONS OF AGING: CULTURE AND HEALTH
- BIOETH 2001 - ETHICS AND AGING
- EPIDEM 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- EPIDEM 2900 - ADVANCED EPIDEMIOLOGY OF AGING
- GERON 2001 - ETHICS AND AGING
- GERON 2006 - MULTI-DISCIPLINARY ASPECTS OF DEMENTIA
- GERON 2008 - HUMAN PERFORMANCE, NUTRITION AND AGING
- GERON 2011 - NAVIGATING GRIEF AND LOSS IN OLDER ADULTS
- GERON 2002 - PREVENTION AND HEALTHY AGING
- GERON 2013 - EVIDENCE-BASED APPROACHES TO SUPPORT FAMILY CAREGIVERS
- GERON 2014 - CAREGIVING IN AGING
- GERON 2016 - DIVERSITY IN AGING
- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
- PHARM 2003 - PHARMACOEPIDEMIOLOGY
- PHARM 5840 - PALLIATIVE CARE PHARMACOTHERAPY

OR Additional courses inside or outside the School of Pharmacy may also be accepted on a case-by-case basis with prior approval of the oversight group, the course instructor, and the School of Pharmacy Curriculum Committee

Doctor of Pharmacy - Global Health ARCO

The purpose of the Area of Concentration in Global Health (ARCO-GH) is to allow students to pursue an area of emphasis within global health consistent with their professional interests and while completing their PharmD degree. The ARCO-GH is intended to give students an in-depth exposure to global health pharmacy practice.

ARCO-GH Academic Requirements

The ARCO-GH consists of six credits of approved elective classroom-based courses, two Advanced Pharmacy Practice Experiences (APPEs) in global health, and an approved project conducted under the guidance of an advisor. A minimum of 16 credit hours of coursework and rotations in the ARCO-GH are required. It does not require the student to take additional credits, but rather is a way for students to concentrate their classroom and experiential learning experiences in a focused way to meet the intent of the area of concentration.

Choose six credits from pre-approved courses inside and outside of the School of Pharmacy:

- BIOINF 2124 - PRINCIPLES OF GLOBAL HEALTH INFORMATICS
- PHARM 5801 - PHARMACEUTICAL CARE TO UNDERSERVED POPULATIONS
- PHARM 5814 - GLOBAL HEALTH: DETERMINANTS AND APPLICATION
- PHARM 5892 - GLOBAL HEALTH: INTERNATIONAL PHARMACY EXPERIENCE
- PUBHLT 2025 - CONCEPTS AND METHODS IN GLOBAL HEALTH

OR Additional courses inside or outside the School of Pharmacy may also be accepted on a case-by-case basis with prior approval of the oversight group, the course instructor, and the School of Pharmacy Curriculum Committee

Doctor of Pharmacy - PharmacoAnalytics ARCO

The purpose of the Area of Concentration in Pharmacoanalytics (ARCO-PA) in the School of Pharmacy is to allow students to learn and implement data analysis techniques while completing their PharmD degree. The ARCO-PA is designed to help students utilize data and technology to enhance pharmaceutical use, operations, and outcomes and drive better quality patient care while also providing pharmacists with the tools and knowledge necessary to analyze trends from large data sets and then interpret these trends in a way that allows them to improve their daily practice. Students will become acquainted with big data sources, managing data, data analytic techniques from experience with statistical and analytics software to apply towards decision-making processes in the pharmacy field, including drug development, drug pricing and acquisition, and patient care outcomes.

ARCO-PA Academic Requirements

The ARCO-PA consists of six credits of approved elective classroom-based courses, two Advanced Pharmacy Practice Experiences (APPEs), and an approved project conducted under the guidance of an advisor. A minimum of 16 credit hours of coursework and rotations in the ARCO-PA are required. It does not require the student to take additional credits, but rather is a way for students to concentrate their classroom and experiential learning experiences in a focused way to meet the intent of the area of concentration.

Choose six credits from pre-approved courses inside and outside of the School of Pharmacy:

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- PHARM 3045 - ADVANCED STATISTICAL METHODS
- PHARM 3052 - TOPICS AND METHODS IN PHARMACEUTICAL OUTCOMES AND POLICY RESEARCH
- PHARM 3073 - APPLIED MULTIVARIATE STATISTICAL ANALYSIS IN PHARMACEUTICAL SCIENCES
- PHARM 3301 - SECONDARY DATABASE APPLICATIONS
- PHARM 3302 - CONDUCTING RESEARCH WITH LARGE BIOMEDICAL DATABASES
- PHARM 3303 - TOPICS AND METHODS FOR SECONDARY DATABASE EVALUATIONS
- PHARM 3304 - RESEARCH METHODS FOR PHARMACEUTICAL PRACTICE AND POLICY
- PHARM 3310 - SECONDARY DATA SOURCES, METHODS AND TOOLS
- PHARM 5830 - DISCOVERING SCIENTIFIC INQUIRY (DSI)

OR Additional courses inside or outside the School of Pharmacy may also be accepted on a case-by-case basis with prior approval of the oversight group, the course instructor, and the School of Pharmacy Curriculum Committee

Doctor of Pharmacy - Pharmacotherapy Scholars Program ARCO

The purpose of the Area of Concentration - Pharmacotherapy Scholars Program (ARCO-PT) is to prepare pharmacy students to become highly proficient patient care providers and for a successful transition into competitive post-graduate residency training programs.

ARCO-PT Academic Requirements

The ARCO-PT consists of six (6) credits of approved elective classroom-based courses, four Advanced Pharmacy Practice Experiences (APPEs), and an approved project conducted under the guidance of an advisor. A minimum of 16 credits of coursework and rotations in the ARCO-PT are required. It does not require the student to take additional credits, but rather is a way for students to concentrate their classroom and experiential learning experiences in a focused way to meet the intent of the area of concentration.

Choose six credits from pre-approved courses inside and outside of the School of Pharmacy:

- PHARM 5813 - ACUTE CARE PHARMACOTHERAPY SIMULATION
- PHARM 5830 - DISCOVERING SCIENTIFIC INQUIRY (DSI)

AND minimum 1 credit of additional pre-approved courses inside or outside the School of Pharmacy accepted on a case-by-case basis with prior approval of the oversight group, the course instructor, and the School of Pharmacy Curriculum Committee

Doctor of Pharmacy - Pharmacy Business Administration ARCO

The purpose of the Area of Concentration in Pharmacy Business Administration (ARCO-PBA) is to allow students to pursue an area of emphasis within management consistent with their professional interests and expose students to an area of pharmacy practice that may best suit their interests. Student leaders and informal organizers may discover that pharmacy leadership provides an energizing career path.

ARCO-PBA Academic Requirements

The ARCO-PBA consists of six (6) credits of approved elective classroom-based courses, four Advanced Pharmacy Practice Experiences (APPEs), and an approved project conducted under the guidance of an advisor. A minimum of 16 credits of coursework and rotations in the ARCO-PBA are required. It does not require the student to take additional credits, but rather is a way for students to concentrate their classroom and experiential learning experiences in a focused way to meet the intent of the area of concentration.

Choose six credits from pre-approved courses inside and outside of the School of Pharmacy:

- BCHS 2558 - HEALTH PROGRAM EVALUATION
- PHARM 5815 - CONCEPTS OF MANAGED CARE PHARMACY

OR Additional courses inside or outside the School of Pharmacy may also be accepted on a case-by-case basis with prior approval of the oversight group, the course instructor, and the School of Pharmacy Curriculum Committee

Doctor of Pharmacy - Research ARCO

The purpose of the Area of Concentration in Research (ARCO-RES) in the University of Pittsburgh School of Pharmacy Doctor of Pharmacy (PharmD) program is to provide students exposure to research fundamentals, cultivate an appreciation for clinical and translational research, and to help position students as highly competitive candidates for formal post-PharmD research education and training.

ARCO-RES Academic Requirements

The ARCO-RES consists of six (6) credits of approved elective classroom-based courses, four Advanced Pharmacy Practice Experiences (APPEs), and an approved project conducted under the guidance of an advisor. A minimum of 16 credits of coursework and rotations in the ARCO-RES are required. It does not require the student to take additional credits, but rather is a way for students to concentrate their classroom and experiential learning experiences in a focused way to meet the intent of the area of concentration.

Choose six credits from pre-approved courses inside and outside of the School of Pharmacy:

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 2003 - PHARMACOEPIDEMIOLOGY
- PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3034 - TOPICS IN TRANSLATIONAL RESEARCH
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3068 - COMPUTATIONAL SYSTEMS PHARMACOLOGY
- PHARM 3069 - PHARMACOMETRICS
- PHARM 3072 - TOPICS IN PHARMACOKINETICS/PHARMACODYNAMICS JOURNAL CLUB
- PHARM 5819 - COMMUNITY LEADERSHIP INNOVATION & PRACTICE (CLIP)

OR Additional courses inside or outside the School of Pharmacy may also be accepted on a case-by-case basis with prior approval of the oversight group, the course instructor, and the School of Pharmacy Curriculum Committee

Doctoral

Pharmaceutical Sciences - Biochemical Pharmacology Track, PhD

The biochemical pharmacology track focuses on the biochemical mechanisms responsible for drug and other xenobiotic, and gene actions on living systems, both healthy and compromised.

- You will have the opportunity to study with faculty in multiple areas including behavioral, cardiovascular and endocrine pharmacology, neuropharmacology, immunopharmacology, chemotherapy, toxicology, and metabolic diseases.
- Your research opportunities include studying the biochemical mechanism of drugs and genes in cell cultures and/or healthy and compromised animal models.
- You will have the opportunity to create and/or use genetically engineered animals that include transgenic and knockout mice, as well as to integrate disease models into the animal models in order to study the gene function in diseases.
- You will develop a broad knowledge of the regulation of drug metabolizing enzymes and transporters and the implications of this regulation in drug metabolism.

PhD Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY

  A minimum of four credits of focus area (track) approved journal clubs.

  A minimum of forty-five credits of focus area (track) approved electives including but not limited to PHARM 3042 (Research Practicum)
- FTDQ 0000 - FULL-TIME DISSERTATION STUDY

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Pertaining to Doctoral Degrees for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php

Pharmaceutical Sciences - Clinical Pharmaceutical Scientist Track, PhD

The Clinical Pharmaceutical Scientist Program is a specialty track/program in which students with expertise in pharmacotherapeutics investigate both the clinical and mechanistic elements of drug therapy issues.

- You will learn experimental design, experimental methods, data analysis, and data interpretation of human-based research projects.
- You will study how research discoveries are translated into practices that promote health and prevent disease.
- You will learn the process required to implement new therapies as standards of care through human-based research projects.

The specific course sequence is determined based on whether students have a previous professional clinical degree (e.g., PharmD or other degree in the health sciences).

PHARM CPS Previous Clinical Degree

- CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH
- CLRES 2010 - CLINICAL RESEARCH METHODS
- CLRES 2021 - REGRESSION AND ANOVA
- CLRES 2022 - LOGISTIC REGRESSION
- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3002 - ADVANCED PHARMACOKINETICS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3039 - ESSENTIALS COMPETITIVE GRANT WRITING 2
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES

  A minimum of four credits of focus area (track) approved journal clubs.

  A minimum of thirty-nine credits of focus area (track) approved electives including but not limited to PHARM 3042 (Research Practicum)
- FTDQ 0000 - FULL-TIME DISSERTATION STUDY

PHARM CPS No Previous Clinical Degree

In addition to above, students entering the program without a clinical degree will also be required to take PHARM 3067 (Clinical Pharmacy Environments) and PHARM 5218 (Pharmacokinetics & Drug Response) in place of 5.5 credits of electives/research practicum.

PhD Comprehensive Exam and Dissertation

Requirements:

Students must complete a minimum of 72 credit hours to fulfill the requirements for the PhD. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and dissertation research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Governing Graduate Study for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php.

Pharmaceutical Sciences - Medicinal Chemistry Track, PhD

The medicinal chemistry track encompasses drug discovery and prepares you with the means to study the behavior of chemical substances at the molecular level.

- You will use computational, biochemical and cell-based screening technologies to identify natural and synthetic compounds with pharmacological activity.
- You will study structure-activity relationships to understand the mechanisms of drug action.
- Your research will be directed towards the identification, synthesis and development of new chemical molecules suitable for biological studies and eventually therapeutic use.

PhD Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY

  A minimum of four credits of focus area (track) approved journal clubs.

  A minimum of forty-five credits of focus area (track) approved electives including but not limited to PHARM 3042 (Research Practicum)
- FTDQ 0000 - FULL-TIME DISSERTATION STUDY

PhD Comprehensive Exam and Dissertation

Requirements:

Students must complete a minimum of 72 credit hours to fulfill the requirements for the PhD. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and dissertation research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Governing Graduate Study for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php.

Pharmaceutical Sciences - Pharmaceutical Outcomes and Policy Research Track, PhD

Pharmaceutical Outcomes and Policy Research (POPR) is a specialty track/program in Pharmaceutical Sciences. The POPR track will train students to investigate the impact and outcomes of pharmaceutical products, pharmacy services, and pharmaceutical policies across health care systems. The core mission of POPR is the advancement of knowledge about the safety and effectiveness of medicines, and pharmacy's role in improving population health. POPR students most often focus on patient-centered outcomes such as access, safety, quality of care, costs, and patient-reported health. Graduates will be trained to work in a broad range of settings, including: academia; pharmaceutical industry; government organizations such as FDA, AHRQ, NIH; contract research organizations; and health care systems

- You will learn epidemiological study designs, data management, data analysis, and data interpretation.
- You will develop strong quantitative methodological skills in pharmaceutical outcomes and health services research.
- You will apply social/behavioral theory to the study of patient, provider, and organizational behaviors as it relates to pharmaceuticals and pharmacy practice.
- You will learn how pharmaceutical outcomes research is used to inform clinical practice and guide health policy decisions.

PhD Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY

  A minimum of four credits of focus area (track) approved journal clubs.

  A minimum of forty-five credits of focus area (track) approved electives including but not limited to PHARM 3042 (Research Practicum)
- FTDQ 0000 - FULL-TIME DISSERTATION STUDY

PhD Comprehensive Exam and Dissertation

Requirements:

Students must complete a minimum of 72 credit hours to fulfill the requirements for the PhD. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit

requirements are completed through elective courses and dissertation research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Governing Graduate Study for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php.

Pharmaceutical Sciences - Pharmaceutics Track, PhD

The pharmaceutics track is concentrated on the study of the design of pharmaceutical dosage forms and their interaction with the human body. Topics included are physical pharmacy, bioanalysis, drug delivery and targeting, drug metabolism, drug transport, pharmacokinetics and pharmacodynamics.

- You will develop a thorough understanding of how to apply principles of physical pharmacy to dosage form design and optimization of drug product performance.
- You will develop the fundamentals required for design of both traditional and complex state-of-the-art drug delivery systems and skills essential for the advancement of targeted drug therapies using small molecules, proteins, peptides and other biomolecules, probiotics, and tissue engineered platforms.
- You will gain knowledge of the human body and the interaction of medications with the human body including metabolism, pharmacokinetics and pharmacodynamics.
- Your research opportunities include formulation of dosage forms, development of novel delivery systems and development of complex new therapies for site specific action, establishing novel markers for disease, study of metabolic pathways, development of bioanalytical techniques, and evaluation of absorption, distribution, and elimination of drug substances and their regulation.

PhD Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY

A minimum of four credits of focus area (track) approved journal clubs.

A minimum of forty-five credits of focus area (track) approved electives including but not limited to PHARM 3042 (Research Practicum)

- FTDQ 0000 - FULL-TIME DISSERTATION STUDY

PhD Comprehensive Exam and Dissertation

Requirements:

Students must complete a minimum of 72 credit hours to fulfill the requirements for the PhD. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and dissertation research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Governing Graduate Study for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php.

Pharmaceutical Sciences - Pharmacometrics and Systems Pharmacology Track, PhD

The Pharmacometrics and Systems Pharmacology (PSP) is an interdisciplinary science to study drug actions and rational development of new drugs through network analysis, multitype-multiscale modeling and simulations "**mechanism-driven**", as well as data analysis "**data-driven**". The PSP track focuses on applying Pharmacometrics and System Pharmacology techniques to facilitate the development of novel drug candidates that are less likely to fail during clinical trials and to provide a better understanding of drug mechanisms of action and therapeutic effects at the systems pharmacology level.

- You will develop a broad knowledge of pharmacometrics and systems pharmacology to develop drug candidates that are less likely to fail during clinical trials.
- You will develop strong computational modeling and simulation expertise from drug target fishing, to drug lead identification, to drug profile optimization.
- You will develop strong computational expertise on pharmacokinetics (PK) and pharmacodynamics (PD) modeling and simulation.
- You will develop skills on multiscale modeling of biological processes at the molecular, gene, organ and organism levels.
- Your will have opportunities to study with faculty from a variety of background including computer-aided drug design, computational and systems biology/pharmacology, population PK/PD modeling, computational chemical genomics, computational biophysics, etc.

- Candidates with programming experience, basic/intermediate knowledge in statistics and/or hands-on modeling experience are highly desired.

This program is associated with the Computational Chemical Genomics Screening Center. More about this program track is here.

PhD Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY

  A minimum of four credits of focus area (track) approved journal clubs.

  A minimum of forty-five credits of focus area (track) approved electives including but not limited to PHARM 3042 (Research Practicum)
- FTDQ 0000 - FULL-TIME DISSERTATION STUDY

PhD Comprehensive Exam and Dissertation

Requirements:

Students must complete a minimum of 72 credit hours to fulfill the requirements for the PhD. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and dissertation research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Governing Graduate Study for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php.

Master's

Pharmaceutical Sciences - Biochemical Pharmacology Track, MS

Biochemical Pharmacology

The biochemical pharmacology track focuses on the biochemical mechanisms responsible for drug and other xenobiotic, and gene actions on living systems, both healthy and compromised.

- You will have the opportunity to study with faculty in multiple areas including behavioral, cardiovascular and endocrine pharmacology, neuropharmacology, immunopharmacology, chemotherapy, toxicology, and metabolic diseases.
- Your research opportunities include studying the biochemical mechanism of drugs and genes in cell cultures and/or healthy and compromised animal models.
- You will have the opportunity to create and/or use genetically engineered animals that include transgenic and knockout mice, as well as to integrate disease models into the animal models in order to study the gene function in diseases.
- You will develop a broad knowledge of the regulation of drug metabolizing enzymes and transporters and the implications of this regulation in drug metabolism.

MS Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY
- PHARM 3049 - SCIENTIFIC WRITING SKILLS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES

And pre-approved track electives and minimum of 2 credits of approved journal clubs.

Requirements:

The Thesis-based MS program requires a minimum of 40 credits. The non-thesis MS requires a minimum of 34 credits. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

MS Comprehensive Exam and Thesis

The thesis for the MS must represent an original research project or a comprehensive and detailed survey of some topic of current interest in the pharmaceutical sciences. It must be defended in an oral examination.

- PHARM 2010 - MASTER OF SCIENCE THESIS
- PHARM 2041 - MS THESIS RESEARCH PRACTICUM 1
- PHARM 2042 - MS THESIS RESEARCH PRACTICUM 2
- PHARM 2043 - MS THESIS RESEARCH PRACTICUM 3
- PHARM 2044 - RESEARCH PRACTICUM 4

Pharmaceutical Sciences - Clinical Pharmaceutical Scientist Track, MS

Clinical Pharmaceutical Scientist

The clinical pharmaceutical scientist is a specialty track in which students with expertise in pharmacotherapeutics investigate both the clinical and mechanistic elements of drug therapy issues.

- You will learn experimental design, experimental methods, data analysis, and data interpretation of human-based research projects.
- You will study how research discoveries are translated into practices that promote health and prevent disease.
- You will learn the process required to implement new therapies as standards of care through human-based research projects.

MS Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY
- PHARM 3049 - SCIENTIFIC WRITING SKILLS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES

And pre-approved track electives and minimum of 2 credits of approved journal clubs.

Requirements:

The Thesis-based MS program requires a minimum of 40 credits. The non-thesis MS requires a minimum of 34 credits. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

MS Comprehensive Exam and Thesis

The thesis for the MS must represent an original research project or a comprehensive and detailed survey of some topic of current interest in the pharmaceutical sciences. It must be defended in an oral examination.

- PHARM 2010 - MASTER OF SCIENCE THESIS
- PHARM 2041 - MS THESIS RESEARCH PRACTICUM 1
- PHARM 2042 - MS THESIS RESEARCH PRACTICUM 2
- PHARM 2043 - MS THESIS RESEARCH PRACTICUM 3
- PHARM 2044 - RESEARCH PRACTICUM 4

Pharmaceutical Sciences - Medicinal Chemistry Track, MS

Medicinal Chemistry

The medicinal chemistry track is a complex scientific discipline whose focus is to develop molecules that can impact human health by discovering, designing, synthesizing and characterizing safe and effective agents for disease therapy and diagnosis. The research involves a multidisciplinary approach encompassing chemistry and biology, and includes organic synthesis, protein and nucleic acid chemistry, natural product chemistry, computational chemistry, molecular biology, cell biology, structural biology, pharmacology and proteomics.

- You will learn to design, synthesize and characterize new medicinal agents and enhance the biological activity of existing pharmaceutical agents.
- You will learn to use computational, biophysical, structural biology and cell-based screening technologies to identify natural and synthetic compounds for pharmacological activity and to conduct structure-based drug design.
- You will isolate, characterize, and synthesize compounds based on natural products, as well as target identification for biologically active natural products.

MS Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY
- PHARM 3049 - SCIENTIFIC WRITING SKILLS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES

And pre-approved track electives and minimum of 2 credits of approved journal clubs.

Requirements:

The Thesis-based MS program requires a minimum of 40 credits. The non-thesis MS requires a minimum of 34 credits. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

MS Comprehensive Exam and Thesis

The thesis for the MS must represent an original research project or a comprehensive and detailed survey of some topic of current interest in the pharmaceutical sciences. It must be defended in an oral examination.

- PHARM 2010 - MASTER OF SCIENCE THESIS
- PHARM 2041 - MS THESIS RESEARCH PRACTICUM 1
- PHARM 2042 - MS THESIS RESEARCH PRACTICUM 2
- PHARM 2043 - MS THESIS RESEARCH PRACTICUM 3
- PHARM 2044 - RESEARCH PRACTICUM 4

Pharmaceutical Sciences - Non -Thesis, MS

The School of Pharmacy offers graduate level training to highly motivated individuals.

Why choose the non-research based thesis?

Most students complete the non-thesis MS degree within one calendar year (three semesters). Our MS in Pharmaceutical Sciences attracts students interested in drug discovery, delivery, and metabolism in addition to pharmacology, pharmacokinetics, and pharmacodynamics. Graduating with the MS in Pharmaceutical Sciences will prepare you for employment in pharmaceutical manufacturing plants and labs. Pharmaceutically-trained professionals are involved in biotechnology, research, synthesizing and testing new compounds, in marketing and sales of pharmaceuticals and biomedical devices, and in pharmaceutical benefit management. Some areas where graduates with degrees in Pharmaceutical Sciences are sought after are Cosmetic Science, Industrial Pharmacy, and University-based laboratory areas.

MS Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY
- PHARM 3049 - SCIENTIFIC WRITING SKILLS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES

And pre-approved track electives and minimum of 2 credits of approved journal clubs.

Requirements:

The Thesis-based MS program requires a minimum of 40 credits. The non-thesis MS requires a minimum of 34 credits. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

MS Comprehensive Exam and Thesis

The thesis for the MS must represent an original research project or a comprehensive and detailed survey of some topic of current interest in the pharmaceutical sciences. It must be defended in an oral examination.

- PHARM 2010 - MASTER OF SCIENCE THESIS
- PHARM 2041 - MS THESIS RESEARCH PRACTICUM 1
- PHARM 2042 - MS THESIS RESEARCH PRACTICUM 2
- PHARM 2043 - MS THESIS RESEARCH PRACTICUM 3
- PHARM 2044 - RESEARCH PRACTICUM 4

Pharmaceutical Sciences - Pharmaceutical Outcomes and Policy Research Track, MS

Pharmaceutical Outcomes and Policy Research (POPR) is a specialty track/program in Pharmaceutical Sciences. The POPR track will train students to investigate the impact and outcomes of pharmaceutical products, pharmacy services, and pharmaceutical policies across health care systems. The core mission of POPR is the advancement of knowledge about the safety and effectiveness of medicines, and pharmacy's role in improving population health. POPR students most often focus on patient-centered outcomes such as access, safety, quality of care, costs, and patient-reported health. Graduates will be trained to work in a broad range of settings, including: academia; pharmaceutical industry; government organizations such as FDA, AHRQ, NIH; contract research organizations; and health care systems

- You will learn epidemiological study designs, data management, data analysis, and data interpretation.
- You will develop strong quantitative methodological skills in pharmaceutical outcomes and health services research.
- You will apply social/behavioral theory to the study of patient, provider, and organizational behaviors as it relates to pharmaceuticals and pharmacy practice.
- You will learn how pharmaceutical outcomes research is used to inform clinical practice and guide health policy decisions.

MS Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY
- PHARM 3049 - SCIENTIFIC WRITING SKILLS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES

And pre-approved track electives and minimum of 2 credits of approved journal clubs.

Requirements:

The Thesis-based MS program requires a minimum of 40 credits. The non-thesis MS requires a minimum of 34 credits. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

MS Comprehensive Exam and Thesis

The thesis for the MS must represent an original research project or a comprehensive and detailed survey of some topic of current interest in the pharmaceutical sciences. It must be defended in an oral examination.

- PHARM 2010 - MASTER OF SCIENCE THESIS
- PHARM 2041 - MS THESIS RESEARCH PRACTICUM 1
- PHARM 2042 - MS THESIS RESEARCH PRACTICUM 2
- PHARM 2043 - MS THESIS RESEARCH PRACTICUM 3
- PHARM 2044 - RESEARCH PRACTICUM 4

Pharmaceutical Sciences - Pharmaceutics Track, MS

Pharmaceutics

The pharmaceutics track is concentrated on the study of the design of pharmaceutical dosage forms and their interaction with the human body. Topics included are physical pharmacy, bioanalysis, drug delivery and targeting, drug metabolism, drug transport. pharmacokinetics and pharmacodynamics.

- You will develop a thorough understanding of how to apply principles of physical pharmacy to dosage form design and optimization of drug product performance.
- You will develop the fundamentals required for design of both traditional and complex state-ofthe-art drug delivery systems and skills essential for the advancement of targeted drug therapies using small molecules, proteins, peptides and other biomolecules, probiotics, and tissue engineered platforms.
- You will gain knowledge of the human body and the interaction of medications with the human body including metabolism, pharmacokinetics and pharmacodynamics.
- Your research opportunities include formulation of dosage forms, development of novel delivery systems and development of complex new therapies for site specific action, establishing novel markers for disease, study of metabolic pathways, development of bioanalytical techniques, and evaluation of absorption, distribution, and elimination of drug substances and their regulation.

MS Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY
- PHARM 3049 - SCIENTIFIC WRITING SKILLS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES

And pre-approved track electives and minimum of 2 credits of approved journal clubs.

Requirements:

The Thesis-based MS program requires a minimum of 40 credits. The non-thesis MS requires a minimum of 34 credits. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and

thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

MS Comprehensive Exam and Thesis

The thesis for the MS must represent an original research project or a comprehensive and detailed survey of some topic of current interest in the pharmaceutical sciences. It must be defended in an oral examination.

- PHARM 2010 - MASTER OF SCIENCE THESIS
- PHARM 2041 - MS THESIS RESEARCH PRACTICUM 1
- PHARM 2042 - MS THESIS RESEARCH PRACTICUM 2
- PHARM 2043 - MS THESIS RESEARCH PRACTICUM 3
- PHARM 2044 - RESEARCH PRACTICUM 4

Pharmaceutical Sciences - Pharmacometrics and Systems Pharmacology Track, MS

The Pharmacometrics and Systems Pharmacology (PSP) is an interdisciplinary science to study drug actions and rational development of new drugs through network analysis, multitype-multiscale modeling and simulations "**mechanism-driven**", as well as data analysis "**data-driven**". The PSP track focuses on applying Pharmacometrics and System Pharmacology techniques to facilitate the development of novel drug candidates that are less likely to fail during clinical trials and to provide a better understanding of drug mechanisms of action and therapeutic effects at the systems pharmacology level.

- You will develop a broad knowledge of pharmacometrics and systems pharmacology to develop drug candidates that are less likely to fail during clinical trials.
- You will develop strong computational modeling and simulation expertise from drug target fishing, to drug lead identification, to drug profile optimization.
- You will develop strong computational expertise on pharmacokinetics (PK) and pharmacodynamics (PD) modeling and simulation.
- You will develop skills on multiscale modeling of biological processes at the molecular, gene, organ and organism levels.
- Your will have opportunities to study with faculty from a variety of background including computer-aided drug design, computational and systems biology/pharmacology, population PK/PD modeling, computational chemical genomics, computational biophysics, etc.
- Candidates with programming experience, basic/intermediate knowledge in statistics and/or hands-on modeling experience are highly desired.

This program is associated with the Computational Chemical Genomics Screening Center. More about this program track is here.

MS Core Curriculum

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY
- PHARM 3049 - SCIENTIFIC WRITING SKILLS
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES

And pre-approved track electives and minimum of 2 credits of approved journal clubs.

Requirements:

The Thesis-based MS program requires a minimum of 40 credits. The non-thesis MS requires a minimum of 34 credits. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and

thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

MS Comprehensive Exam and Thesis

The thesis for the MS must represent an original research project or a comprehensive and detailed survey of some topic of current interest in the pharmaceutical sciences. It must be defended in an oral examination.

- PHARM 2010 - MASTER OF SCIENCE THESIS
- PHARM 2041 - MS THESIS RESEARCH PRACTICUM 1
- PHARM 2042 - MS THESIS RESEARCH PRACTICUM 2
- PHARM 2043 - MS THESIS RESEARCH PRACTICUM 3
- PHARM 2044 - RESEARCH PRACTICUM 4

Pharmaceutical Sciences, MS (thesis-based)

MS in Pharmaceutical Sciences

The School of Pharmacy offers graduate level training to highly motivated individuals. Our mission is to prepare students to be scientists, leaders, and innovators who think critically, solve complex problems, and advance science and health care. Major strengths include highly accomplished, well-funded research faculty, multidisciplinary training opportunities, and cutting-edge technologies.

Training consists of required core courses, elective courses, journal clubs, research presentations, and an original faculty-advised research project leading to a final thesis or dissertation. Students may select to enroll in six focus areas (tracks): 1) Medicinal chemistry, 2) Biochemical Pharmacology, 3) Pharmaceutics, 4) Clinical Pharmaceutical Sciences, 5) Pharmacometrics and Systems Pharmacology (PSP), and 6) Pharmaceutical Outcomes Policy and Research.

Contact Information

Lori Altenbaugh
Graduate Program Coordinator
University of Pittsburgh
School of Pharmacy
3501 Terrace St
5016 Salk Hall
Pittsburgh, PA 15261
412-648-1014
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Length of Programs

The MS (thesis-based) program requires a minimum of 40 credits. Most students complete the MS degree in two academic years. The non-thesis MS program requires a minimum of 34 credits and is usually completed within one calendar year (three semesters).

Academic Standards

School of Pharmacy students are responsible for upholding the standards of behavior outlined in the University's Guidelines on Academic Integrity, the University's policy on sexual harassment, and other policies related to student behavior.

Required Courses

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 2010 - MASTER OF SCIENCE THESIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3042 - RESEARCH PRACTICUM
- PHARM 3049 - SCIENTIFIC WRITING SKILLS
- PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY
- PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES
- PHARM 3XXX - Journal Club (2 credits)
- PHARM - Track-Specific - Electives (1-16 credits)

PharmacoAnalytics - Pharmaceutical Outcomes Research, MS

The School of Pharmacy offers graduate level training to highly motivated individuals. Our mission is to train the next generation of leaders and decision makers seeking to improve the health of the community through outstanding basic and clinical research. Major strengths include highly accomplished, well-funded research faculty, multidisciplinary training opportunities, and cutting-edge technologies.

This MS degree offers healthcare professionals an opportunity to bring data science to the real-world databases with emphasis on using pharmacoanalytic applications. Students will utilize data and technology to enhance pharmaceutical use, operations, and outcomes that drive better quality patient care while also providing pharmacists with the tools and knowledge necessary to analyze trends from large data sets and then interpret these trends in a way that allows them to improve their daily practice. Students will be competent with identifying big data sources, managing data, determining pharmacoepidemiologic observational study designs, data interpretation. Students will apply various data analytic techniques using statistical and analytic software to inform decision-making processes in the pharmacy practice that is driven by patient-centerd outcome assessments.

Knowledge of data manipulation in some platform (STATA, SAS, Python, R, Tableau); secondary data sources, methods and tools are preferred prior to enrollment.

Core Courses PharmacoAnalytics

Core Courses PharmacoAnalytics (19.5 credits)

- PHARM 2003 - PHARMACOEPIDEMIOLOGY
- PHARM 3040 - STATISTICAL METHODS
- PHARM 3045 - ADVANCED STATISTICAL METHODS
- PHARM 3049 - SCIENTIFIC WRITING SKILLS
- PHARM 3301 - SECONDARY DATABASE APPLICATIONS
- PHARM 3302 - CONDUCTING RESEARCH WITH LARGE BIOMEDICAL DATABASES
- PHARM 3304 - RESEARCH METHODS FOR PHARMACEUTICAL PRACTICE AND POLICY
- PHARM 3306 - INTRODUCTION TO THE UNITED STATES HEALTHCARE SYSTEM AND PHARMACEUTICALS
- PHARM 3308 - DATA PRIVACY AND SECURITY
- PHARM 3310 - SECONDARY DATA SOURCES, METHODS AND TOOLS
- PHARM 3312 - COMMUNICATING DATA
- PHARM 3303 - TOPICS AND METHODS FOR SECONDARY DATABASE EVALUATIONS
- PHARM 3052 - TOPICS AND METHODS IN PHARMACEUTICAL OUTCOMES AND POLICY RESEARCH

Electives

Choose Electives (minimum 10.5 credits)

- PHARM 3042 - RESEARCH PRACTICUM

- PHARM 3073 - APPLIED MULTIVARIATE STATISTICAL ANALYSIS IN PHARMACEUTICAL SCIENCES
- PHARM 3300 - CONCEPTS IN PHARMACOECONOMIC AND OUTCOME EVALUATIONS IN HEALTH AND MEDICINE

Professional

Doctor of Pharmacy, PharmD

Doctor of Pharmacy (PharmD) Program

The professional curriculum is composed of a course of study requiring sixty-two (62) credits of pre-professional study followed by four years of professional courses. The four-year professional curriculum blends active learning in large group classrooms, small group team-based activities, and laboratories with "hands on" experiential learning in diverse practice settings.

Experiential Learning is a foundation of the curriculum, beginning within the first weeks of the first professional (P1) year and sequentially building practice experiences and culminating in eight "full-time" five-week advanced practice experiences in the fourth professional (P4) year. Students progress from early stages of meaningful connections with patients to caring for complex patients with acute and chronic diseases. Practice activities occur in communities, in hospitals and health care settings, and in many unique learning environments that encourage students to personalize their professional development towards career goals.

Program Accreditation

The University of Pittsburgh School of Pharmacy's Doctor of Pharmacy program is accredited by the Accreditation Council for Pharmacy Education, 190 South LaSalle Street, Suite 3000, Chicago, IL 60603-3446, 312/664-3575; FAX 866/228-2631, web site www.acpe-accredit.org.

The University of Pittsburgh Doctor of Pharmacy program received ACPE accreditation status for 8 years, the maximum period allowable, through June 30, 2033.

Pre-Professional Requirements

Applicants to the professional pharmacy program must have successfully completed, or be in the process of completing, all prerequisite mathematics and science subjects no later than the spring term of the year of admission. All other pre-professional courses should be completed no later than the first day of the fall term of admission. Pre-professional courses must be taken for a letter grade.

Pre-Professional Courses:

- General Biology (with lab) - 8 credits
- General Chemistry (with lab) - 8 credits
- Organic Chemistry (with lab) - 8 credits
- English Composition - 6 credits
- Calculus - 3-4 credits
- Statistics - 3-4 credits
- Elective courses+ - 24 credits

Total: 60-62 credits

+At least 9 credits must be in the humanities and 9 credits in the social sciences. A course in Public Speaking is recommended.

Non-native English-speaking applicants must supply evidence of their proficiency in the English language.

Degree Requirements

To earn the degree of Doctor of Pharmacy, the student must demonstrate satisfactory achievement in required course work prescribed by the curriculum (*detailed below under Program Description*), earning an overall GPA of 2.00 or higher. Refer to the school's Student Handbook for the guidelines for academic progress.

Program Description

The professional curriculum leads to the Doctor of Pharmacy (PharmD) degree and requires completion of 134.5 credits (note: this curriculum is subject to change):

Fall Term-First Professional Year (P-1)

- PHARM 5110 - PHARMACIST PATIENT CARE 1: PROCESS AND SKILLS
- PHARM 5114 - ANATOMY AND PHYSIOLOGY 1
- PHARM 5120 - THE EMERGING PROFESSIONAL
- PHARM 5122 - CASE CONFERENCE SERIES 1
- PHARM 5124 - BIOCHEMISTRY 1: FUNDAMENTALS
- PHARM 5126 - DOSAGE FORM DESIGN AND DELIVERY
- PHARM 5128 - WHOLE PERSON PHARMACY CARE 1: EXPLORING COMMUNITY, CULTURAL & SOCIAL DETERMINANTS OF HEALTH

Total: 16 credits

Spring Term-First Professional Year (P-1)

- PHARM 5111 - PHARMACIST PATIENT CARE 2: SKILLS AND ENVIRONMENTS
- PHARM 5115 - ANATOMY AND PHYSIOLOGY 2
- PHARM 5121 - CASE CONFERENCE SERIES 2
- PHARM 5125 - BIOCHEMISTRY 2: DNA, PHARMACOGENOMICS & BIOTECHNOLOGY
- PHARM 5127 - PRINCIPLES OF DRUG ACTION
- PHARM 5129 - WHOLE PERSON PHARMACY CARE 2: EXPLORING POPULATION AND STRUCTURAL DETERMINANTS OF HEALTH
- PHARM 5133 - PROFESSIONAL AND CAREER DEVELOPMENT 1

Total: 16 credits

Fall Term-Second Professional Year (P-2)

- PHARM 5210 - NONPRESCRIPTION THERAPIES AND SELF-CARE PRACTICE
- PHARM 5212 - COMMUNITY PHARMACIST PRACTICE 1: PATIENT-CENTERED CARE AND SILVER SCRIPTS
- PHARM 5216 - PHARMACOTHERAPY OF CARDIOVASCULAR DISEASE
- PHARM 5218 - PHARMACOKINETICS AND DRUG RESPONSE
- PHARM 5220 - CASE CONFERENCE SERIES 3
- PHARM 5222 - FUNDAMENTALS OF IMMUNOLOGY

Total: 15 credits

Spring Term-Second Professional Year (P-2)

- PHARM 5211 - DRUG LITERATURE ANALYSIS AND EVALUATION
- PHARM 5213 - COMMUNITY PHARMACIST PRACTICE 2: MEDICATION THERAPY MANAGEMENT- IMMERSION IN PRACTICE
- PHARM 5223 - GASTROENTEROLOGY/NUTRITION
- PHARM 5227 - CASE CONFERENCE SERIES 4
- PHARM 5229 - FUNDAMENTALS OF NEPHROLOGY/PULMONOLOGY
- PHARM 5231 - PHARMACOTHERAPY OF INFECTIOUS DISEASE 1: COMMUNITY-BASED
- PHARM 5233 - PROFESSIONAL AND CAREER DEVELOPMENT 2
- PHARM 5235 - DRUG DISCOVERY AND DEVELOPMENT

Total: 15.5 credits

Fall Term-Third Professional Year (P-3)

- PHARM 5318 - ENDOCRINOLOGY
- PHARM 5320 - POPULATION HEALTH AND MANAGEMENT
- PHARM 5322 - PHARMACY LAW
- PHARM 5324 - CASE CONFERENCE SERIES 5
- PHARM 5328 - ADVANCED THERAPEUTICS: IMMUNOLOGY
- PHARM 5330 - HEALTH SYSTEM PHARMACY 1: OPERATIONS AND DISPENSING
- PHARM 5332 - PHARMACOTHERAPY OF INFECTIOUS DISEASE 2: HEALTH-SYSTEMS-BASED
- PHARM - Professional Elective - 3 credits

Total: 16.5 credits

Spring Term-Third Professional Year (P-3)

- PHARM 5311 - SAFE MEDICATION USE AND PHARMAECONOMICS
- PHARM 5315 - ONCOLOGY/HEMATOLOGY
- PHARM 5321 - CRITICAL CARE AND ADVANCED NEPHROLOGY
- PHARM 5323 - CASE CONFERENCE SERIES 6
- PHARM 5325 - NEUROLOGY/PSYCHIATRY
- PHARM 5331 - HEALTH SYSTEM PHARMACY 2: ADVANCED PRACTICE & MANAGEMENT
- PHARM 5333 - PROFESSIONAL AND CAREER DEVELOPMENT 3
- PHARM - Professional Electives - 3 credits

Total: 15.5 credits

Fourth Professional Year (P-4)

Spans 3 semesters (SUMMER, FALL, SPRING) with several options for credits earned per semester, for a total of 40 weeks

- PHARM 5401 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 1
- PHARM 5402 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 2
- PHARM 5403 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 3
- PHARM 5404 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 4
- PHARM 5405 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 5
- PHARM 5406 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 6
- PHARM 5407 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 7
- PHARM 5408 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 8

Total: 40 credits

Total Professional Credits: 134.5 credits

School of Public and International Affairs

School of Public and International Affairs

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- Admissions
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The mission of the University of Pittsburgh School of Public and International Affairs (SPIA) is to prepare students to make significant contributions to society through leadership in public service in government, nonprofit organizations, or the private sector. We accomplish this mission through quality teaching, rigorous research, and service to communities and constituencies-at the highest standards of ethical and professional conduct-domestically and around the world.

Contact Information

Recuitment & Admissions Office
Suite 3601 Posvar Hall
412-648-7640
E-mail: spia@pitt.edu
www.spia.pitt.edu

Admissions

SPIA admits persons who have demonstrated intellectual competence and high motivation in an academic and/or professional environment and who will enrich the quality of life in the school. Individuals from varied cultural, academic, and social backgrounds provide an exciting frame of reference for the stimulating exchanges so vital to a dynamic academic process. The following are required of all Master applicants: transcripts, application and fee, TOEFL, Duolingo or IELTS score (if international), letters of recommendation, essays, and resume.

You can begin any of our master's degree programs (MPA, MID, or MPIA) in either the fall or spring terms. Applications to the PhD program are for the fall term only. Applications to the mid-career master's degree (MPPM) and non-degree programs are accepted for the fall, spring, or summer terms.

Admission Prerequisites

It is desirable, but not mandatory, that PhD applicants have an earned a master's degree in public and international affairs or a degree in one of the social sciences and work experience prior to undertaking doctoral study.

Admission Requirements

All applicants must have earned a bachelor's degree from a regionally accredited U.S. institution or a degree that is equivalent to a four-year U.S. bachelor's degree. Applicants are expected to have a B+ or better average (3.0 GPA) in their work to date. To be competitive for

merit scholarships, applicants normally need at least a 3.5 GPA. The admissions committee also takes into consideration GPA within the major, GPA within the last two years, extenuating circumstances, length of time since graduation from college, rigor of the undergraduate program, and other factors.

Doctoral applicants are only eligible for admission to full-time status in the Fall Term.

Application Requirements

Online Application

Complete and submit the online application in its entirety. All application materials can be submitted electronically using the online system, with the exception of official academic transcripts.

Application Fee

The non-refundable application fee may be paid by credit card. You will be prompted to pay the fee at the end of the online application process. The application fee is waived for Returned Peace Corps Volunteers, AmeriCorps Volunteers, Truman Scholars, Pickering Fellows, Coro Fellows, Rangel Fellows, McNair Fellows, Teach for America alumni, City Year alumni, Payne Fellows, Catholic Volunteer Network alumni, and veterans/active duty members of the US Armed Forces.

TOEFL, IELTS, or Duolingo English Language Test Scores (International Applications Only)

International applicants must submit a score from one of three possible English tests: the TOEFL, the IELTS, or the Duolingo English Test.

Score reports must be sent directly from the testing agency to SPIA. SPIA's institutional code for TOEFL score reports is 2574.

Effective January 21, 2026, the University of Pittsburgh, the minimum TOEFL score of 80 will shift to a minimum score of 4.0 (CEFR B2) with all subscores also at 4.0 or higher. An overall score of 4.0 on the new scale corresponds to previous scores in the 72-85 range. Requiring all subscores to meet the 4.0 threshold ensures that applicants demonstrate proficiency in each language skill at the CEFR B2 level. The minimum Duolingo English Test score required for admission is 120.

Exceptions: International students who have completed a degree at a regionally accredited college or university in the United States are not required to submit a TOEFL, IELTS, or Duolingo English Test score. International students who are citizens of certain English-speaking countries are also exempt.

GRE or GMAT scores

For all of our master's programs, GRE or GMAT scores are optional and not required for admission. If you're applying to the MPA, MPIA, MID, or PhD program, you may choose to submit scores from one of these tests as supplemental material, if you feel that they show evidence of your abilities beyond what the rest of your application reflects.

If you're applying to the mid-career MPPM program (online or on campus) or the non-degree program, you should not submit GRE or GMAT scores. Supplemental materials submitted to those programs will not be reviewed.

If you are submitting test scores, you must order an official score report, sent directly from the testing agency to us. (GRE reports can be ordered at www.gre.org; GMAT reports can be ordered at www.mba.com.) Copies of your own score report are not acceptable. Our institutional code for the GRE is 2574.

Résumé

All applicants should upload a current résumé/curriculum vitae, showing relevant awards, academic achievements, full- and part-time job experience, internships, and volunteer work.

Personal Essay - (Master & PhD applicants)

Fall PhD Applicants:
For doctoral applicants, identify the broad topic and research questions you envision as the focus of your doctoral dissertation research. Explain the importance of your research questions and identify the SPIA faculty member with whom you'd like to work. There is a limit of 5,000 characters (approximately two double-spaced, typed pages).

Master's Applicants:

Use your essay to introduce yourself to the admissions committee. Share your professional goals and explain why a SPIA degree can help you achieve them. In your response, address:
1. The motivation behind your interest in public and international affairs.
2. The unique skills, perspectives, and problem-solving approaches you would contribute to our community.
3. The aspects of SPIA's programs, faculty, resources, or opportunities that are most compelling to you.

Essay Tip: Include at least one specific example from your academic, professional, or volunteer experience that demonstrates how you have approached a complex challenge, contributed to a team, or advanced an initiative. Be as detailed and personal as possible-avoid using generic or pre-written responses. There is a limit of 5,000 characters (approximately two double-spaced, typed pages).

Optional Essay (Master's Applicants) and Research Proposal/Writing Sample (PhD Applicants)

Master's Applicants: If there are any special circumstances you would like the admissions committee to consider, highlight them in the optional essay. Use this essay to include information that you feel is important, but that you're unable to include elsewhere on the application. There is no penalty for leaving this blank.

PhD Applicants: As an applicant to the Ph.D. program, you are required to submit an additional essay that discusses your potential dissertation research. Describe the idea and why it is important. Further, discuss the main questions to be investigated and the types of evidence that would be needed to support conclusions. Finally, identify the SPIA faculty with whom you would like to work. There is a 5,000 character limit (approximately two double-spaced, typed pages). PhD Applicants are also asked to upload a single-authored writing sample in English that is 25 pages or less. The writing sample does not need to be a published paper but should demonstrate academic or professional research.

Academic Transcripts

When completing the online application, you will be asked to upload unofficial transcripts from all colleges and universities you have attended, whether or not you earned a degree. Unofficial transcripts must clearly display your name, the institution's name, courses taken, grades received, and (if applicable) your degree in progress.

Hard copies are not required at the time of application as long as your unofficial transcripts are uploaded successfully.

If you are admitted, you will be required to submit a final, official transcript, showing your conferred degree, sent directly from your institution's registrar to the School of Public and International Affairs. The official copy must match the academic records you submitted during the application process.

If you do not have access to technology that allows you to upload an unofficial transcript, you may request that your institution send an official transcript by mail directly to: School of Public and International Affairs, 3601 Posvar Hall, Pittsburgh, PA 15260.

Two Letters of Recommendation

Letters should be written by professors who have taught you or supervisors who have overseen your work, either professionally or in a volunteer capacity. If you graduated from college less than three years ago, at least one, if not both, of your letters should be from professors. Letters written by friends, family members, work colleagues, or anyone who has not taught or supervised you are not acceptable.

All letters must be submitted online. When you complete the online application, you will be prompted to enter the names and email addresses of your recommenders. The system will automatically send them an email explaining how they can upload their letters.

Admission Deadlines: Fall Term

US Citizens/Permanent Residents:

- MPA, MPIA, MID (First Priority) - February 1
- MPA, MPIA, MID (Second Priority) - April 15
- MPA, MPIA, MID (Third Priority) - June 1
- MPPM - June 1
- Non-degree - August 1
- PhD - January 15

International Students:

- All applications - January 15

Application Deadlines: Spring Term

US Citizens/Permanent Residents:

- MPA, MPIA, MID, MPPM - November 1
- Non-degree - December 1

International Students:

- MPA, MPIA, MID, MPPM - August 1

Application Deadlines: Summer Term

US Citizens/Permanent Residents:

- MPPM - March 1
- Non-degree - April 1

International Students:

- MPPM - January 15

School-Based Funding

Applicants to the Master of International Development, Master of Public Administration, and Master of Public and International Affairs programs are automatically considered for partial tuition scholarships if they apply by the February 1st priority deadline. These scholarships are highly competitive, not guaranteed, and limited to full-time students. There is no separate application required for merit scholarships; decisions are made based on the strength of your application. While full funding is not available for our master's programs, we encourage all applicants to explore external funding opportunities and complete the FAFSA to determine eligibility for federal aid.

For those pursuing the Master of Public Policy and Management program, we offer a 20% tuition discount for specified government employees. Additionally, we partner with a number of organizations to offer specialized scholarships. For details, please visit our Scholarship Partners page.

Admission Information

Application Process
SPIA only accepts online applications. Payment for the application fee can be made by credit card. The application fee, if not waived, is non-refundable; it does not apply toward the payment of tuition.

Tuition Deposit
Once admitted to SPIA, a student is required to submit a US$200 tuition deposit to secure their place in the incoming class. The deposit is applied to the tuition and is non-refundable. Payment can be made by credit card.

Admission Status
Admission to degree programs in the School are competitive and based on the relative strength of all credentials required in support of the application. Admission may be granted or denied only by the dean of the school or his or her designee. However non-immigrant students may be denied visa documents for non-academic reasons by the Office of International Services. Acceptable students are admitted to SPIA with "full", "provisional", or "non-degree" status, depending on their qualifications and objectives. The qualifications described below represent SPIA's minimum standards.

Full Graduate Status
For admission with full graduate status, an applicant must demonstrate, in the judgment of the admissions committee, that they clearly possess the skills, aptitude, and academic preparation necessary to succeed in graduate study. The judgment of the admissions committee is based on a holistic review of all application materials submitted, including, but not limited to, undergraduate grade point average, letters of recommendation, full- or part-time work experience, and the student's personal essay(s). Only students with full graduate status will be considered for School-based funding or be graduated.

Provisional Status
Applicants who are graduates of a recognized college or university but who do not qualify for admission to full graduate status because of deficiencies in either their undergraduate program or their academic achievement may be considered for provisional graduate status if strong evidence of their ability to complete a graduate program is provided. Courses taken to remove deficiencies do not contribute toward the completion of graduate degree requirements. Transfer from provisional to full graduate status is possible only after removal of deficiencies and other conditions noted at the time of admission and satisfactory progress in graduate work. A student on provisional status is not eligible to be considered for School-based funding or to be graduated.

As a requirement of provisional status, a student must complete 6 (for part-time students) or 12 (for full-time students) SPIA credits with a minimum cumulative GPA of 3.0 or better by the end of their first term (for full-time students) or by the end of their second term (for part-time students). By meeting these requirements, status will be changed to full graduate status, which will allow the student to become eligible for graduation. The student will not be eligible to pursue any joint degree programs until they have obtained full graduate status. If a student fails to meet the conditions of your provisional admission, the student will be dismissed from the school. If a student defers their admission to a future term, the same conditions will apply.

Non-Degree Status
Applicants to the non-degree program must have a bachelor's degree and are held to the same admissions standards as anyone applying to a degree program. In most cases, only U.S. citizens/permanent residents are eligible. International students may not apply as non-degree students unless they are participating in one of SPIA's exchange partnerships with foreign universities.

Non-degree students are typically admitted for one semester only, to take a specific class or classes. Most often, they are graduate students at other universities who want to transfer the SPIA credits into their home schools. Some non-degree students are taking classes for professional training or for personal enrichment. In their essays, non-degree applicants should explain what courses they intend to take and for what purpose.

The non-degree program is not appropriate for students who are trying to improve their credentials so that they may apply to a SPIA degree program. Students who are not yet qualified for a degree program would not be admitted to the non-degree program. If a non-degree student wishes to enter a degree program, they must submit a new application to SPIA. No more than 6 credits earned under non-degree status can be applied to a degree program.

Part-Time Status
Admission procedures for part-time students are the same as those for full-time students.

Guaranteed Admission Program (University of Pittsburgh Undergraduate Students only)
Prospective undergraduates who apply to the University of Pittsburgh may be offered guaranteed admission to SPIA at the time they are admitted to the university's undergraduate program. The decision to offer this guaranteed rests entirely with the undergraduate admissions committee. To be considered for graduate/professional school guarantees, prospective freshmen must be U.S. citizens or eligible non-citizens (i.e. permanent resident aliens, refugees, or legal immigrants), apply to the School of Arts and Sciences or a regional campus, unless otherwise noted, and indicate the pre-professional field of study on their admissions application. The guarantee is void if the student does not enroll in/graduate from the University of Pittsburgh's undergraduate program or does not apply to SPIA within three years of graduating from the University of Pittsburgh with a bachelor's degree.

Additional requirements:
- A separate application is not necessary for consideration. All first-year applicants to the Dietrich School of Arts and Science who choose a social science major will be considered for the guarantee. In addition, applicants who chose "Public and International Affairs" in the Guaranteed Admission Program dropdown box on the Application for Undergraduate Admission will also be considered for the guarantee. Only prospective first-year students can be considered for the guarantee.
- Maintain a minimum 3.5 grade point average while satisfying the minimum course work requirements for the Dietrich School of Arts and Sciences.
- Demonstrate a commitment to public service through internships, volunteer, and/or work experience in the fields of public and international affairs.
- Apply to the Master of Public Administration, Master of Public & International Affairs, or Master of International Development programs. The offer of guaranteed admission remains in effect for three years after graduation from Arts & Science with a bachelor's degree.

Accelerated Bachelor's/Master's Program (4+1 for University of Pittsburgh Undergraduate Students only)
Exceptionally able undergraduate students from the Deitrich School of Arts and Sciences or the College of General Studies may be admitted to SPIA with full-graduate status. These students may use 12-24 credits based on SPIA degree program to satisfy their requirements for the baccalaureate degree. Eligible students must be in good academic standing with a minimum overall GPA of 3.5, have completed at least 108 credits to be admitted for the MPIA degree or have completed at least 96 credits to be admitted for the MPA and MID degrees, have a cumulative GPA of 3.5 or better for all three SPIA degrees, have completed all General Education and major requirements and have no "g" grades.

For the MPIA and MID degree, students will spend their last term in their senior year as an undergraduate student, taking 12 SPIA credits while finishing any remaining undergraduate requirements (ideally no more than 3-6 credits). At the end of that term, students will graduate with their bachelor's degree on schedule. In year five, students will finish their remaining 24 SPIA credits and graduate with their master's degree.

For the MPA degree, students will spend their last two terms in their senior year as an undergraduate student, taking 24 SPIA credits while finishing any remaining undergraduate requirements (ideally no more than 3-6 credits). At the end of the second term, students will graduate their bachelor's degree on schedule. In year five, students will finish their remaining 24 SPIA credits as a graduate student and graduate with their master's degree.

Deferred Admission
Students accepted to a degree program at SPIA may request deferral of their term of entrance for a period of up to academic term. The

request for deferral must be made in writing and must be received by May 1. If approved, the student is sent a new letter confirming the deferral and stating the new term for beginning their course of study. If the student has been awarded School-based funding, the award will not be deferred.

Readmission
If a student wishes to return to SPIA and complete the degree after being made inactive, the student must file a complete application for readmission (and fulfill all current application requirements). Readmission is not guaranteed, nor does it necessarily reinstate the student to the status enjoyed prior to being dismissed/becoming inactive. To be readmitted, the student must demonstrate proper preparation to meet all current admission and degree requirements. If curriculum and/or policies have changed since a student's prior term of enrollment, the student will be held to the new set of requirements and standards. Readmission is automatic, however, for students who receive prior approval for a formal leave of absence. Leaves of absence may not exceed 12 months.

Statute of Limitations

There is a six-year statute of limitations on returning to SPIA to resume a degree. If a student terminates their enrollment for any reason prior to graduating, or becomes inactive for any reason, that student must re-enroll at SPIA within six years of the final term of enrollment to resume progress toward the degree. After six years have passed, any credits a student has previously earned can no longer be applied toward a SPIA degree.

Tuition

Visit the following page, https://www.tuition.pitt.edu/ for up-to-date tuition and mandatory fee rates. Note that there are different tuition rates for Pennsylvania residents and non-residents.

Academic Standing

In addition to those University-wide regulations and standards detailed in the Academic Standing for Graduate and Professional Students, https://www.provost.pitt.edu/academic-standing-graduate-and-professional-students, each student in SPIA is expected to be familiar with these school-specific regulations and academic standards.

Students are in good academic standing when they earn acceptable grades for graduate work and make normal progress toward the degree. Specifically, full-time students must earn a minimum of 9 credits per term with a minimum cumulative GPA of 3.5 in all courses. Part-time students are held to the same standards. However, they are expected to do so while carrying less than 9 credits per term.

Students receiving school-based funding are held to higher standards. Master's students must earn, after two terms, 24 credits and a cumulative GPA of 3.0. Doctoral students must earn 24 credits and a cumulative GPA of 3.0.

Provisional Status

Students admitted with provisional status must complete 6 (for part-time students) or 12 (for full-time students) SPIA credits with a minimum cumulative GPA of 3.0 or better by the end of their first term (for full-time students) or by the end of their second term (for part-time students). By meeting these requirements, status will be changed to full graduate status, which will allow the student to become eligible for graduation. If a student fails to meet the conditions of your provisional admission, the student will be dismissed from the school.

Academic Notice

Students are automatically placed on academic notice when they fail to maintain a minimum GPA of 3.00 and earn the appropriate number of credits for their status. Students are also placed on academic notice automatically if they receive two G or I grades in one term and/or earn a grade of U, C- or lower.

Academic Dismissal

Students who fail to correct the deficiencies of their academic notice within a specified time period (normally one term) are subject to academic dismissal.

For additional information on academic standing and procedures, students are referred to SPIA's Handbook of Academic Policies and Procedures for Master's Degree Programs, SPIA's Handbook of Academic Policies and Procedures for the Doctor of Philosophy, and the University's Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures.

Advanced Standing Credits - Acceptance of Transfer Credits from Outside Institutions

Students who have completed graduate courses in degree-granting graduate programs at other accredited institutions within the past seven (7) years prior to admission to SPIA should submit official transcripts from those institutions at the time they apply so that the courses can be evaluated for transfer credits or waivers. If the source institution is located in the United States, the institution must be regionally accredited in order for the credits to be transferrable. Graduate-level courses taken while a student was enrolled in an undergraduate program are generally not eligible to be transferred into SPIA. Under normal circumstances, only graduate-level courses taken after a student has earned a bachelor's degree may be evaluated as transfer credits. (See "Enrollment in Graduate Courses as an Undergraduate" above.) A maximum of 12 credits can be transferred for students enrolled in the MPA and MID degree programs. A maximum of 9 credits can be transferred for students enrolled in the MPIA degree program. A maximum of 6 credits can be transferred for students enrolled in the MPPM program. Students admitted with provisional status cannot transfer credits until full graduate student status has been granted.

Official transcripts certifying graduate courses completed at another regionally accredited institution can be evaluated for acceptability as transfer credits, provided grades of B or better (GPA = 3.0) or its equivalent has been earned. Other documentation such as course syllabi and descriptions will be required to support the student's request. The documents must prove that the course(s) are substantially similar in content to existing SPIA course(s) in order for the transfer to be approved. Transfer (advanced standing) credits are entered as block transfer credits (advanced standing) on the student's transcript. Grades and quality points are not recorded for credits accepted by transfer.

The completion of requirements for advanced degrees must be satisfied through registration at the Pittsburgh campus of the University. Graduate students already enrolled, may, when approved in advance by the director of student services, spend a term or more at another graduate institution, to obtain training or experience not available at the University, and transfer those credits toward the requirements for a SPIA degree. In such instances, neither the University nor SPIA is responsible for any financial assistance to the graduate student.

No credits will be granted toward a SPIA degree for work completed in extension courses, correspondence courses, or those offered in the off-campus center of another institution unless those credits are approved for equivalent graduate degrees at that institution, and provided that the institution has a regionally accredited program.

For further detail on University requirements on advanced standing credits, see Advanced Standing Credits, https://www.provost.pitt.edu/advanced-standing-credits

Advanced Standing Credits - Acceptance of Transfer Credits from Other Graduate Schools at the University of Pittsburgh

With the exception of students enrolled in formal joint-degree programs, students who earn/have earned credits while enrolled as a graduate student at another University of Pittsburgh school may petition for some of their credits to count toward the SPIA degree. Typically, no more than six credits earned while enrolled in another graduate program at the University of Pittsburgh may be counted toward the SPIA degree. In most cases, such credits will not be listed as transfer credits on the student's SPIA transcript, and will count only as free electives. The final decision on course acceptability rests with the SPIA director of academic programs & advising and the University of Pittsburgh Registrar.

Statute of Limitations

The purpose of the statute of limitations is to ensure that a graduate degree from SPIA represents mastery of current knowledge in the student's field of study.
Requirements for the professional master's degrees must be completed within a period of five consecutive calendar years from the students' initial registration for graduate study. Joint degrees that require coursework in excess of 50 credits may be granted a longer statute of limitations.

Under exceptional circumstances a candidate may apply for an extension of the statute of limitations. The request must be approved by the division director and submitted to the dean for final action. Each student who requests an extension of the statute of limitations must be prepared to demonstrate proper preparation for the completion of all current degree requirements.

Advising and Career Development

Academic Advising: Each student is assigned a faculty and academic advisor based on, whenever possible, the compatibility of student and faculty academic interests. Faculty advisors are responsible for counseling their advisees about career opportunities in the student's area of study; for counseling advisees who have been placed on probation; and for approving the advisee's school-wide required and elective courses, proposed thesis or dissertation topics, and supervised internships. Academic, faculty advisors and students monitor academic progress and identify areas where corrective action on the part of students may be required. It is essential, therefore, that students consult periodically with their advisors. Unless students subsequently request a change, faculty members originally assigned will continue as advisors throughout the students' program of study. If, however, a change in faculty advisor is requested, students must obtain the signed approval of the new advisors. Based on a student-focused approach, we provide students with a academic advisor who serves as the first point of contact for class registration, counseling advisees who have been placed on probation, and preparation for graduation. Additionally, academic advisors support students by providing information necessary to navigate the logistical challenges of graduate school and connect students to resources at the University of Pittsburgh.

Career Development: SPIA places great emphasis on assisting students in determining the best and most appropriate positions available. In addition to faculty advisors, the school provides resources and guidance for students throughout their course of study as they devise strategies to identify professional opportunities. Among the many services offered through Career Development are individual career advising, internship and job search assistance, and a series of career-related workshops and special events. Extensive reference materials on jobs, fellowships, and internships are made available in a variety of ways, including SPIA Career Launch, SPIA's online career management system for students and alumni. Workshops cover such topics as resume preparation, job search strategies, negotiation skills, networking, and using technology in securing employment. Special events include Foreign Service information sessions, mock interviews for the Presidential Management Fellowship Program, an internship fair, and networking events with alumni, foundations, and agency representatives on campus and in Washington, D.C.

Concentration and Degree Options

SPIA offers the following degrees:

Master of Public Administration (MPA) Public Administration, MPA , including concentrations in:

- Energy & Environment
- Governance & International Public Management
- Policy Research & Analysis
- Public & Nonprofit Management
- Social Policy
- Urban Affairs & Planning

Master of Public and International Affairs (MPIA) Master of Public and International Affairs, MPIA , including concentrations in:

- International Political Economy
- Security and Intelligence Studies

- Human Security

Master of International Development (MID) Master of International Development, MID , including concentrations in:

- Energy & Environment
- Governance & International Public Management
- Human Security
- Nongovernmental Organizations & Civil Society
- Social Policy
- Urban Affairs & Planning

Master of Public Policy and Management (MPPM) Public Policy and Management, MPPM

- Traditional accelerated mid-career master program
- Online accelerated mid-career master program

Doctor of Philosophy (PhD)

Minors

Students have the flexibility to customize their education as any concentration can be taken as a minor. Adding a minor will help differentiate your education, deepen your knowledge base and broaden professional marketability. Each minor consists of a 9-credit sequence of courses within your chosen subject area. This is taken in addition to general required courses and courses for your area of concentration. Any course taken to fulfill a requirement for your degree or concentration cannot count towards your minor. A course my not be double-counted. An approved course must be substituted.

For SPIA minors, click on this link:

SPIA Minors

Joint Degrees

SPIA students may pursue two graduate degrees simultaneously, through SPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements (including entrance exams like the GRE, GMAT, and LSAT, where applicable). If admitted to both schools, students spend one full year in SPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in SPIA, earning a total of 36 SPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year or, in the case of current law students, two years of full-time study.

Full-time students in the MPA, MPIA, or MID programs may be eligible to participate in the following joint programs:

Juris Doctor with University of Pittsburgh School of Law: The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues such as refugee services and the Department of Justice.

Master of Business Administration with University of Pittsburgh Katz Graduate School of Business - MPIA and MID students only: Combining a SPIA degree with an MBA opens many opportunities for a career in international finance, government financial regulation, or

multinational corporations. Students with both degrees are highly marketable in the fields of international business and international economic policy.

Master of Public Health with University of Pittsburgh School of Public Health: Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Master of Social Work with University of Pittsburgh School of Social Work: Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between SPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Master of Science in Information Science with University of Pittsburgh School of Information Science: The joint MSIS degree allows SPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Master of Quantitative Economics with University of Pittsburgh's Dietrich School of Arts & Sciences: The joint MQE/MPA degree allows a student to pursue two graduate degrees simultaneously between the Department of Economics and the School of Public and International Affairs. This streamlined, 2 ½ years joint degree program is built for students seeking training in public policy, public administration, and data analytics. It is ideally suited for students looking to enter mid-career positions as policy/data analysts in both the public and private sectors.

J**oint Degrees at Kobe University, Japan:** Through a special partnership, students may combine their SPIA degrees with one of several degrees offered by the Graduate School of International Cooperative Studies at Kobe University: the Master of International Affairs, Master of Laws, Master of Economics, or Master of Political Science. The Kobe GSICS curriculum is in English.

Pitt Student - Accelerated Bachelor's/Master's Program (4+1) for University of Pittsburgh Undergraduate Students only)

The Accelerated Bachelor's/Master's Program for Pitt undergraduate students to complete their bachelor's degree while working on a master's degree at SPIA.

Exceptionally able undergraduate students from the Deitrich School of Arts and Sciences or the College of General Studies may be admitted to SPIA with full-graduate status. These students may use 12-24 credits based on SPIA degree program to satisfy their requirements for the baccalaureate degree. Eligible students must be in good academic standing with a minimum overall GPA of 3.5, have **completed at least 108 credits to be admitted for the MPIA & MID degrees or have completed at least 96 credits to be admitted for the MPA degree**, have a cumulative GPA of 3.5 or better for all three SPIA degrees, have completed all General Education and major requirements and have no "g" grades.

For the MPIA & MID degrees, students will spend their last term in their senior year as an undergraduate student, taking 12 SPIA credits while finishing any remaining undergraduate requirements (ideally no more than 3-6 credits). At the end of that term, students will graduate with their bachelor's degree on schedule. In year five, students will finish their remaining 24 SPIA credits and graduate with their master's degree.

For the MPA degree, students will spend their last two terms in their senior year as an undergraduate student, taking 24 SPIA credits while finishing any remaining undergraduate requirements (ideally no more than 3-6 credits). At the end of the second term, students will graduate their bachelor's degree on schedule. In year five, students will finish their remaining 24 SPIA credits as a graduate student and graduate with their master's degree.

Interested in applying? First, talk to your undergraduate advisor to make sure you are eligible, and make an appointment with a SPIA admissions counselor to discuss the program (spia@pitt.edu). Submit a complete application to SPIA by February 1 of your junior year, and be sure to check the box to indicate that you are applying for the Accelerated Bachelor's/Master's program. One of your two letters of recommendation must be written by Susan Crain in the Arts & Sciences Dean's Office, confirming that you are eligible for the program.

Special Academic Opportunities/Programs

SPIA offers a variety of academic programs to complement the degree programs offered, including area studies, exchange programs, and research and travel grants.

Centers, Institutes and Initiatives

The Matthew B. Ridgway Center for International Security Studies - educates the next generation of security analysts and produces scholarship and impartial analysis that informs the options available to policymakers who must confront diverse challenges to international and human security on a global scale.

The Ford Institute for Human Security - conducts research that focuses on a series of transnational threats to the human rights of civilian populations and makes independent research and policy papers available to both domestic and international policymakers.

The Johnson Institute for Responsible Leadership - reaffirms SPIA's commitment to creating ethical leaders and provides an institutional platform from which to launch an innovative program of teaching, research, and public service on issues of ethics and accountability in all areas of public life.

Center for Governance and Markets - to understand the diverse institutions and governance arrangements that affect social order and human well-being in the United States and around the world. Generating knowledge of ways in which individuals and communities overcome challenges to living free, prosperous, and peaceful lives.

The Gender Inequality Research lab (GIRL) - is an interdisciplinary research forum for scholars and practitioners collaborating on policy-relevant research on gender inequality.

Area Studies

The University of Pittsburgh is home to several internationally recognized area studies centers. Many of these centers have been designated National Resource Centers (NRCs) by the US Department of Education, certifying their status as leading centers of their kind in the United States. The NRCs sponsor numerous programs and offer Foreign Language and Area Studies (FLAS) Fellowships for which SPIA students (U.S. citizens only) are eligible.

UCIS offers graduate certificates that SPIA students can pursue concurrently with their degrees, allowing them to focus their studies on a particular region or theme. It is normally possible to complete the requirements for a SPIA master's degree and a UCIS certificate in two years. For further information, click here, https://www.ucis.pitt.edu/main/graduate-students

SPIA Programs Abroad

SPIA has developed a number of international partnerships that offer students the possibility to study abroad for a regular academic term, during the summer, or-in a double degree program-for an entire year or more. Program availability is subject to change.

International Development and Asian Affairs in Kobe, Japan

This program enables students to earn a Certificate in International Development and Asian Affairs from GSICS at Kobe University while completing their masters degree from SPIA.

Public Administration and/or International Studies in Seoul, Korea

The exchange program enables students to earn credits toward their SPIA degree by taking courses in the Graduate School of Public Administration and/or the Graduate School of International Studies at Seoul National University. SPIA and Seoul National University also offer a dual-degree program that will give students the option to earn both a Master of Public Administration from Seoul National University and one of SPIA's four master's degrees.

Public Policy and International Affairs in Paris, France

This program enables students to earn credits toward their SPIA degree by taking courses at the Institut d'Etudes Politiques de Paris (in French), or at its English-language wing, the Paris School of International Affairs.

Government or Political Science in Bogota, Colombia

This program enables students to earn credits toward their SPIA degree by taking courses at the Department of Political Science at the University of the Andes, one of Latin America's leading institutions. Coursework is in Spanish.

Public Management in Nanjing, China

This program enables students to earn credits toward their SPIA degree by taking courses at Nanjing University's School of Public Management. Coursework is in Chinese.

International Relations, Madrid, Spain

This program allows students to earn credits toward their SPIA degree by taking courses at the School of International Relations, IE University. Coursework is in English.

Budget permitting, each year the Office of the Dean and the school's academic programs make available small grants to students. Uses for these grants can include attending professional development conferences, presenting papers, and supporting internships and study abroad activities. These grants are awarded through a highly competitive selection process.

Faculty

Lisa S. Alfredson, Professor, PhD, London School of Economics

Luke Condra, Assistant Professor, PhD, Stanford University

George W. Dougherty, Assistant Professor, PhD, University of Georgia

Nicola Foote, Professor, PhD, University College London

Muge Kokten Finkel, Assistant Professor, PhD, University of Virginia

Shanti Gamper-Rabindra, Associate Professor, Phd, Massachusetts Insitute of Technology

Ryan Grauer, Assistant Professor, PhD, University of Pennsylvania

Melinda Haas, Assistant Professor, JD, PhD, University of Pennsylvania Law School, Princeton University

Gary Hollibaugh, Assistant Professor, PhD, University of Rochester

Daniel Jones, Assistant Professor, PhD, University of Pittsburgh

Michael Kenney, Associate Professor, PhD, University of Florida

So Jin Lee, PhD, Duke University

Michael Lewin, Senior Lecturer, PhD, Johns Hopkins University

Huafang Li, Assistant Professor, PhD, Rutgers University

Siyao Li, Assistant Professor, PhD, University of Pennsylvania

Sera Linardi, Assistant Professor, PhD, California Institute of Technology

Jennifer B. Murtazashvili, Assistant Professor, PhD, University of Wisconsin, Madison

Ilia Murtazashvili, Assistant Professor, PhD, University of Wisconsin, Madison

Lisa Nelson, Associate Professor, PhD, University of Wisconsin, Madison

Erica Owen, Assistant Professor, PhD, University of Minnesota

Andrea Pena-Vasquez, PhD, University of Notre Dame

Zoila Ponce de Leon, PhD, University of North Carolina, Chapel Hill

Marcela Gonzalez Rivas, Assistant Professor, PhD, University of North Carolina, Chapel Hill

Kay Shimizu, Assistant Professor, PhD, Stanford University

Carissa Schively Slotterback, Dean and Professor, PhD, Florida State University

Nuno Themudo, Associate Professor, PhD, London School of Economics

Kimberly Turner, Assistant Professor, PhD, Southern Ilinois University, Carbondale

Jeremy Weber, Assistant Professor, Phd, University of Wisconsin, Madison

Part-time and Visiting Faculty

Kathleen Buechel, Senior Lecturer, MA, Kennedy School of Government, Harvard University

Julie Santucci, Senior Lecturer, MA, University of Arizona

Nicholas Croce, Visiting Assistant Teaching Professor, PhD, Syracuse University

Program and Course Offerings

Certificate

Cybersecurity, Policy and Law Certificate

To be a leader in cybersecurity requires more than just technical knowledge - it also requires a deeper understanding of the of the cyber challenges surrounding law, policy, regulations, and ethics. We are offering a Graduate Certificate in Cybersecurity, Policy and Law from three schools within the University of Pittsburgh: the School of Public & International Affairs, School of Law and the School of Computing and Information.

Cybersecurity is a multidisciplinary field that involves technical issues, security policies, regulation and law. Our integrated curriculum provides students with the skills to develop comprehensive cybersecurity policies and strengthen cybersecurity environments to minimize risk.

As part of the certificate's multidisciplinary approach, the certificate requires courses to be taken from all three Pitt schools. Students must complete a minimum of three courses from the School of Computing and Information, one course from the Graduate School of Public and International Affairs, and one course from the School of Law to earn the certificate.

Applicants must have a Bachelor's degree. All students are expected to complete the progrma within one to two years.

Students enrolled in the School of Public & International (SPIA) degree program may count no more than six (6) of of the certificate credits (two courses) toward their degrees.

Students will need to contact the School of Law or School of Comuting & Information to obtain permission to take courses from those schools.

The Certificate curriculum, comprising of 15 credits, follows:

Program Requirements

Courses

School of Computing and Information courses

- INFSCI 2150 - INFORMATION SECURITY AND PRIVACY
- TELCOM 2821 - NETWORK SECURITY
- INFSCI 2620 - DEVELOPING SECURE SYSTEMS
- TELCOM 2811 - INNOVATING FOR PUBLIC IMPACT
- INFSCI 2621 - SECURITY MANAGEMENT AND COMPUTER FORENSICS
- CS 2053 - APPLIED CRYPTOGRAPHY AND NETWORK SECURITY

Graduate School of Public and International Affairs courses

- PIA 2156 - LAW, POLICY & TECHNOLOGY
- PIA 2379 - INTRODUCTION TO CYBER CRIMES
- PIA 2360 - CYBER SECURITY POLICY
- PIA 2389 - CRIMINAL OPERATIONS IN THE CYBERWORLD
- PIA 2327 - TERRORISM AND COUNTER TERRORISM
- PIA 2346 - INTRODUCTION TO AMERICAN INTELLIGENCE
- PIA 2365 - TRANSNATIONAL SECURITY & ILLICIT FINANCE
- PIA 2041 - POLICY ANALYSIS FOR CYBERSECURITY AND INTELLIGENCE STUDIES

School of Law courses

- LAW 5623 - CYBER POLICY, CRIME & NATIONAL SECURITY
- LAW 5380 - CYBERCRIME
- LAW 5404 - CYBERSPACE AND THE LAW
- LAW 5430 - INFORMATION PRIVACY: LAW AND PRACTICE
- LAW 5260 - INTELLECTUAL PROPERTY
- LAW 5877 - PUBLIC POLICY SEMINAR

Global Sustainable Development

This Certificate provides graduate students with tools to engage with complex challenges of global sustainable development. Global sustainable development involves the pursuit of a better world for all through the elimination of chronic poverty, discrimination & injustice, and environmental degradation, in order to ensure a sustainable future of well-being for the earth and its peoples. Worldwide, a common framework used to pursue sustainable development is found in the United Nations Sustainable Development Goals (SDGs), which promotes 17 inter-related, comprehensive, and universally applicable sustainability goals spanning economic, social, political, and

environmental issues. This Certificate provides theoretical knowledge, interdisciplinary approaches, and practical skills needed to tackle chronic problems and achieve sustainable development goals on issues including poverty, hunger, health, inequality, gender empowerment, the environment, peace and justice, governance, NGO and civil society participation, and global cooperation. Learn how to solve global problems in comprehensive, sustainable, and ethical ways appropriate to diverse national and regional realities, capacities, and priorities.

The curriculum provides in-depth theoretical understanding of global sustainable development as well as practical skills to engage with complex challenges targeted through the 2030 UN Agenda for Sustainable Development, which encompasses the "5 P's": People, Planet, Prosperity, Peace, and Partnership. Students complete 12 credits and a Digital Portfolio. Courses include two required foundational courses, and two elective courses from an approved course list which addresses a wide range of SDG topics including poverty, hunger, health, education, gender inequality, the environment and natural resources, water and sanitation, energy, employment, development planning and management, global inequalities, peace/inclusion/and justice, governance and global partnerships.

Requirements: Graduate students complete 12 credits (6 credits in GSD foundation courses, and 6 credits of approved GSD electives), as well as a Digital Portfolio which can be shared with future employers and graduate schools. Students may take up to 2 approved Certificate courses (6 credits) that simultaneously fulfill other Degree requirements, including up to 2 approved courses outside GSPIA. Minimum of grade of C required for all Certificate courses; courses may not be taken on S/NC basis.

Required Foundation Courses: 6 credits

- PIA 2510 - ECONOMICS OF DEVELOPMENT
- PIA 2501 - DEVELOPMENT POLICY & PRACTICE
- PIA 2448 - POLITICAL ECONOMY OF DEVELOPMENT

Digital Portfolio

Students are required to create and submit a Digital Portfolio which can be shared with future employers and graduate schools. Students must meet and work with Elaine Linn (Global Studies, University Center for International Studies) to create the portfolio using the Digication platform.

Approved Elective Courses: 6 credits

Please note that not all GSD elective courses are offered every year.

- PIA 2115 - ENVIRONMENTAL ECONOMICS
- PIA 2117 - PROGRAM EVALUATION
- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2307 - HUMAN SECURITY
- PIA 2310 - MARKETS AND STATES
- PIA 2448 - POLITICAL ECONOMY OF DEVELOPMENT
- PIA 2473 - STRATEGIES OF GLOBAL INQUIRY
- PIA 2476 - NONVIOLENT RESISTANCE MOVEMENTS
- PIA 2478 - ASYLUM POLITICS & POLICY
- PIA 2496 - GOVERNING TECHNOLOGY
- PIA 2502 - ENVIRONMENTAL POLICY: LOCAL & GLOBAL
- PIA 2507 - HUMAN RIGHTS AND SOCIAL CHANGE
- PIA 2508 - NGO ADVOCACY & INTERNATIONAL COALITIONS
- PIA 2512 - POVERTY AND INEQUALITY
- PIA 2519 - COMPARATIVE GOVERNANCE
- PIA 2522 - CLIMATE POLICY - LOCAL & GLOBAL
- PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT
- PIA 2529 - POLITICAL ECONOMY ANALYSIS FOR GLOBAL AFFAIRS
- PIA 2531 - HUMAN RIGHTS, THE SDGS AND DEVELOPMENT

- PIA 2551 - GENDER AND DEVELOPMENT
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
- PIA 2553 - GLOBAL HEALTH POLICY
- PIA 2590 - LOCAL AND GLOBAL FOOD POLICY & SUSTAINABILITY
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- BFIN 2043 - INTERNATIONAL FINANCIAL MANAGEMENT
- BSEO 2033 - MANAGING THE NATURAL ENVIRONMENT
- BSPP 2328 - THE BUSINESS OF HUMANITY - STRATEGIC MANAGEMENT IN THE ERA OF GLOBALIZATION, INNOVATION AND ESG
- BSEO 2578 - SUSTAINABLE BUSINESS STRATEGY
- CEE 2610 - ENGINEERING AND SUSTAINABLE DEVELOPMENT
- ENGR 2007 - SUSTAINABILITY CAPSTONE
- ENGR 2905 - CURRENT ISSUES IN SUSTAINABILITY
- PUBHLT 2025 - CONCEPTS AND METHODS IN GLOBAL HEALTH
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2173 - TRANSFORMING GLOBAL HEALTH EDUCATION INTO ACTION

Doctoral

Public and International Affairs, PhD

Whether you want to teach, conduct research, or work in a policy environment, our Ph.D. program will equip you with the skills, tools, and knowledge to succeed in highly competitive environments such as leading universities, government agencies, and nonprofit and nongovernmental organizations around the world.

To apply to the PhD program, you must have a bachelor's degree; however, we strongly encourage that students complete a relevant master's degree prior to joining our program - either in public and international affairs or in one of the social sciences. Once you're accepted, you must complete 67 hours of coursework and a six-credit dissertation. If you have earned a master's degree, as many as 30 credits from that degree may be applied to your total credit requirement for our program (or 36 credits if your master's degree was earned at the School of Public and International Affairs at Pitt).

Embedded within an interdisciplinary school, our newly redesigned program structure is aimed at exposing students to multiple methods and offering the flexibility to conduct research from the perspectives that best fit the topic. We have also redesigned the program to facilitate a faster transition from coursework into dissertation research. To achieve these goals:

- All students are trained in advanced Qualitative and Quantitative methods.
- Some of our required courses are aimed at supporting PhD student development, including a professional development workshop, dedicated time for comprehensive exam preparation, and a research design workshop.
- Students are encouraged to seek out electives in other academic units in the University of Pittsburgh to expand the set of available doctoral-level courses and gain exposure to ideas and faculty in other disciplines.
- Our comprehensive examination is individualized to each student so that the exam prepares students for their own dissertation research and as experts in their field.
- We limit the number of students we admit to ensure that virtually all admitted students will receive at least four years of financial support, contingent on their academic performance.

Most students who are accepted for our doctoral program are awarded four years of funding. This allows you to complete your required coursework and your doctoral dissertation.

Requirements

Students must earn 73 credits to graduate, including advanced standing (transfer) credits, 19 credits from required core course, 18 credits from elective course, and 6 dissertation credits (PIA 3099). Full-time students are expected to complete the required core and elective courses with in the first two years of study (see also "Expected Degree Progress for Full-time Students" below). Failure to do so may be grounds for dismissal. Comprehensive examinations may only be taken after all courses are completed with a grade of "B" or better.

The required courses are:

Doctoral Core Courses: 19 credits

- PIA 2028 - PUBLIC POLICY ANALYSIS
- PIA 2032 - ADVANCED QUANTITATIVE METHODS: CAUSAL INFERENCE FOR POLICY ANALYSIS
- PIA 3004 - SEMINAR IN RESEARCH DESIGN AND METHODS
- PIA 3026 - PHD PROFESSIONAL DEVELOPMENT WORKSHOP (1 credit)
- PIA 3050 - QUALITATIVE RESEARCH DESIGN & METHODS
- PIA 3097 - INDEPENDENT STUDY PHD (Full-time students are required to register for three credits of Independent Study (PIA 3097) to prepare for their Comprehensive Exam in the Fall Semester of their Second Year in the program. Part-time students must do so two terms before they intend to take their comprehensive exam)
- PIA 3121 - POLICY THEORY

Electives: 48 credits (including transfer credits)

Note that students can transfer up to 30 credits from a relevant master's program (and up to 36 for a graduate from SPIA).

Must include PIA 2023 Intermediate Quantitative Methods (pre-requisite for PIA 2032) if the student does not have similar coursework from a prior degree.

Students will use electives to fill remaining credits.

PIA 3099 Dissertation: 6 credits

Students must be admitted to candidacy and must be writing their dissertation to be eligible to register for PIA 3099 Disseration. Six (6) credits of PIA 3099 Disseration are required to graduate.

- PIA 3099 - DISSERTATION PHD

Minimum Required Credits: 73 credits

Students must earn 73 credits to graduate, including advanced standing (transfer) credits, 19 credits from required core courses, 18 credits from elective courses, and 6 dissertation credits (PIA 3099), with a minimum GPA of 3.0. Students must meet this requirement in order to qualify for final approval of their comprehensive examinations. Students are required to maintain full-time status while completing the 67 credits of coursework. Full-time students are expected to complete the required core and elective courses within the first two years of study (see also "Expected Degree Progress for Full-time Students" below). Failure to do so may be grounds for dismissal. Comprehensive examinations may only be taken after all courses are completed with a grade of "B" or better.

Additional Information

Additional Information

Students may register for additional individualized course work or guided research under the direct supervision of a SPIA faculty member if the following conditions are met: all required course work in the School-wide core has been completed or will be completed in the term PIA 3097 will begin; the student must be in good academic standing and making normal progress toward the degree; and a summary study

or research design must be submitted in writing by the students and signed by the faculty member supervisor and Doctoral Program Director.

FTDK (Full-time Dissertation Study)

Doctoral students who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for full-time dissertation study, which carries no credits or letter grade but provides students full-time status. Students so enrolled are assessed a special tuition fee but are still responsible for paying the full-time computer and network, security/transportation, student health service, and activity fees. Students must consult with the Office of Academic Advising for permission to register for full-time dissertation study.

Full-Time and Part-Time Study

Students must be officially admitted to SPIA to be eligible to register for classes. Students who register for 9-16 credits in the fall or spring term are full-time students and are assessed the full-time SPIA tuition rate. SPIA requires students who receive School-based funding to register for 12 credits. Students who register for fewer than 9 credits are part-time students and are billed on a per-credit basis. During the summer term and summer sessions, SPIA students are billed on a per-credit basis regardless of the number of credits taken.

Maximum Allowable Credits per Term

No SPIA student is permitted to register for more than 16 credits in a term without permission from the student's advisor and the director of student services. Graduate students who receive approval to register for more than 16 credits will be billed for each additional credit that exceeds their full-time tuition rate.

Independent Study

Full-time students are required to register for three credits of Independent Study (PIA 3097) to prepare for their Comprehensive Exam in the Fall Semester of their Second Year in the program. Part-time students must do so two terms before they intend to take their comprehensive exam.

Students may register for additional individualized course work or guided research under the direct supervision of a SPIA faculty member if the following conditions are met: all required course work in the School-wide core has been completed or will be completed in the term PIA 3097 will begin; the student must be in good academic standing and making normal progress toward the degree; and a summary study or research design must be submitted in writing by the students and signed by the faculty member supervisor and Doctoral Program Director.

FTDK (full-time dissertation study)

Doctoral students who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for full-time dissertation study, which carries no credits or letter grade but provides students full-time status. Students so enrolled are assessed a special tuition fee but are still responsible for paying the full-time computer and network, security/transportation, student health service, and activity fees. Students must consult with the Office of Academic Advising for permission to register for full-time dissertation study.

Adding and Dropping Courses

A registered student may add and drop courses only during the "add/drop period." The dates for the "add/drop period" are listed in the University's Schedule of Classes and on the University's Academic Calendar at www.pitt.edu/~provost/calendar.html. Students who no longer wish to remain enrolled in a course after the add/drop period has ended may withdraw from the course or resign from the University. See Monitored Withdrawal from a Course or Resigning from the University.

Monitored Withdrawal from a Course

After the add/drop period has ended, students may withdraw from a course that they no longer wish to attend by completing Monitored Withdrawal Request form in the Office of Academic Advising. The grade of W will appear on the student's grade report and transcript. There is no financial adjustment to students' tuition or fee obligations involved in withdrawing from courses. Withdrawing may jeopardize satisfactory academic progress, School-based funding, and external sources of funding.

Resigning from the University

If students decide to drop all of their courses after the add/drop period has ended and before 60 percent of the term or session has been completed, they must resign from the University for that term. Official resignation from the University requires students to contact the Student Appeals Office. Students have several options. They may resign in person, by mail, or by calling (412)624-7588, where students may leave a message 24 hours a day, including weekends and holidays. An R grade will appear on the student's academic transcript. Tuition is prorated from the date of the student's notification to the Student Appeals Office of the student's desire to resign, unless 60 percent of the term has been completed, in which case there is no refund.

After 60 percent of the term or session has passed, students who wish to terminate their registration may process withdrawal from all classes only with the permission of the associate or assistant dean. If the reason for withdrawal is medical or psychological in nature, the associate or assistant dean may consult with the director of Student Health Services prior to making a determination. There is no financial adjustment associated with this procedure, which results in the assignment of W grades for the courses.

Students who stop attending a course or courses and do not initiate add/drop, withdrawal or resignation procedures, or who withdraw from a course without authorization, will be assigned an F grade and will incur financial obligations.

Registering in Other Schools and Departments within the university

Students may register for graduate courses in other Schools and departments in the University with the prior approval of their faculty advisor and the approval of the department offering the course.

Cross-Registration outside the university

During the fall and spring terms, full-time students may earn credits by cross-registering in graduate courses at Carlow University, Carnegie Mellon University, CCAC, Chatham University, Duquesne University, LaRoche University, the Pittsburgh Theological Seminary, Point Park University, and Robert Morris University, when approved in advance by their faculty advisor. Credits earned by cross-registration are accepted as University credits for the purpose of calculating the grade point average and the completion of degree requirements. Students normally register for no more than one course at another institution in a given term.

Students who cross-register do not pay tuition to the host institution; however, they are responsible for any additional fees associated with the course, such as books and the like. During the summer, students may attend one of the above colleges as guest students, but they must pay that institution's tuition and fees. Students are discouraged from cross-registering during their term of graduation to avoid delays in the receipt of course credit needed to graduate.

Inactive Status

Students who have not registered for at least one credit during a 12-month period are transferred to inactive status and must file an application for readmission to SPIA (application fee required) before being permitted to register again. Students on inactive status cannot apply to graduate; are not eligible to use University facilities, and should not expect to receive counseling from the faculty or active supervision by their advisor and committee.

Registration Status at Graduation

All graduate students are required to register for at least one credit during the 12-month period preceding graduation and must be registered for the term in which they plan to graduate. Students who complete all degree requirements at the end of a term, but for procedural reasons are graduated the next, may ask the Office of Academic Advising to petition the University Registrar for a waiver of this requirement. Waivers will not be granted to students who are inactive.

While students are permitted to earn credits at other institutions, the final 12 credits prior to graduation must be earned at the University of Pittsburgh.

Grading and Recording

Grading Policy

SPIA's grading policy recognizes the grade of B or better as representing adequate graduate-level attainment. Although C or lower grades may be given, these are not considered as indicating acceptable performance. Under no circumstances will any grade of U or C- or lower be counted among the minimum total number of credits required for the degree.

Other Grades: Incomplete, Audit, Withdraw, Resign

G Grade

The G (incomplete) grade is a temporary grade used when extenuating circumstances (such as illness on the day of the final exam) prevent a student from finishing a class on time. It represents a contract between the faculty member and the student to continue working together after the end of the semester to finish any incomplete course requirements. Students should not be given a G grade if, in actuality, they need to repeat the course.

Students assigned G grades are required to complete course requirements no later than one year after the term or session in which the course was taken. Once the deadline has passed, the G grade will automatically change to an NG and will no longer appear as in progress on the student record. The student will be required to reregister for the course if it is needed to fulfill requirements for graduation. SPIA students are strongly encouraged to remove the G grade within six weeks after the beginning of the term following the one in which the G grade was reported.

If a student wishes to request a G grade, the student should submit the Incomplete (G) Grade Agreement Form request directly to the faculty member before the end of the semester.

Faculty may choose to give a G grade (or not) at their sole discretion. If a faculty member approves a student's request for a G grade, both must complete and sign this form and submit a copy to the academic advisor.

It is the responsibility of the faculty member and the student to make sure the new grade is submitted in the deadline period. If the instructor does not submit a change of grade request, the G grade remains on the transcript for three terms (including the term it was assigned) and then automatically reverts to an NG grade. If the student graduates in the time period, the student will not be able to receive their diploma or transcript until the grade has been changed.

If the student does not complete the agreed upon work. The grade must be changed. For a G grade the choice of grading is up to the instructor. All G grades revert to a Non-Grade (NG) after one academic year. The Registrar's Office automatically assigns this grade. The instructor should act to change the grade before that time. It is up to the instructor to determine if they should assign an NG grade or assign the grade that should have been given at the end of the term. Once an NG grade is automatically assigned, the grade is final.

If the instructor is no longer teaching or no longer with the university, it will be up to the Program Director or Associate Dean to decide what final grade to assign. Adjuncts or faculty who are not teaching the following term should NOT assign a G grade.

All graduating students must have final grades in all courses in order to receive their diploma and transcript. The degree will be awarded based on the schools' certification lists but will place diploma & transcript holds on any graduate missing final grades. G grades are not considered final grades, just placeholders or missing grades. This means that the record is not accurate/complete until the G grade/s are changed. If an instructor has assigned a G grade, the instructor is required to enter a grade at some point for the student even if the student has not completed the work. This applies to all courses that the student has enrolled in even if the course is not required for the degree.

A G grade will affect school-based funding.

I Grade

This grade is assigned in SPIA for research that faculty members and students know, during course registration, will extend beyond the term. I grades are only permissible in the following courses: PIA 3097: Independent Study, PIA 3098: Practicum, and PIA 3099: Dissertation.

All graduating students must have final grades in all courses in order to receive their diploma and transcript. The degree will be awarded based on the schools' certification lists but will place diploma & transcript holds on any graduate missing final grades. I grades are not considered final grades, just placeholders or missing grades. This means that the record is not accurate/complete until the I grade/s are changed. If an instructor has assigned an I grade, the instructor is required to enter a grade at some point for the student even if the student has not completed the work. This applies to all courses that the student has enrolled in even if the course is not required for the degree.

It is the responsibility of the faculty member and the student to make sure the new grade is submitted in the deadline period. If the instructor does not submit a change of grade request, the I grade remains on the transcript for three terms (including the term it was assigned) and then automatically reverts to an NG grade. If the student graduates in the time period, the student will not be able to receive their diploma or transcript until the grade has been changed.

If the instructor is no longer teaching or no longer with the university, it will be up to the Program Director or Associate Dean to decide what final grade to assign. Adjuncts or faculty who are not teaching the following term should not assign an I grade.

Doctoral students are required to remove all incomplete grades (G or I grades) in order to be eligible to sit for the Comprehensive Examinations.

Repeating Courses

Students may repeat any course in which a grade of B- or lower is received and an authorization to repeat the course is given by the student's advisor and proper paperwork is filed. Students earning a B- in a core course or in a required course for the degree will have the option of repeating that course after discussion with his advisor. Students earning a C- or lower in a degree required course will be required to repeat that course.

The grade earned by repeating a course is used in lieu of the grade originally earned, although the original grade is not erased from the transcript. No course may be repeated more than twice. No sequence course may be repeated for credit after a more advanced course in that sequence has been passed with a B or higher grade. The repeated course must be the same as that in that the original grade was earned. In extenuating circumstances, a division director, with the assistant dean's approval, may substitute another course of similar content. Grades of W, R, or N reported for the repeated course will not be counted as a course repeat.

To ensure that only the last course grade is included in the GPA calculation, a Course Repeat Form must be filed by the student with the Office of Academic Advising.

Acceptable Academic Standards, Probation, AND Dismissal

Acceptable Academic Standards

Once admitted to SPIA, students must maintain acceptable academic standards as a condition of their right to continue their graduate studies and or/receiving funding from the School. Students who do not maintain acceptable performance are considered to be academically deficient and not making normal progress toward the successful completion of their degree. See also Appendix B in PhD Student Handbook.

Aside from maintaining acceptable performance on their coursework, Doctoral students must also meet expected degree milestones in a timely manner. Part-time students should consult Appendix B for relevant standards. Failure to meet the expected degree milestones carries a risk of dismissal from the program. The following chart illustrates what constitutes expected degree progress for full-time students (see also the Doctoral Milestones section).

Probation

A student is automatically placed on academic probation when any of the following occurs: (1)The student fails to maintain a minimum 3.0 cumulative and/or current (term) GPA in all courses;(2) The student fails to earn a minimum of 9 credits per term if full-time or 3 credits per term if part-time; (3) The student earns two G or I grades in one term, or maintains two G or I grades at any one time; (4)The student earns a grade of U, C-or lower; or (5) the student fails to meet expected doctoral milestones. Please refer to complete policy in Appendix B.

Dismissal

Students are dismissed from SPIA if after 1 term they do not meet their probation requirements. In the event that a student is dismissed from SPIA, they are notified in writing by the Office of Student Services. All appeals to dismissal must be made to the Associate Dean by the stated deadline. Appeals can only be made on procedural grounds. Lack of notification of status is not a basis for appeals.

Obtaining a master's degree upon dismissal

SPIA PhD students who leave the doctoral program early without completing the doctoral degree do not automatically receive a master's degree for the work that they have completed. However, a PhD student who leaves the program prematurely may petition to receive a master's degree for completed work. If a student leaves the PhD program prematurely but has completed the requirements for a master's degree while pursuing the PhD, the student may be approved to graduate with a master's degree with the consent of the appropriate SPIA master's program director, associate dean, director of student services, and PhD program director. Approval is not guaranteed, and SPIA will evaluate whether the student has in fact completed all of the requirements (including the internship requirements, where applicable) for the Master of Public Administration, Master of International Development, Master of Public and International Affairs, or Master of Public Policy and Management.

Under no circumstances will a master's degree be awarded to students who complete their SPIA PhD program. If a student receives a terminal master's degree, that student may not return to the doctoral program or continue pursuing the PhD without first applying and being readmitted.

Doctoral Milestones

The first two years of the PhD program are structured by coursework and preparation for comprehensive examinations. Students are strongly encouraged to explore dissertation possibilities early in the program. To earn a PhD, students must pass the following milestones.

Plan of Study Meeting

Every student is assigned a first-year advisor at program entry. The student should consult with the first-year advisor to identify coursework for the first semester. Prior to the end of the student's first year the student should meet with their first-year advisor regarding the plan of study. This meeting's aim is to structure a program that best serves the student's interests and ensure that the degree requirements are met in a timely and stipulated manner.

Annual Progress Evaluation: First and Second Years

The annual evaluation serves the filling purposes:

- To monitor the student's progress in the program
- To identify any necessary adjustments to the student's original plan of study
- In exceptional circumstances, to signal that a student's performance points to a reconsideration of their doctoral status

In their first two years in the doctoral program, students must meet with their faculty advisor as part of their annual progress evaluation. The relevant advisor for these meetings is the first-year advisor until the student has identified a dissertation advisor, at which point that individual becomes the relevant advisor. During these meetings, the faculty advisor should revisit the plan of study to assess student progress and, if necessary, suggest corrective actions and/or adjust the plan. The student is responsible for scheduling this meeting near the end of the Spring term and should be fully aware that many professors may be unavailable after the end of the term. Failure to schedule this meeting in a timely manner may lead to the evaluation being undertaken without student participation.

Aside from the evaluation undertaken with the faculty advisor, the Doctoral Program Director may also solicit comments from faculty with whom the student has taken coursework during the year, especially in relation to courses in which the student did not perform adequately (i.e. received a G, I or lower than B grade). Unsatisfactory progress may lead to students being put on probation, suspension of financial aid and/or dismissal from the program.

Annual Dissertation Progress Evaluation: Third and Fourth Years

At the end of the third and later years, the student must undergo an annual evaluation of their progress toward the dissertation. The dissertation advisor is the relevant advisor for these meetings. The student is responsible for scheduling this meeting and should be fully aware that many professors may be unavailable during the summer. Failure to schedule this meeting in a timely manner may lead to the evaluation being undertaken without student participation. As stated in the Regulations Governing Graduate Study at the University of Pittsburgh, "meetings of the doctoral candidate and their dissertation committee must occur at least annually from the time the student gains admission to doctoral candidacy. During these meetings, the committee should assess the student's progress toward the degree and discuss objectives for the following year an a timetable for completing degree requirements."

The student's dissertation committee will undertake the evaluation. Students' full dissertation committees must sign off on normal progress for each academic year following defense of the proposal. This will normally occur for the first time at the end of the third academic year. If the committee decides that insufficient progress has been made, one semester will be permitted for correction prior to removal from the program.

The annual review should be schedule at least once every academic year.

Unsatisfactory progress may lead to students being put on probation, suspension of financial aid and/or dismissal from the program.

Comprehensive Examination

The comprehensive examination is designed to assess the student's mastery of their intended field of research. The examination is based on a reading list jointly written by the student and two faculty advisors in the end of the first year of doctoral study (more detail below). Unless an exception is granted by the Doctoral Program Director, comprehensive examinations are taken in May following a student's fourth semester, after the student completes all required courses and earns at least 67 credits (including advanced student credits). In addition, all incomplete grades must be removed by meeting the requirements to complete the courses: even if the course is viewed by the student as not being relevant to their degree program.

The process for the comprehensive examination is as follows:

One month prior to the last day of the Spring semester of the student's first year, the student identifies two faculty members to serve as advisors (a "chair" and a "reader") for the exam and second year research paper. Ideally, the student would seek out individuals who would go on to serve as members of the dissertation committee in following years, but there is no commitment to do so at this stage on either end. The chair must be a SPIA faculty member. The reader should also be a a SPIA faculty member but may be external to SPIA with permission from the PhD Program Director.

After identifying advisors, the student and advisors discuss the student's initial dissertation research interests and plans and would collaboratively form a reading list around those interests. This process should be complete by the last day of the Spring semester of the student's first year. The reading list will form the basis of material that may be covered on the comprehensive exam at the end of the year. The reading list must contain readings in three categories.

- Core readings in the student's field (where "field" is defined on an individual basis), even it not directly related to the student's specific research plans, to ensure that the student is well-read in the field that the student will be working in
- Topical readings specific to the student's research interests
- Methodological read ins specific to the student's research plans

All readings should be aimed towards providing knowledge and expertise necessary to execute the planned dissertation research. This does not presume that the student has solidified specific research questions(s) for their dissertation at the time that the list is being formed; indeed, part of the aim of this process should be to help the student identify where there are gaps in the literature which will then help them pose or refine their research questions.

Individualized reading lists will be reviewed by the PhD director (with assistance from members of the PhD committee in relevant fields as necessary) to ensure sufficient coverage of each of the three categories described above. No changes may be made to the reading list within six months of the comprehensive examination date.

Students will register for an independent study in the first semester of the second year, supervised by the comprehensive exam chair, to facilitate absorbing material on the reading list.

The chair and reader will then write an exam based around the reading list with six questions, asking the student to respond to three. However, we will require that the questions cover the three broad categories noted above. That is, the student must respond to one question on "core readings", one on topic-specific readings, and one on methodology.

Each exam will be 60-hour take-home exam. Answers are limited to 3,000 words per question (not including references or footnotes). During the 60-hour period, students cannot communicate with others about the exam questions.

Students will take the exam in May and will receive either a "high pass", "pass", or "fail". If a student fails, they must retake the exam prior to the start of the following Fall semester. A second failure will result in dismissal from the program. Faculty readers are expected to complete their evaluation and return the evaluation form to the PhD Director within two weeks of the student completing the exam.

Second Year Paper

In addition to an exam, students will complete a second-year research paper. A second-year paper will require students to complete a research project which could (though it not required to) become a chapter of their dissertation and/or could be submitted to a peer-reviewed journal for publication. The student will pose an original research question, review relevant literature, outline the methods used to answer their question, employ those methods, report their results, and provide a conclusion.

The timeline for the paper is as follows: students will submit a short proposal for their planned paper to their chair and reader no later than the last day of the Spring semester of the second year; students can and could be encouraged to complete the proposal sooner. Approval of the proposal by chair and reader will be submitted to the PhD director. Students must then submit a complete paper by the first day of the following Fall semester of the third year. Student should present their research in a venue with their chair, reader, and the PhD program director present by the end of October of their third year. The presentation should incorporate feedback provided by reader and chair following submission of the draft. The paper (and presentation) will then be evaluated as "high pass", "pass", or "fail". As with comprehensive exam, a "fail" can result in dismissal from the program.

Establishing the Dissertation Committee

During the fifth semester (typically the fall of the third year of studies), and before admission to candidacy for the PhD degree, the academic advisor proposes, for the approval of the director of the school's doctoral program and the dean, a committee of four or more persons, including at least one from another department in the University of Pittsburgh or from an appropriate graduate program at another academic institution, to serve as the dissertation committee. The majority of the committee, including the advisor, must be full or adjunct members of the Graduate Faculty. This committee must review and approved the proposed research project before the student may be admitted to candidacy. A published Graduate Faculty Membership Roster is updated three times a year. *Only a SPIA faculty member is eligible to serve as the chair of the committee.*

This dissertation committee has the responsibility to advise the student on their research and has the authority to require high-quality research and/or the rewriting of any portion or the entire dissertation. It conducts the final oral examination and determines whether the dissertation meets accepted standards. The student must meet with their dissertation committee at least once a year (see Annual Dissertation Progress Evaluation above).The membership of the dissertation committee may be changed whenever it is appropriate or necessary, subject to the approve of the Doctoral Program Director and the Dean.

When a dissertation committee member leaves the University, the member must be replaced unless the dissertation is almost complete or the member has an essential role on the committee. In the latter case, the dean's approval should be obtained. When the chair of a committee leaves and cannot be conveniently replaced, a co-chair must be appointed from within the department, and the restructured committee requires the approval of the dean and either the department chair or the director of the school's doctoral program. If the defense takes place within a few months of the chair's departure, the requirement of the co-chair is usually waived.

Retired faculty members may remain as members or chairs of committee if they are spending considerable time in Pittsburgh or the vicinity and are still professionally active. Retired faculty who meets these criteria may also be appointed as a member or as a co-chair (but not chair) of a newly formed committee. Retired faculty who leave the Pittsburgh area and/or do not remain professionally active should be replaced on committees and the revised committee approved by the dean and either the department chair or the school's director of doctoral programs.

The completed and signed Dissertation Committee Approval Form and/or the Change in Dissertation Committee Form should be submitted to the Academic Advising office for posting and filing.

All coordination between Dissertation Committee members is the responsibility of the student.

Dissertation Proposal

Immediately after passing the comprehensive examinations, and establishing the dissertation committee, the students should meet with the chair to discuss the development of a dissertation proposal, which outlines the goals and objectives, theoretical argument, policy implications, literature, research design, and timetable for the dissertation research. Students must defend their dissertation proposal within two semesters after having completed comprehensive exams, which will normally correspond to the end of Fall semester of the third year of studies. Students who do not defend their proposal by the end of the semester after their comprehensive exams will be placed on probation; students who do not defend their proposal by the end of the following semester (the probationary semester) are removed from the program.

The student will submit the Announcement of Dissertation Proposal Meeting Form to the Academic Advising office or the Doctoral Program Director ten days prior to the proposal meeting. The announcement will be sent to the faculty and graduate student email lists. Proposal defense meetings are open to all faculty and students.

There must be a minimum of three members present for the meeting to be convened, and the absent member is required to submit a written evaluation of the proposal to the Committee Chair. Under no circumstances can the meeting be held without the Chair. If the Committee accepts the proposal, all Committee members will sign the Approval of Dissertation Proposal Form. The completed and signed form is then submitted along with a copy of the approved proposal to the PhD.D. Program Director, who has final approval. According to University guidelines, only after the proposal has been accepted as final by the Doctoral Program Director does the student advance to candidacy. The signed and completed form is to be returned to Academic Advising office for posting and filing.

Dissertation

The Dissertation Committee must meet a minimum of once a year; however, students are strongly encouraged to schedule more frequent committee meetings.

An appropriate dissertation should be a substantive piece of original and independent research grounded in an appropriate body of literature. The characteristics which a dissertation should demonstrate are:

- the establishment of a historical context for the presentation of an innovative and creative approach to the problem analysis and solution,
- a clear understanding of the problem area as revealed by analysis and synthesis of a broad literature base,
- a well-defined research design,
- clarity in composition and careful documentation,
- results of sufficient merit to be published in refereed journals or to form the basis of a book or monograph,
- sufficient detail so that other scholars can build on it in subsequent work, and
- the preparation of the author to assume a position within the profession.

Oral Defense of the Dissertation

At the oral defense, the student will be asked to explain and justify dissertation research and to assess its relation and contribution to the literature and policy in the field. The final oral examination in defense of the doctoral dissertation is conducted by the dissertation committee and need not be confined to materials in and related to the dissertation. Any member of the Graduate Faculty of the University may attend and participate in the examination. The date, place, and time of the examination should be published well in advance in the University Times. Other qualified individuals may be invited by the committee to participate in the examination. Only members of the dissertation committee may be present during the final deliberations and may vote on the passing of the candidate. A report of this examination, signed by all the members of the dissertation committee, must be sent to the Office of Academic Advising for posting and filing. If the decision of the committee is not unanimous, the case is referred to the dean for resolution. The chair of the dissertation committee should ensure that the dissertation is in final form, i.e., all required changes have been made, before requesting signatures of the members of the committee

Electronic Thesis and Dissertation (ETD)

After approval of the dissertation, all candidates are required to publish the document electronically via d-scholarship. For access to more information on ETD and training, go to www.pitt.edu/~graduate/etd/training.html.

General Academic Regulations in SPIA

Applying for Advanced Standing (Transfer Credits)

At the Plan of Study Meeting students who have completed a master's degree from an accredited institution prior to admission to SPIA must submit official transcripts certifying graduate courses completed. They can then be evaluated for acceptability as advanced standing, provided grades of B (or its equivalent) or better have been earned. Other documentation such as course syllabi and descriptions will be required to support the student's request. All accepted course credits will be entered as block credits on the student's transcript. Grades and GPAs are not recorded for transfer credits.

The required 72 credits of coursework may include credits obtained through meeting Advanced Standing requirements. In no cases, however, will accepted credits be used to waive required core courses. For students with master's degrees, a maximum of 30 credits for coursework may be applied to the PhD degree. For those students who have a master's degree from SPIA, a maximum of 36 credits for coursework may be applied.

In recognition of relevant doctoral study completed at a school other than SPIA, a maximum of 12 additional credits may be applied to the minimum credit requirement. In no case, however, can the total of all credits accepted through advanced standing exceed 36 credits (master's degree and relevant doctoral degree credits together, regardless of where the credits were obtained). Course Credit Acceptance forms are available through the Academic Advising office. When completed and signed, this form and supporting documentation must be submitted to the Academic Advising office for further evaluation, approval, posting and filing.

Acceptance of Transfer Credit

The completion of requirements for advanced degrees must be satisfied through registration at the Pittsburgh campus of the University; however, graduate students already enrolled may, when approved in advance by the Doctoral Program Director, spend a term or more at another graduate institution to obtain training or experience not available at the University, and transfer those credits toward the requirements for a SPIA degree. In such instances, neither the University nor SPIA is responsible for any financial assistance to the graduate student.

Credit acceptance will not be granted for courses in which a grade lower than a B (GPA=3.0) or its equivalent has been received. No credits will be granted toward a SPIA degree for work completed in extension courses, correspondence courses, courses delivered electronically, or those offered in the off-campus center of another institution unless those credits are approved for equivalent graduate degrees at that institution, and provided that the institution has an accredited program.

Course Work Acceptable as Graduate Credit

Courses at the University of Pittsburgh numbered 2000-2999 and 3000-3999 are acceptable graduate courses. No undergraduate language courses, courses numbered below 2000, or language acquisition courses may be applied toward SPIA degree requirements.

Substituting Non-SPIA Courses for Degree Requirements

Required courses for the individual degree programs are considered by the School as essential to the study of public and international affairs. Accordingly, students are required to take these courses in SPIA. In exceptional cases, and on a case-by-case basis, students may be permitted to substitute comparable courses offered in other Schools and departments, provided they obtain prior approval from the Doctoral Program Director *and* the faculty advisors for either or both the fields of specialization.

Statute of Limitations

The purpose of the statute of limitation is to ensure that a graduate degree from SPIA represents mastery of current knowledge in the student's field of study.

Requirements for the doctoral degrees must be completed within a period of eight consecutive calendar years from the students' initial registration for doctoral study.

Under exceptional circumstances a candidate may apply for an extension of the statute of limitations. The request must be approved by the program director and submitted to the assistant dean for final action. Each student who requests an extension of the statute of limitations must be prepared to demonstrate proper preparation for the completion of all current degree requirements.

Leaves of Absence

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of two years may be granted to doctoral students. The length and rationale for the leave of absence must be stated in advance and approved by the dean or his/her designee. Only students in good academic standing will be approved for a leave of absence. If approved, the time of the leave shall not count against the total time allowed for the degree being sought by the students. Readmission following an approved leave of absence is a formality.

Students who take an unapproved leave of absence may, at the discretion of the dean and the program director, be readmitted to the School, but must finish their degree requirements within the statute by their original matriculation.

Parental accommodation. Consistent with the University's efforts to be inclusive and to support academic personal life balance, the University believes it is important to provide accommodations for graduate and professional students who become new parents, whether by childbirth or adoption, so that they may contribute to their family responsibilities while continuing to make progress towards their degree. This practice will help develop students who can successfully integrate their academic and personal pursuits. In recognition of the challenges of balancing the demands of graduate study and parenting a new child, these guidelines aim to improve the academic environment for student parents. The Graduate and Professional Student Parental Accommodation Guidelines assist graduate students immediately following the birth or placement for adoption of a child. The purpose of these guidelines is to make it possible for a student to maintain registered full-time student status, along with all the benefits of such status, while facilitating the return to full participation in courses, research and teaching.

Eligibility: The Parental Accommodation Guidelines apply only to full- and part-time students enrolled in graduate and professional programs who are in good academic standing and who are making satisfactory progress toward completion of a graduate degree. Students must have completed at least one full-time semester of their degree program to become eligible for coverage under these guidelines. The guidelines cover the situation of students who experience a childbirth, who adopt a child who is unable to be enrolled in full-day public school due to age or other developmental reasons, or who is a partner of someone who has experienced a childbirth or an adoption for whom the student has parental responsibilities. These eligibility requirements cover all provisions of the guidelines.

Graduation

Certification Requirements for Graduation

SPIA doctoral program requires the satisfactory completion of:

- Minimum of 67 credits of coursework (includes transfer credits)
- Dissertation credits (PIA 3099) - 6 credits

Successful completion of the following milestones:

- Plan of Study Meeting
- Annual Progress Evaluations
- Comprehensive Examinations
- Approval of Dissertation Committee
- Dissertation Proposal
- Dissertation Defense
- Electronic Dissertation Submission

Moreover, all candidates for graduation must be in good academic standing and registered in the term in which they wish to graduate.

The following must also be completed and submitted.

Complete the Required Surveys
- Survey of Earned Doctorate
- AAUDE Doctoral Exit Survey
- Forward the confirmation emails or certificate to korade@pitt.edu

Submit final ETD in ETD Administrator
- Review the instructions for submitting ETDs
- Submit your final ETD in ETD Administrator

Submit your Receipt for ETD Processing Fee
- Initiate the ETD Processing Fee by emailing payments@pitt.edu and provide the following information: your student ID, the dollar amount ($50), and the academic term (ex: spring 2025)
- Once the fee is posted, you will see the charge in PittPAY on the Account Activity tab; the payment can be processed on the Make

Payment tab.

- PittPAY will email you a receipt as soon as the payment is made.
- Forward a copy of your receipt to korade@pitt.edu

Application for Graduation

Students must complete an electronic application for graduation early in the term in which graduation is expected. To apply for graduation, complete the online application by logging into my.pitt.edu and following the instructions. As noted above, students should be registered in the term in which they are to graduate; in exceptional circumstances, students who complete all the degree requirements at the end of a term but graduate in the next term may petition the assistant dean of SPIA for a waiver of this registration requirement.

Master's

Master of International Development, MID

The Master in International Development (MID)is dedicated to achieving social, economic, and political progress and equality for all. Students gain training from experts in sustainable approaches that fundamentally promote well-being, empowerment and participation, dignity and human rights, of people everywhere. Our multidisciplinary and comprehensive program combines foundational knowledge and an essential balance of theory, applied skills, and experiential learning. Students experience a cutting-edge curriculum and gain professional opportunities needed to meet career aspirations and to be leaders and innovators as the field international development continues to grow and evolve. SPIA alumi live and work in the USA and over 120 countries around the world, doing impactful work in diverse employment sectors that include NGOs and nonprofits, research institutes and thinktanks, local and state public sectors, inter-governmental organizations such as the UN and World Bank, and the private sector.

MID students follow their passions to develop effective and collaborative responses to critical issues and the UN Sustainable Development Goals, for which we provide core training through numerous areas of specialization. Students gain essential development skills and insights, with emphasis on application to vulnerable and discriminated groups and to critical world problems such as impoverishment, climate change, ill health and disease, gender inequality, racial and ethnic discrimination, human rights violations, education gaps, migration, and urbanization. They put their knowledge and skills to work as practitioners, consultants, researchers, policymakers, diplomats, and social entrepreneurs on these an many other issues of global importance and in local to global contexts.

MID students complete 36 credits (3 terms at full time) including foundation and innovation courses; a specialized area of concentration; either a Thesis (independent research on a development problem), or a Capstone project focusing on a real world problem with an external partner such as an NGO or public sector agency; an internship experience; and free electives which may be applied to a minor, language study, area studies certificate, or dual degree. Areas of Concentration (choice of major and minor) include: NGOs & Civil Society, Governance & International Public Management, Social Policy, Energy & Environment, Urban Affairs & Planning, and Human Security. Optional regional studies certificates include Africa, Latin America and the Caribbean, Europe/EU, Asia, Russia & Eastern Europe. The University offers over 32 languages and a variety of study abroad opportunities. MID students can pursue joint degrees with other professional schools at the University. SPIA additionally offers a semester in DC option where students can network with key organizations and actors in the field.

MID Core (15 credits)

The MID degree requires 36 credits of course work. The 36 credits include a total of 15 MID degree core credits.

- PIA 2501 - DEVELOPMENT POLICY & PRACTICE
- PIA 2533 - SOCIAL INNOVATION FOR INTERNATIONAL DEVELOPMENT

One of the following:

- PIA 2510 - ECONOMICS OF DEVELOPMENT

OR

- PIA 2448 - POLITICAL ECONOMY OF DEVELOPMENT

One of the following:

- PIA 2003 - QUALITATIVE RESEARCH DESIGN & METHODS

OR

- PIA 2117 - PROGRAM EVALUATION

OR

- PIA 2022 - QUANTITATIVE METHODS

Take one of the following. Students may complete a one-term capstone (for 3 credits) or a two-term thesis option (for a total of 6 credits):

- PIA 2096 - CAPSTONE SEMINAR:

OR

- PIA 2099 - THESIS (to begin in second term, requires 6 credits to complete, using 3 credits of electives in addition to required core)

All students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by the student's career advisor in advance. Students with at least three years of relevant full-time work experience may petition their career advisor for a waiver of this requirement during their first semester.

MID Areas of Concentration (12 credits)

Students take four courses (12 credits) in one of the six MID Areas of Concentration, selecting courses from Concentration required course options and Concentration electives with annually updated courselists. MID Areas of Concentration:

- Governance & International Public Management
- Social Policy
- Nongovernmental Organizations & Civil Society
- Energy and Environment
- Urban Affairs and Planning
- Human Security

Electives/Minor Courses (9 credits)

Students take three electives/minor courses.

Master of Public and International Affairs, MPIA

The MPIA degree is a multidisciplinary program designed to prepare students for careers of influence in the international arena - as government policymakers, diplomats, intelligence officials, global business leaders, analysts, and policy researchers. The program emphasizes the practical skills and knowledge necessary to participate in international policy processes and shape their future. The MPIA curriculum includes traditional courses on international economics and international affairs, along with practical courses on intelligence collection and analysis, diplomacy, and international finance and professionalization. It also includes one of the country's few graduate specializations in Human Security - a unique field that focuses on the security of civilian populations and human rights.

Students must complete at least 36 credits in public and international affairs and may choose one of three majors: International Political Economy, Human Security, or Security & Intelligence Studies. Students may also pursue a minor in any area of concentration offered at SPIA (e.g., policy research and analysis), as well as a multidisciplinary one in cybersecurity. Students wishing to study a language or earn a university certificate can do so (though we note that could extend the time to degree beyond 18 months). Students can also choose to specialize in a region or area studies or design their own specialization. Students are encouraged to meet with an academic advisor to plan their course of study.

MPIA Core Requirements: 15 credits

- PIA 2022 - QUANTITATIVE METHODS
- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2042 - SKILLS FOR GLOBAL POLICY PROFESSIONALS

- PIA 2043 - INTERNATIONAL ECONOMICS

  Take one of the following. Students may complete a one-term capstone (for 3 credits) or a two-term thesis option (for a total of 6 credits):
- PIA 2096 - CAPSTONE SEMINAR:

  OR
- PIA 2099 - THESIS (to begin in second term, requires 6 credits to complete, using 3 credits of electives in addition to required core)

  All students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by the student's career advisor in advance. Students with at least three years of relevant full-time work experience may petition their career advisor for a waiver of this requirement during their first semester.

Concentration Core Course: 3 credits

Take one of the following courses based on Concentration plan.

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY
- PIA 2307 - HUMAN SECURITY
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES

Concentration Courses: 9 credits

Take three approved Concentration courses based on Concentration plan.

- PIA 2xxx Approved Concentration course
- PIA 2xxx Approved Concentration course
- PIA 2xxx Approved Concentration course

Electives: 9 credits

- Take three (9 credits) graduate-level electives

Public Administration, MPA

Today's policymakers require analytical skills from a variety of disciplines: quantitative, economic, political, and organizational. Students in the policy research & analysis major enjoy access to a rich array of resources to help them prepare for careers in both the public and private sectors. Recent graduates of our program have gone on to work in such careers as budget examiners for the state of New York, analysts for the Government Accountability Office and the U.S. Mint and consultants for the leading firm Booz Allen Hamilton.

Motivated and inquisitive people looking to acquire the technical skills and knowledge to contribute to research and policymaking decisions will appreciate our curriculum. It is infused with a rich variety of interdisciplinary viewpoints to give students a well-informed view of policy analysis that is both national and international in scope.

Required Courses: 21 credits

Along with the 48 credits of Required MPA courses, all students must complete a 300-hour internship with approval from SPIA career development team.

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2022 - QUANTITATIVE METHODS
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS
- PIA 2104 - FINANCIAL MANAGEMENT

- PIA 2117 - PROGRAM EVALUATION

  Take one of the following. Students may complete a one-term capstone (for 3 credits) or a two-term thesis option (for a total of 6 credits):
- PIA 2096 - CAPSTONE SEMINAR:

  OR
- PIA 2099 - THESIS (to begin in third term, requires 6 credits to complete, using 3 credits of electives in addition to required core)

  All students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by the student's career advisor in advance. Students with at least three years of relevant full-time work experience may petition their career advisor for a waiver of this requirement during their first semester.

Energy and Environment Concentration: 12 credits

Energy & Environment explores the politics and policies of the worldwide energy industry, examining ways to meet global energy needs in a sustainable, environmentally conscious way. Pittsburgh is a global epicenter of one of the biggest energy revolutions of the 21st century - the shale gas boom. New technologies like "fracking" are making billions of dollars of natural gas accessible to world markets for the first time, generating thousands of new jobs from Europe to North America. Western Pennsylvania sits atop one of the largest and most productive shale deposits anywhere on the planet, raising major questions about how to extract the gas responsibly, how to protect communities from environmental harm, and how to tax and regulate the rapid growth. SPIA students study the economics of the global energy industry, environmental sustainability, and regulatory policy in one of the world's best living laboratories. Graduates are prepared for jobs at environmental protection agencies, energy corporations, and a host of local, state, and national government offices that make energy policy.

Take **two** of the following five courses:

- PIA 2115 - ENVIRONMENTAL ECONOMICS
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2231 - CONTEMPORARY US ENERGY POLICY
- PIA 2502 - ENVIRONMENTAL POLICY: LOCAL & GLOBAL
- PIA 2522 - CLIMATE POLICY - LOCAL & GLOBAL

  Plus two additional Approved E&E Concentration Courses:
- PIA 2xxx Approved E&E Concentration Course
- PIA 2xxx Approved E&E Concentration Course

Governance and International Public Management Concentration (12 credits)

Governance and International Public Management provides a comparative perspective on international development, focusing on the ways in which public and nonprofit organizations must adapt to meet the different cultural, political, and economic circumstances of the communities they serve.

It explores how public agencies around the globe, faced with similar problems like poverty, illiteracy, and inequality, have addressed those issues differently in different countries. Students confront the challenges of implementing complex policies in a global, multicultural context. This major focuses on developing the management and analytical skills necessary to take leadership roles in the multilateral sector, governments abroad, or any organization that delivers services internationally. Graduates are well-prepared to pursue careers at the United Nations, the U.S. Agency for International Development, and similar organizations.

Take one of the following five courses:

- PIA 2310 - MARKETS AND STATES
- PIA 2519 - COMPARATIVE GOVERNANCE
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
- PIA 2529 - POLITICAL ECONOMY ANALYSIS FOR GLOBAL AFFAIRS
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT

  Plus take an additional three Approved GIPM Concentration Courses:
- PIA 2xxx Approved GIPM Concentration Course
- PIA 2xxx Approved GIPM Concentration Course
- PIA 2xxx Approved GIPM Concentration Course

Public & Nonprofit Management Concentration (12 credits)

Public service is a discipline practiced at many levels: local, national and international often with ripple effects across each. Through grassroots contributions and global applications, SPIA students pursuing a public & nonprofit management major acquire a deep understanding of the many contexts in which public and nonprofit organizations operate. Many look forward to the opportunity to leverage change in a mixed economy.

Our curriculum stresses responsible leadership and our students develop the skills to diagnose leadership challenges and opportunities from a variety of ethical and moral frameworks. Our interdisciplinary approach draws from a variety of fields such as philosophy, law, organizational design and political science. Our approach gives students the skills they need to meet the challenges of a world in which services increasingly span boundaries among business, government and nonprofit organizations.

- PIA 2103 - TALENT MANAGEMENT IN THE PUBLIC & NONPROFIT SECTOR
- PIA 2185 - STRATEGIC MANAGEMENT

Plus take an additional two Approved PNM Concentration Courses:

- PIA 2xxx Approved PNM Concentration Course
- PIA 2xxx Approved PNM Concentration Course

Policy Research and Analysis Concentration (12 credits)

Today's policymakers require analytical skills from a variety of disciplines: quantitative, economic, political, and organizational. Students in the policy research & analysis major enjoy access to a rich array of resources to help them prepare for careers in both the public and private sectors. Recent graduates of our program have gone on to work in such careers as budget examiners for the state of New York, analysts for the Government Accountability Office and the U.S. Mint and consultants for the leading firm Booz Allen Hamilton.

Motivated and inquisitive people looking to acquire the technical skills and knowledge to contribute to research and policymaking decisions will appreciate our curriculum. It is infused with a rich variety of interdisciplinary viewpoints to give students a well-informed view of policy analysis that is both national and international in scope.

- PIA 2023 - INTERMEDIATE QUANTITATIVE METHODS

Plus take an additional three Approved PRA Concentration Courses:

- PIA 2xxx Approved PRA Concentration Course
- PIA 2xxx Approved PRA Concentration Course
- PIA 2xxx Approved PRA Concentration Course

Social Policy Concentration (12 credits)

Gain the quantitative, political, administrative and legal skills to analyze social needs and policy impact on human lives worldwide. You'll learn to monitor, evaluate, and communicate data to convey the consequences of policy development and implementation.

Take one of the following two courses:

- PIA 2210 - RACE, GENDER, LAW AND POLICY
- PIA 2216 - ECONOMICS OF SOCIAL POLICY

Take one of the following four courses *(the course chosen above may not be counted a second time)*:
PIA 2210 - RACE, GENDER, LAW AND POLICY
PIA 2216 - ECONOMICS OF SOCIAL POLICY
PIA 2223 - CITY OF WHITE SUPREMACY
PIA 2224 - REPARATIONS: POLICY, THEORY AND HISTORY
Plus take an additional two Approved SP Concentration Courses:

- PIA 2xxx Approved SP Concentration Course
- PIA 2xxx Approved SP Concentration Course

Urban Affairs and Planning Concentration (12 credits)

The concentration in Urban Affairs and Planning takes a city-focused perspective on urban development. More than half of the world's people now live in urban areas, raising important questions about how governments should meet the public's needs for transportation, health and sanitation, education, and other essential services.

As the developing world urbanizes, and the developed world undergoes redevelopment, booming cities like Shanghai, Mumbai, Buenos Aires, and Johannesburg face critical challenges, including poverty, homelessness, and pollution, while other cities in developed countries, like Newcastle and Pittsburgh, face similar challenges of their own. The concentration prepares students to confront those problems while developing valuable skills in Geographic Information Systems (GIS), regional economic planning, sustainable development management, and social justice in the context of urban development.

Students must take two of the following six courses:

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2188 - ECONOMIC DEVELOPMENT STRATEGIES AND PRACTICES
- PIA 2223 - CITY OF WHITE SUPREMACY
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2720 - APPLIED GIS IN THE LOCAL GOVERNMENT
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS

Plus take an additional two Approved UAP Concentration Courses:

- PIA 2xxx Approved UAP Concentration Course
- PIA 2xxx Approved UAP Concentration Course

Elective/Minor Courses (15 credits)

Students may take five additional elective/minor graduate-level courses for a total of 15 credits.

48 Credits

MPA Joint Degrees

Students pursing an MPA have the option to do a Joint Degree:

MPA/JD

MPA/MIS

MPA/MPH

MPA/MSW

Quantitative Economics/Public Administration, MS/MPA

Public Policy and Management, MPPM

Master of Public Policy and Management (MPPM)

Accelerated Mid-Career Masters (Traditional)

The accelerated mid-career, 30-credit Master of Public Policy and Management (MPPM) degree provides mid-career professionals an opportunity to expand their knowledge, develop new analytic tools and professional skills, explore new ideas and theories, and interact with experienced faculty and practitioners.

The program is designed to help enhance and advance the careers of professionals in the public and nonprofit sectors. It is also ideal for professionals in other fields looking to change careers, and begin a new, rewarding life in public service. Degree requirements can be completed within one year of full-time study or two years of part-time study. Students may specialize in security & intelligence, global political economy, human security, development planning & environmental sustainability, non-governmental organizations & civil society, urban & regional planning, public & nonprofit management, and policy research & analysis.

The MPPM program seeks applicants with a bachelor's degree and a minimum of five or more years of experience beyond an entry-level position. Candidates' experience should demonstrate increasing levels of responsibility, leadership, and professional competence, particularly in areas such as budgeting and finance, human resource management, or policy formulation or implementation. Candidates with fewer than five years of such experience should not apply to the MPPM program, but should apply instead to one of GSPIA's other, 48-credit master's degree programs.

Online Accelerated Mid-Career Masters

The online Master of Public Policy and Management (MPPM) degree is a part-time, 30-credit program for mid-career professionals with at least five years of full-time work experience. It is an online version of the MPPM program that GSPIA has offered to talented mid-career students for more than a decade. Students who apply to the MPPM program may now choose whether they want to pursue the degree in its traditional, on-campus format or in a 100% online format.

The program provides mid-career professionals with an opportunity to expand their knowledge, develop new analytic tools and professional skills, explore new ideas and theories, and interact with experienced faculty and practitioners. It is designed to help enhance and advance the careers of working professionals in the public and nonprofit sectors, but is also ideal for professionals in other fields looking to change careers, and begin a new, rewarding life in public service.

Online Program Structure

As an online MPPM student, you will enroll in two web-based courses (for a total of 6 credits) per term. You will be able to complete the 30-credit degree in just five terms. By taking courses during the spring, summer, and fall terms, you can earn your degree in just 20 months. You may, if you prefer, complete the program at a slower pace by taking just one course at a time.

You will follow a set curriculum of online courses, all of which are taught by regular GSPIA faculty who are dedicated to your success, wherever you are. You will complete your coursework using the Pitt Online Website, where you can login at your convenience to view course material and submit assignments.

In addition to the professors teaching your courses, you will be assigned to a faculty advisor and a full-time enrollment counselor who will be able to assist you by phone, Skype, or email with any questions you may have. Your advisor and enrollment counselor will help you navigate the registration process and work with you throughout your time at GSPIA to ensure your success.

Traditional Requirements:

MPPM Core Courses: 12 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
  OR
- PIA 2021 - INTERNATIONAL AFFAIRS
  OR
- PIA 2501 - DEVELOPMENT POLICY & PRACTICE

- PIA 2185 - STRATEGIC MANAGEMENT

- PIA 2117 - PROGRAM EVALUATION

- PIA 2896 - MPPM POLICY SEMINAR

Specialization Courses (six courses): 18 credits

- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course

Minimum Required Credits: 30 credits

Online Requirements

Online MPPM Core Courses: 12 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2117 - PROGRAM EVALUATION
- PIA 2185 - STRATEGIC MANAGEMENT
- PIA 2896 - MPPM POLICY SEMINAR

Online specialization courses (six courses): 18 credits

Online MPPM students must take an additional 18 credits beyond the core.

- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course

Minimum Required Credits: 30 credits

Micro-Credential

Public Policy

The "Public Policy" micro-credential consists of three SPIA courses on Public Policy. It is aimed at attracting PhD students from other units on campus who are interested in supplementing their disciplinary training with some exposure to theory and practice of the Public Policy process. We anticipate that students will primarily use required elective credits in their own programs to fulfill the requirements of this Micro-credential.

Required Course 1:

- PIA 3121 - POLICY THEORY

Required Course 2:

- PIA 2028 - PUBLIC POLICY ANALYSIS

Required Course 3: Choose one from a list:

- Any SPIA 3000-level course (except for PIA 3004 - Seminar in Research Design and Methods)
- PIA 2032 - ADVANCED QUANTITATIVE METHODS: CAUSAL INFERENCE FOR POLICY ANALYSIS
- PIA 3050 - QUALITATIVE RESEARCH DESIGN & METHODS
- PIA 2231 - CONTEMPORARY US ENERGY POLICY
- PIA 2502 - ENVIRONMENTAL POLICY: LOCAL & GLOBAL
- PIA 2522 - CLIMATE POLICY - LOCAL & GLOBAL
- PIA 2216 - ECONOMICS OF SOCIAL POLICY
- PIA 2210 - RACE, GENDER, LAW AND POLICY
- PIA 2224 - REPARATIONS: POLICY, THEORY AND HISTORY
- PIA 2743 - URBAN AND LOCAL POLICY MAKING IN THE UNITED STATES
- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2510 - ECONOMICS OF DEVELOPMENT
- PIA 2501 - DEVELOPMENT POLICY & PRACTICE
- PIA 2553 - GLOBAL HEALTH POLICY
- PIA 2460 - LATIN AMERICA SOCIAL & PUBLIC POLICY
- PIA 2507 - HUMAN RIGHTS AND SOCIAL CHANGE
- PIA 2429 - THE WAR ON DRUGS
- PIA 2327 - TERRORISM AND COUNTER TERRORISM

Minor

Social Policy Minor

The requirements for the Social Policy (SP) Minor are:

One of the following SP concentration courses*:

PIA 2210 - RACE, GENDER, LAW AND POLICY

PIA 2216 - ECONOMICS OF SOCIAL POLICY

PIA 2512 - POVERTY AND INEQUALITY

PIA 2531 - HUMAN RIGHTS, THE SDGS AND DEVELOPMENT

PIA 2551 - GENDER AND DEVELOPMENT

PIA 2553 - GLOBAL HEALTH POLICY

PIA 2590 - LOCAL AND GLOBAL FOOD POLICY & SUSTAINABILITY

* MPA students may substitute PIA 2510 for PIA 2512

Plus:

PIA 2xxx Approved SP concentration course

PIA 2xxx Approved SP concentration course

Total credits = nine (9)

Public Administration Program

Master of Public Administration (MPA)

Public administration is a field practiced at the intersection of the government, nonprofit, and private sectors. SPIA's MPA program trains managers to balance the needs of each community with its resources, promoting neighborhood development, effective local government, ethical leadership, and responsible business practices. Students gain an incredibly diverse and flexible set of professional skills that will prepare you for leadership in nonprofit agencies, government offices, and private businesses worldwide.

Students will development professiona skills in neighborhood development, data interpretation, advocacy for effective local government, ethical leadership, responsible business practices and critical thinking and problem solving.

Degree Requirements

All MPA students are required to complete the SPIA core & MPA Degree Core courses along with the required Concentration courses and Electives.

Degree Core required courses (12 credits):

PIA 2022 Quantitative Methods

PIA 2025 Microeconomics

PIA 2028 Public Policy Analysis

PIA 2096 Capstone Seminar OR PIA 2099 Thesis

All students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by the student's career advisors in advance. Students with at least three years of relevant full-time work experience may peitition their career advisor for a waiver of this requirement during their first semester.

MPA Degree Core required courses (9 credits):

PIA 2020 Administration of Public Affairs

PIA 2117 Program Evaluation

PIA 2104 Financial Management

MPA Concentrations (12 credits):

Applicants will select from one of the following concentrations. Please click on this link for concentration details, Public Administration, MPA

Energy & Environment

Governance & International Public Management

Policy Research & Analysis

Public & Nonprofit Management

Social Policy

Urban Affairs & Planning

Free Electives/Minor Courses (15 credits)

Total MPA degree credits = 48

Minor

MPA students may also pursue a minor. Please click on the following link: SPIA Minors

Joint Degree Options

MPA students are eligible to pursue one of several joint degrees at the University of Pittsburgh, including a joint MPA/law degree (JD), MPA/Master of Public Health (MPH), MPA/Master of Science in Information Science (MSIS), and MPA/Master of Social Work (MSW). They may also pursue a joint master's degree through the Graduate School of International Cooperative Studies at Kobe University in Japan. An accelerated, five-year bachelor's/master's degree program is available to select University of Pittsburgh undergraduates.

Master of Public Administration/JD

Master of Public Administration/MPH

Master of Public Administration/MSW

Master of Public Administration/MIS

Quantitative Economics/Public Administration, MS/MPA

Accreditation

SPIA's Master of Public Administration degree is accredited by the National Association of Schools of Public Affairs and Administration (NASPAA). NASPAA accreditation recognizes that a master's program in public affairs has gone through a rigorous process of voluntary peer review conducted by the Commission on Peer Review and Accreditation (COPRA) , and has met NASPAA's Standards for Professional Master's Degree Programs in Public Affairs, Policy, and Administration.

Public and International Affairs Program

Master of Public and International Affairs (MPIA)

From the halls of the United Nations to the streets of war-torn conflict zones, the modern international system is in a state of rapid flux that demands versatile, well-educated professionals. The MPIA degree is a multidisciplinary program designed to prepare students for careers of influence in the international arena - as government policymakers, diplomats, intelligence officials, global business leaders, nonprofit managers, and policy researchers. The program emphasizes practical skills and knowledge necessary to participate in the world policy process and shape its future.

The MPIA curriculum includes traditional courses on world history, economics, and international relations theory, along with practical courses on intelligence collection and analysis, diplomacy, and international finance. It also includes one of the country's only graduate specializations in Human Security - a unique field that focuses on the security of civilian populations and human rights. Students will gain

professional skills in human security and rights, intelligence collection and analysis, international relations, diplomacy and international trade and finance.

Degree Requirements

All MPIA students are required to complete the SPIA core & MPIA Degree Core courses along with the required Concentration courses and Electives.

Degree Core required courses (15 credits):

PIA 2022 Quantitative Methods

PIA 2021 International Affairs

PIA 2043 International Economics

PIA 2042 Skills for Global Policy Professionals

PIA 2096 Capstone Seminar OR PIA 2099 Thesis

All students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by teh student's career advisors in advance. Students with at least three years of relevant full-time work experience may peitition their career advisor for a waiver of this requirement during their first semester.

MPIA Core (3 credits):

Applicants will select from one of the following concentrations. Please click on this link for concentration details, Master of Public and International Affairs, MPIA. Based on Concentration, students must take one of the following courses:

PIA 2303 Security & Intelligence Studies or

PIA 2307 Human Security or

PIA 2301 International Political Economy

Concentration Core (9 credits):

Three approved courses based on concentration program.

PIA 2xxx Approved concentration course

PIA 2xxx Approved concentration course

PIA 2xxx Approved concentration course

Free Electives/Minor Courses (9 credits)

Total MPIA degree credits = 36

Minor

MPIA students may also pursue a minor. Please click on the following link: SPIA Minors

Joint Degree Options

MPIA students are eligible to pursue one of several joint degrees at the University of Pittsburgh, including a joint MPIA/law degree (JD), MPIA/Master of Public Health (MPH), MPIA/Master of Science in Information Science (MSIS), MPIA/Master of Social Work (MSW) and MPIA/Master of Business Administration (MBA).

Master of Public and International Affairs/JD

Master of Public and International Affairs/MPH

Master of Public and International Affairs/MIS

Master of Public and International Affairs/MSW

Master of Public and International Affairs/MBA

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Master's

Social Policy, MPA

Gain the quantitative, political, administrative and legal skills to analyze social needs and policy impact on human lives worldwide. You'll learn to monitor, evaluate, and communicate data to convey the consequences of policy development and implementation.

Social Policy

The concentration curriculum, comprising 12 credits, follows:

GSPIA Core Requirements (See Master's Degree Requirements) 12 credits:

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PROGRAM EVALUATION

Concentration Courses: 12 credits

Take one of the following two courses:

- PIA 2210 - RACE, GENDER, LAW AND POLICY
- PIA 2216 - ECONOMICS OF SOCIAL POLICY

Take one of the following four courses (the course chosen above may NOT be counted twice):

- PIA 2210 - RACE, GENDER, LAW AND POLICY
- PIA 2216 - ECONOMICS OF SOCIAL POLICY
- PIA 2223 - CITY OF WHITE SUPREMACY
- PIA 2224 - REPARATIONS: POLICY, THEORY AND HISTORY

Plus:

- PIA 2xxx Approved SP concentration course
- PIA 2xxx Approved SP concentration course

Electives: 15 credits

Minimum Requied Credits: 48 credits

International Development Program

Master of International Development (MID)

SPIA's Master in International Development (MID)-one of the oldest programs of its kind in the country-is dedicated to achieving social, economic, and political progress in countries worldwide, through means that fundamentally promote human dignity, well-being, empowerment, and rights. Distinguished by a multidisciplinary and comprehensive approach, our degree program combines cutting-edge knowledge and an essential balance of theory and practice.

We offer a flexible curriculum including six **concentration** options and numerous minor concentrations, valuable capstone and **internship** experiences, and **joint degree** and **regional certificate** options. Students gain essential development skills and insights, with emphasis on application to vulnerable and discriminated groups and to critical world problems such as impoverishment, climate change, ill health and disease, gender inequality, racial and ethnic discrimination, education gaps, migration, and urbanization.

Our program enables students to follow their passions and to develop effective and collaborative responses to critical issues and the UN Sustainable Development Goals. Graduates go on to pursue valuable careers and participate in meaningful processes of social change in diverse local contexts and at global levels.

Degree Requirements

Degree Core required courses (15 credits):

The MID degree required 36 credits of course work. The 36 credits include a total of 15 MID Degree Core credits.

Students must take the following:

- PIA 2501 Development Policy & Practice
- PIA 2533 Social Innovation for Global Development
- PIA 2510 Economics of Development OR PIA 2448 Political Economy of Development
- PIA 2003 Qualitative Research Design & Methods OR PIA 2117 Program Evaluation OR PIA 2022 Quantitative Methods
- PIA 2096 Capstone Seminar (3 credits) OR PIA 2099 Thesis (6 credits)

All students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by teh student's career advisors in advance. Students with at least three years of relevant full-time work experience may peitition their career advisor for a waiver of this requirement during their first semester.

MID Concentrations Core(12 credits):

Applicants will select and complete 12 credits from one of the following concentrations. **Please click on this link for concentration details, Master of International Development, MID**

Energy & Environment

Governance & International Public Management

Human Security

Nongovernmental Organizations & Civil Society

Social Policy

Urban Affairs & Planning

Free Electives/Minor Courses (9 credits)

Total MID degree credits = 36

Minor

MID students may also pursue a minor. Please click on the following link: SPIA Minors

Joint Degree Options

MID students are eligible to pursue one of several joint degrees at the University of Pittsburgh, including a joint MID/law degree (JD), MID/Master of Public Health (MPH), MID/Master of Science in Information Science (MSIS), MID/Master of Social Work (MSW) and MID/Master of Business Administration (MBA).

Master of International Development/JD

Master of International Development/MPH

Master of International Development/MIS

Master of International Development/MSW

Master of International Development/MBA

Concentration

Social Policy Concentration

The concentration in Social Policy appeals to students who are committed to the study of social issues of public importance, who would like to pursue careers analyzing social needs and policy impacts as well as advocating for improved policies and implementation. To that effect, the curriculum offers courses on pressing social problems both in the U.S. and other parts of the world, and highlights linkages between inequality and discrimination, conflict, poverty, political and community participation, and social mobility. Students are trained in essential methods such as policy analysis and other rigorous tools of social science to bear on these important policy questions.

This concentration enables International Development students to address core development problems in diverse contexts worldwide, including those highlighted in the UN Sustainable Development Goals, by taking courses on topics such as poverty and inequality, food insecurity, global health, gender and development, economic growth, human rights and the SDGs, and environmental sustainability.

The concentration curriculum, comprising 12 credits, follows:

GSPIA Core Requirements (See Master's Degree Requirements) 12 credits:

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY & PRACTICE
- PIA 2510 - ECONOMICS OF DEVELOPMENT

Concentration Courses: 12 credits

Two of the following five courses:

- PIA 2512 - POVERTY AND INEQUALITY
- PIA 2531 - HUMAN RIGHTS, THE SDGS AND DEVELOPMENT
- PIA 2551 - GENDER AND DEVELOPMENT
- PIA 2553 - GLOBAL HEALTH POLICY
- PIA 2590 - LOCAL AND GLOBAL FOOD POLICY & SUSTAINABILITY
- PIA 2xxx Approved SP Concentration Course
- PIA 2xxx Approved SP Concentration Course

Electives: 18 credits

Minimum Requied Credits: 48 credits

Joint Degree

Governance & International Public Management, MID/MBA

Requirements for the joint degree MID/MBA

SPIA Core Requirements: 15 credits

- PIA 2501 - DEVELOPMENT POLICY & PRACTICE
- PIA 2533 - SOCIAL INNOVATION FOR INTERNATIONAL DEVELOPMENT

Take one of the following:

- PIA 2510 - ECONOMICS OF DEVELOPMENT

OR

- PIA 2448 - POLITICAL ECONOMY OF DEVELOPMENT

Take one of the following:

- PIA 2003 - QUALITATIVE RESEARCH DESIGN & METHODS

OR

- PIA 2117 - PROGRAM EVALUATION

OR

- PIA 2022 - QUANTITATIVE METHODS

Take one of the following. Students may complete a one-term capstone (for 3 credits) or a two-term thesis option (for a total of 6 credits):

- PIA 2096 - CAPSTONE SEMINAR:

OR

- PIA 2099 - THESIS (12 credits prior + Approved Research Methods course + approval by academic advisor) (12 credits prior + Approved Research Methods course + approval by academic advisor)(to begin in second term, requires 6 credits to complete, using 3 credits of electives in addition to required core)

Internship Requirement: All students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by the student's career advisor in advance. Students with at least three years of relevant full-time work experience may petition their career advisor for a waiver of this requirement during their first semester.

Concentration Courses: 12 credits

Taken from a list of Approved Concentration Courses.

Electives: 9 credits

Minimum Required SPIA Credits: 36 credits

Master of Business Administration requirements: 33 credits

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Required Professional Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a students' academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

MBA Elective Courses

Students in the joint degree program must complete an additional 7.5 elective credits of School of Business courses.

Total Number of Credits for Joint Degree: 69

Concentration Specific Requirements:

Governance and International Public Management provides a comparative perspective on international development, focusing on the ways in which public and nonprofit organizations must adapt to meet the different cultural, political, and economic circumstances of the communities they serve.

It explores how public agencies around the globe, faced with similar problems like poverty, illiteracy, and inequality, have addressed those issues differently in different countries. Students confront the challenges of implementing complex policies in a global, multicultural context. This major focuses on developing the management and analytical skills necessary to take leadership roles in the multilateral sector, governments abroad, or any organization that delivers services internationally. Graduates are well-prepared to pursue careers at the United Nations, the U.S. Agency for International Development, and similar organizations.

Governance & International Public Management

Students must take one of the following five courses:

- PIA 2310 - MARKETS AND STATES
- PIA 2519 - COMPARATIVE GOVERNANCE
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
- PIA 2529 - POLITICAL ECONOMY ANALYSIS FOR GLOBAL AFFAIRS
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT

  Plus three additional Approved GIPM Concentration Courses:
- PIA 2xxx Approved GIPM Concentration Course
- PIA 2xxx Approved GIPM Concentration Course
- PIA 2xxx Approved GIPM Concentration Course

Master of International Development/MBA

Requirements for the joint degree MID/MBA

SPIA Core Requirements: 15 credits

- PIA 2501 - DEVELOPMENT POLICY & PRACTICE
- PIA 2533 - SOCIAL INNOVATION FOR INTERNATIONAL DEVELOPMENT

  Take one of the following:
- PIA 2510 - ECONOMICS OF DEVELOPMENT

  OR
- PIA 2448 - POLITICAL ECONOMY OF DEVELOPMENT

  Take one of the following:
- PIA 2003 - QUALITATIVE RESEARCH DESIGN & METHODS

  OR
- PIA 2117 - PROGRAM EVALUATION

  OR
- PIA 2022 - QUANTITATIVE METHODS

  Take one of the following. Students may complete a one-term capstone (for 3 credits) or a two-term thesis option (for a total of 6 credits):
- PIA 2096 - CAPSTONE SEMINAR:

  OR
- PIA 2099 - THESIS (12 credits prior + Approved Research Methods course + approval by academic advisor) (12 credits prior + Approved Research Methods course + approval by academic advisor)(to begin in second term, requires 6 credits to complete, using 3 credits of electives in addition to required core)

Internship Requirement: All students must complete an approved internship of at least 300 hours while enrolled at SPIA. The internship must be approved by the student's career advisor in advance. Students with at least three years of relevant full-time work experience may petition their career advisor for a waiver of this requirement during their first semester.

Concentration Courses: 12 credits

Taken from a list of Approved Concentration Courses.

Electives: 9 credits

Minimum Required SPIA Credits: 36 credits

Master of Business Administration requirements: 33 credits

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Required Professional Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a students' academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

MBA Elective Courses

Students in the joint degree program must complete an additional 7.5 elective credits of School of Business courses.

Total Number of Credits for Joint Degree: 69

Concentration Specific Requirements:

This concentration explores the politics and policies of environmental sustainability and environmental protection, climate change and climate emergencies, natural resource governance and the worldwide energy industry, and ways to meet global energy needs in an ethical and sustainable way. International Development students are equipped to confront the global climate emergency that threatens human survival, especially the in the poorest countries. Students study efforts to achieve a just and equitable transition to renewable energy,

thereby cutting global greenhouse gas emissions, while securing affordable and resilient energy systems and investing in economic diversification of traditional fossil fuel reliant regions. Students learn about international, national, state and local policy strategies to govern and protect the environment. Successes such as the Montreal Protocol for the protection of the ozone layer inform current efforts to address climate change, biodiversity loss, and transboundary air, water and waste issues.

Energy and Environment

Take two of the following five course options:

- PIA 2115 - ENVIRONMENTAL ECONOMICS
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2231 - CONTEMPORARY US ENERGY POLICY
- PIA 2502 - ENVIRONMENTAL POLICY: LOCAL & GLOBAL
- PIA 2522 - CLIMATE POLICY - LOCAL & GLOBAL

Plus take an additional two Approved E&E Concentration Courses:

- PIA 2xxx Approved E&E Concentration Course
- PIA 2xxx Approved E&E Concentration Course

Concentration Specific Requirements:

Governance and International Public Management provides a comparative perspective on international development, focusing on the ways in which public and nonprofit organizations must adapt to meet the different cultural, political, and economic circumstances of the communities they serve.

It explores how public agencies around the globe, faced with similar problems like poverty, illiteracy, and inequality, have addressed those issues differently in different countries. Students confront the challenges of implementing complex policies in a global, multicultural context. This major focuses on developing the management and analytical skills necessary to take leadership roles in the multilateral sector, governments abroad, or any organization that delivers services internationally. Graduates are well-prepared to pursue careers at the United Nations, the U.S. Agency for International Development, and similar organizations.

Governance & International Public Management

Take one of the following five courses:

- PIA 2310 - MARKETS AND STATES
- PIA 2519 - COMPARATIVE GOVERNANCE
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
- PIA 2529 - POLITICAL ECONOMY ANALYSIS FOR GLOBAL AFFAIRS
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT

Plus take an additional three Approved GIPM Concentration Courses:

- PIA 2xxx Approved GIPM Concentration Course
- PIA 2xxx Approved GIPM Concentration Course
- PIA 2xxx Approved GIPM Concentration Course

Concentration Specific Requirements:

Human security threats are wide-ranging, manifesting in critical problems of deprivation, indignity, and fear that are also deeply interconnected. Human Security students learn to develop forward-thinking solutions to such problems by using analytical tools that are people-centered, and that tackle linkages between threats through comprehensive interdisciplinary analysis and innovative multi-sectoral collaboration across the fields of development, human rights, and security. By focusing on people as the central unit of analysis, human security approaches mark a shift away from traditional state-centered threats and responses, instead emphasizing peoples' lived experiences,

as well as participatory or "bottom-up" solutions that foster resilience and sustainability. Students benefit from SPIA's multidisciplinary faculty and its highly regarded Ford Institute for Human Security, one of the oldest human security programs in the country.

The flexible design of this concentration enables International Development students to use SPIA's comprehensive course offerings in order to study how development intersects with other issues, for example: the empowering tools offered by human rights for achieving Sustainable Development Goals such as education, poverty, hunger, and inequality; the importance of environmental sustainability goals for development work to prevent root causes of human displacement and ill-health; the role of development in fostering peace, reducing interpersonal violence such as human trafficking and gender-based violence, as well as political violence and armed conflict; and the value of intersectional and gender analysis across human security threats.

Human Security

Students must take PIA 2307 Human Security plus three additional Approved HS Concentration Courses.

- PIA 2307 - HUMAN SECURITY

  Plus an additional three Approved HS Concentration Courses:
- PIA 2xxx Approved HS Concentration Course
- PIA 2xxx Approved HS Concentration Course
- PIA 2xxx Approved HS Concentration Course

Concentration Specific Requirements:

The explosive growth of non-governmental organizations (NGOs) worldwide has fostered demand for deeply committed staff with solid development policy and organizational management skills. This concentration focuses on how NGOs and civil society drive social change and enable participation and empowerment, especially among vulnerable and excluded groups. It gives students the skills they need for careers in NGOs and social-change organizations including foundations, social movement coalitions, community organizations, non-profit associations, and social enterprises. Key topics of study include NGO management, program design and evaluation, advocacy, community participation and social movements, rights-based approaches, project and financial management, fundraising and grant writing, and policy analysis. Students apply such learning to wide-ranging policy issues at the heart of NGO work, for example food security, health policy, poverty and inequality, environmental sustainability, migration and refugees, human rights, and other UN SDGs. NGOCS students learn to apply essential organizational and management skills to address these and other important policy issues in diverse contexts around the world. Students also develop valuable direct experience through NGO internships, benefiting from the SPIA-to-DC pathway for internships with national and international organizations in the nation's capital and the option to study at SPIA's DC Center, SPIA's dedicated support for a wide range of international NGO internships and study abroad experiences, and local opportunities within our own vibrant nonprofit community.

Nongovernmental Organizations & Civil Societies

Students must take one of the following courses:

- PIA 2507 - HUMAN RIGHTS AND SOCIAL CHANGE
- PIA 2508 - NGO ADVOCACY & INTERNATIONAL COALITIONS
- PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT

Plus three Approved NGOCS Concentration Courses:

- PIA 2xxx Approved NGOCS Concentration Course
- PIA 2xxx Approved NGOCS Concentration Course
- PIA 2xxx Approved NGOCS Concentration Course

Concentration Specific Requirements:

The concentration in Social Policy appeals to students who are committed to the study of social issues of public importance, who would like to pursue careers analyzing social needs and policy impacts as well as advocating for improved policies and implementation. To that effect, the curriculum offers courses on pressing social problems both in the U.S. and internationally, and highlights linkages between

inequality and discrimination, conflict, poverty, political and community participation, and social mobility. Students use essential methods such as policy analysis and other rigorous tools of social science to bear on these important policy questions. Master of International Development students address social policies that are core to development problems in diverse contexts worldwide, including those highlighted in the UN Sustainable Development Goals (SDGs), such as poverty, food insecurity, health, gender inequality, human rights, and environmental sustainability.

Social Policy

Take two of the following five course options:

- PIA 2512 - POVERTY AND INEQUALITY
- PIA 2531 - HUMAN RIGHTS, THE SDGS AND DEVELOPMENT
- PIA 2551 - GENDER AND DEVELOPMENT
- PIA 2553 - GLOBAL HEALTH POLICY
- PIA 2590 - LOCAL AND GLOBAL FOOD POLICY & SUSTAINABILITY

Plus an additional two Approved SP Concentration Courses:

- PIA 2xxx Approved SP Concentration Course
- PIA 2xxx Approved SP Concentration Course

Concentration Specific Requirements:

This concentration gives students a city-focused perspective on international development. More than half of the world population now resides in urban areas, raising important questions about how governments should meet public needs for transportation, health and sanitation, education, and other essential services within complex and often massive urban contexts. Worldwide, cities face similar challenges of development and redevelopment. As urbanization continues to grow at a rapid pace, booming cities like Shanghai, Mumbai, Buenos Aires, and Johannesburg face particularly critical challenges including poverty, homelessness, and pollution. Students confront and compare problems and approaches from the local to the global, developing valuable skills in Geographic Information Systems (GIS), regional economic planning, sustainable development management, and social justice in the context of urban development.

Urban Affairs & Planning (UAP)

Take two of the following five course options:

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2188 - ECONOMIC DEVELOPMENT STRATEGIES AND PRACTICES
- PIA 2223 - CITY OF WHITE SUPREMACY
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS

Plus take an additional two Approved UAP Concentration Courses:

- PIA 2xxx Approved UAP Concentration Course
- PIA 2xxx Approved UAP Concentration Course

Public Policy and Management Program

Master of Public Policy & Management (MPPM)

Traditional Master of Public Policy and Management (MPPM)

The accelerated, 30-credit Master of Public Policy and Management (MPPM) degree provides mid-career professionals an opportunity to expand their knowledge, develop new analytic tools and professional skills, explore new ideas and theories, and interact with experienced faculty and practitioners. The program is designed to help enhance and advance the careers of professionals in the public and nonprofit

sectors. It is also ideal for professionals in other fields looking to change careers, and begin a new, rewarding life in public service. Degree requirements can be completed within one year of full-time study or two years of part-time study.

Online Master of Public Policy and Management (MPPM)

The online Master of Public Policy and Management (MPPM) degree is a part-time, 30-credit program for mid-career professionals with at least five years of full-time work experience. It is an online version of the MPPM program that SPIA has offered to talented mid-career students for more than a decade. Students who apply to the MPPM program may now choose whether they want to pursue the degree in its traditional, on-campus format or in a 100% online format.

Special Admissions Requirements

The MPPM program seeks applicants with a bachelor's degree and a minimum of five or more years of experience beyond an entry-level position. Candidates' experience should demonstrate increasing levels of responsibility, leadership, and professional competence, particularly in areas such as budgeting and finance, human resource management, or policy formulation or implementation. Candidates with fewer than five years of such experience should not apply to the MPPM program, but should apply instead to one of SPIA's other, 36 or 48-credit master's degree programs. The flexible curriculum of the MPPM program is ideal for full-time and part-time students, as it allows them to take any of the courses offered at SPIA. Students are free to study international affairs, international development, or public administration, and may focus their course selection on any of the fields of study offered under SPIA's traditional, 36 or 48-credit master's degree programs.

School of Public Health

School of Public Health

History & Mission

Pitt's School of Public Health was founded in 1948 with a $13.6 million grant from the A. W. Mellon Educational and Charitable Trust. When the school opened its doors two years later in 1950, it was the 13th public health school in the nation. With an initial focus on occupational health and hygiene, the school was naturally influenced to address local public health needs within the industrialized City of Pittsburgh. Later, as Pittsburgh transformed into an economy driven by education and research, so did Pitt Public Health.

Mission

Through excellence in research, education and practice, the University of Pittsburgh School of Public Health generates knowledge, trains public health professions and partners with communities locally and globally to promote health, prevent disease and achieve health equity.

Looking Forward

The school now focuses its research on global health, health equity and premature mortality. Research also continues in such traditional Pitt Public Health study areas as infectious diseases, workplace and environmental health, strokes and heart disease, and radiation safety. Learn more about how emerging challenges have shaped our current priorities.

Contact Information

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Graduate Degrees

Behavioral and Community Health Sciences	MPH, PhD
Biostatistics	MS, PhD
Biostatistics, Health Data Science	MS
Biostatistics, Statistical and Computational Genomics	MS
Environmental and Occupational Health	MS, MPH, PhD
Environmental and Occupational Health, Public Health Practice	PhD
Epidemiology	MS (30 and 45 credit), PhD
Genetic Counseling	MS
Genome Bioinformatics	MS
Health Policy and Management	MHA, MPH
Health Services Research and Policy	MS, PhD
Human Genetics	MS, PhD
Infectious Diseases and Microbiology	MS, PhD

Infectious Diseases and Microbiology, Infection Prevention	MPH
Infectious Diseases and One Health	MPH
Multidisciplinary	MPH
Public Health Genetics	MPH

Graduate Joint (Dual, Combined, Concurrent) Degrees

Behavioral and Community Health Sciences/Arts and Sciences (Anthropology)	MPH/PhD
Behavioral and Community Health Sciences/Social Work	MPH/PhD, MPH/MSW
Behavioral and Community Health Sciences/Public and International Affairs	MPH/MPA, MPH/MID, MPH/MPIA
Environmental and Occupational Health/Medicine	PhD/MD
Epidemiology/Medicine	PhD/MD
Genetic Counseling/Public Health Genetics	MS/MPH
Health Policy and Management/Business	MHA/MBA
Health Policy and Management/Law	MPH/JD
Health Services Research and Policy/Medicine	PhD/MD
Human Genetics/Medicine	PhD/MD
Infectious Diseases and One Health/Medicine	MPH/MD
Multidisciplinary/Medicine	MPH/MD

Graduate Certificate Programs

Disaster Preparedness

Environmental Health Risk Assessment

Evaluation of Public Health Promotion and Health Education Programs

Global Health

Health Equity

Lesbian, Gay, Bisexual, and Transgender (LGBT) Individuals' Health and Wellness

Maternal and Child Health

Public Health Genetics

Admissions

Application instructions differ depending on whether applying for a degree, certificate, or non-degree coursework. Instructions on how to apply, deadlines and requirements, information for international applicants, frequently asked questions, and financial aid information can be found by visiting Pitt Public Health Admissions and Aid.

Each department has specific admissions requirements linked below.

- Behavioral and Community Health Sciences
- Biostatistics and Health Data Science
- Environmental and Occupational Health
- Epidemiology
- Health Policy and Management
- Human Genetics
- Infectious Diseases and Microbiology
- Multidisciplinary Master of Public Health

Accelerated Bachelor's/Master's Program

Designed to allow students to complete a bachelor's and master's degree in approximately 5 years per regulations. Qualified Pitt undergraduates can apply to an accelerated program in their third year. Accelerated program details, application instructions, and requirements can be found by visiting Pitt Public Health Accelerated Bachelor's/Master's Program.

Non-Degree Status

Whether you're considering a degree program and want to start off with a few courses, or you're a public health professional looking for additional training - you can enroll at Pitt Public Health as a non-degree student.

Non-degree students can take up to 12 credits (cumulative maximum) that can be applied to a Pitt Public Health degree or certificate program pending program approval. More information including admissions requirements and application instructions can be found by visiting Non-Degree Courses.

Note: *Pitt Public Health encourages non-degree students to apply to a degree or certificate program, but acceptance as a non-degree student does not guarantee admission to a degree or certificate program.*

Definitions Related to Distance Education

Individual academic programs may be governed by other definitions related to distance education that are required by their accrediting bodies. However, schools and units must follow the university's definitions for institutional reporting.

Please visit Definitions Related to Distance Education for full policy.

Registration

After being admitted to a graduate program, students may register for classes during the enrollment period. The enrollment period for a term or session is published in the University's Academic Calendar. Students registering for the first time are advised to complete the enrollment process well before the beginning of the term. More information may be found at www.registrar.pitt.edu/enrollment.

Once students have enrolled, they may view their class schedules online via PeopleSoft/HighPoint CX. For additional registration information, visit the Office of the University Registrar website: www.registrar.pitt.edu.

A student must be officially admitted, readmitted, or reinstated to the University before they may register for courses.

Registration Status

This policy establishes the criteria used to determine registration status, including full-time/part-time and active/inactive status.

Please visit Registration Status for the full policy.

International students may have additional registration and enrollment requirements. Information can be found on the Office of International Services Resources page.

Registration Add/Drop

This policy establishes the responsibilities and regulations regarding the Registration and Add/Drop processes and applies to all campuses of the University.

Please visit Registration Add/Drop for full policy.

Fees and Tuition

This policy establishes that tuition and mandatory fees are approved by the Board of Trustees and other fees and deposits are approved by the Office of the Provost. Some mandatory fees may not be applicable to all campuses; however, if assessed, the rate must be consistent with the current approved rates established at all campuses.

Please visit Fees and Tuition for full policy.

Maximum Credits per Term

No student is permitted to register for more than 15 graduate credits without written permission from the dean of the academic center in which the student is pursuing a degree. Graduate students who register for more than 15 credits will be billed for each additional credit that exceeds their full-time tuition rate. Individual schools and departments may restrict the maximum program of any or all of their graduate students.

Termination of Registration

This policy establishes Termination of Registration, a process that allows students to drop all their courses during the Add/Drop period, after which time a student resignation is required. It includes the resulting grade assignments, and academic and nonacademic financial adjustments associated with a Termination of Registration by the resignation process. This policy also documents administrative termination of registration resulting from disciplinary sanctions.

Please visit Termination of Registration for full policy.

Cross Registering via the Pittsburgh Council on Higher Education (PCHE)

Cross registration is a program through the Pittsburgh Council on Higher Education (PCHE) that provides an opportunity for enriched educational programs by permitting students to attend courses at any of ten participating colleges and universities: Carlow University, Carnegie Mellon University, Chatham University, Community College of Allegheny County, Duquesne University, LaRoche University, Pittsburgh Theological Seminary, Point Park University, Robert Morris University, and the University of Pittsburgh.

Please vist PCHE Cross Registration for more information.

Full-time and Part-time Study

Please visit Part-time and Full-time Enrollment for detailed information.

Registration for Full-time Dissertation Study Course (FTDR 3999)

This policy establishes the requirements for registration in the "Full-Time Dissertation Study" course.

Please visit Registration for the "Full-Time Dissertation Study" Course for full policy.

Course Withdrawal

This policy establishes regulations for course withdrawal and assignment of the Withdrawal (W) grade.

Please visit Course Withdrawal for full policy.

Specific resources related to registration and enrollment deadlines and processes include:

- The Office of the University Registrar maintains an Enrollment Resources website with information and tutorials related to registration, add/drop, withdrawal, and resignation.
- The Enrollment Calendar is made up of important dates surrounding enrollment/registration into classes at the University of Pittsburgh.

Required Training for All Graduate and Professional Students

Any graduate or professional student enrolled in a graduate program requiring more than 10 credits of in-person instruction or in any other graduate program designated by the Provost is required to complete training in the recognition, prevention and reporting of sexual misconduct, harassment and sexual violence (often known as Title IX training). The Title IX training program created by Pitt's Office of Institutional Engagement and Well-being satisfies this requirement. Under some circumstances, students may be allowed to complete special versions of the training designed to meet their specific needs. Requests for alternative training should be submitted to the Vice Provost for Graduate Studies. An approved version of the training must be completed in the student's first semester at the University.

Advising

The School of Public Health considers effective academic advising an essential component of educating students. Departments have the primary responsibility for identifying and assigning to each student a major advisor, who, in consultation with the student, plans a program of study and research in accord with school and departmental guidelines. Departments are expected to provide students with a copy of school and departmental regulations appropriate for their program, and students are expected to become familiar with University, school, and department regulations concerning graduate study and to accept responsibility for the completion of all degree requirements.

The student's academic advisor is to direct and assist the student in the selection of classes and the conduct of research. Waivers from program requirements are processed at the program level, and waivers from school requirements by the Office of Student Affairs provided the student has met CEPH competencies. The Application for Graduation is processed through the Pitt Public Health Office of Student Affairs after clearance has been received from the academic advisor. A student will be certified for graduation only after the academic advisor has confirmed that all degree requirements have been met.

For students required to take preliminary, comprehensive, or defense examinations, the academic advisor, in consultation with the student, designates faculty members to act as the examining committee.

Each doctoral student is required to complete an Independent Development Plan per year and to submit it to his/her advisor. A suggested template is provided.

Each doctoral student, together with the student's doctoral committee, is responsible for assuring accomplishment of all elements of the student's course of studies, including the core requirements, the research tools requirement, course work in the field of specialization, advanced standing, the qualifying and comprehensive examinations, and the dissertation overview and its final oral defense.

No person should expect to receive guidance and direction from members of the Graduate Faculty unless they are registered in accordance with the program of study they are carrying.

Allowable Credits

Advanced Standing Credits

This regulation establishes the criteria for the acceptance of advanced standing credits, which are credits toward a University of Pittsburgh degree or credential through mechanisms other than credits earned through course registration at the University. Any exceptions to this regulation must be approved by the Office of the Provost and posted in the University Catalog.

Please visit Advanced Standing Credits for full policy.

Course Repeat

This document establishes regulations on course repeats. All schools and regional campuses are required to adhere to this regulation. Any exceptions to this regulation must be approved by the Office of the Provost and posted in the University Catalog.

Please visit Course Repeat for full policy.

Credential Overlap

This regulation establishes guidelines for credit overlaps occurring between multiple degrees or credentials being pursued at the University of Pittsburgh. All schools and regional campuses are required to adhere to this regulation. Any exceptions to this regulation must be approved by the Office of the Provost and posted in the University Catalog.

Please visit Credential Overlap for full policy.

Coursework Acceptable as Graduate Credit

A substantial proportion of courses acceptable toward a graduate degree should be designed explicitly for graduate students. Introductory graduate level (master's level) courses are numbered 2000-2999, those at an advanced graduate level (doctoral level) are numbered 3000-3999. To be eligible for a master's degree, a student must have completed at least 30 credits at the graduate level with at least an average grade of B (3.00). A doctoral student must complete additional graduate level courses as determined by his or her department or school. No lower-level undergraduate course (numbered 0001-0999 or 7000-7999) may be applied toward a graduate degree.

At least four courses (12 credits) or one-half the master's degree program, whichever is greater, must be at the graduate-level (the 2000 or 3000 series) and must be completed with an average grade of B (3.00). Additionally, the Commonwealth of Pennsylvania requires that master's degrees include a minimum of 30 semester credit hours beyond the baccalaureate level. The Commonwealth requires that a first professional degree, except those for the preparation of professional educators, must require the satisfactory completion of a minimum of 60 semester credit hours or 90 quarter credit hours for admission to the degree program and the satisfactory completion of a total minimum of 150 semester credit hours for the program.

Grading

Grade Changes

This policy establishes the responsibilities and regulations regarding the grade change process.

Please visit Grade Changes for full policy.

Quality Point Average (QPA) and Grade Point Average (GPA)

This policy establishes the University Cumulative Quality Point Average (QPA) and Grade Point Average (GPA).

Please visit University Cumulative Quality Point Average (QPA) and Grade Point Average (GPA) for full policy.

University Grading

This establishes the official University grades and symbols, including any corresponding grade points and definitions.

Please visit University Grading for full policy.

Incomplete (I) Grade

This document establishes regulations regarding submitting and resolving an Incomplete (I) for a class. Any exceptions to this regulation must be approved by the Office of the Provost and posted in the University Catalog.

Please visit Incomplete Grade for full policy.

Students are responsible for being honest and behaving ethically while pursuing academic studies. All individuals (students, faculty, post-doctoral researchers, and staff) at Pitt Public Health abide by the University's policy on academic integrity as well as the Pitt Public Health academic integrity procedures.

Academic Standing and Satisfactory Academic Progress

While enrolled at the University of Pittsburgh, students are expected to meet certain cumulative GPA standards and maintain progress towards their degree. The University of Pittsburgh makes use of multiple levels of academic standing to identify students at risk of jeopardizing successful completion of their degree and to provide multiple opportunities for intervention and coaching towards successful completion.

Academic Standing for Graduate and Professional Students

This regulation establishes the criteria for determining academic standing for graduate and professional students, and includes Academic Notice, Academic Program Change, and Academic Dismissal. Any exceptions to this policy must be approved by the Office of the Provost and posted in the University Catalog.

The University of Pittsburgh is committed to the success of its students and has guidelines in place to connect students with the appropriate resources at the earliest sign of academic difficulty. Students' academic standing is maintained and monitored each term by the school, department or program in which the student is enrolled. Schools must provide graduate students with a written description of the implementation of this policy.

Note: While different from academic standing, Satisfactory Academic Progress (SAP) may impact the financial aid eligibility of students.

Please visit Academic Standing for Graduate and Professional Students for full policy.

Financial Aid Satisfactory Academic Progress

This policy establishes Satisfactory Academic Progress for students used in determining financial aid eligibility. It applies to most aid programs at the University of Pittsburgh. If a financial aid program has eligibility criteria that differ from this policy, then refer to the specific requirements of that program. The Satisfactory Academic Progress requirements for individual academic programs are separate from this policy.

Questions about the effect of unsatisfactory academic standing on financial aid should be directed to the Office of Admissions and Financial Aid.

Please visit Financial Aid Satisfactory Academic Progress for full policy.

Statute of Limitations

The purpose of the statute of limitations is to ensure that a graduate degree from the University of Pittsburgh represents mastery of current knowledge in the field of study.

All requirements for MA and MS degrees must be completed within a period of four consecutive calendar years from the student's initial registration for graduate study; all requirements for professional master's degrees (MPH, MHA), in five years. Dual degrees and joint degrees that require course work in excess of 50 credit hours may be granted a longer statute of limitations by the University Council on Graduate Study.

From the student's initial registration for graduate study, all requirements for the PhD degree must be completed within a period of ten years or eight years if the student has received credit for a master's degree appropriate to the field of study. Programs for professional doctoral degrees, for which the majority of candidates pursue part-time study while working full time within their chosen disciplines, may be granted a longer statute of limitations by the schools offering the degrees.

Under exceptional circumstances, a candidate for an advanced degree may apply for an extension of the statute of limitations. The request must be approved by the department or departmental committee (master's or doctoral) and submitted to the dean for final action. Requests for an extension of the statute of limitations must be accompanied by a departmental assessment of the work required of the student to complete the degree as well as documented evidence of the extenuating circumstances leading to the requested extension. Students who request an extension of the statute of limitations must demonstrate proper preparation for the completion of all current degree requirements.

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of two years may be granted to doctoral students or one year to master's students. The length and rationale for the leave of absence must be stated in advance, recommended to the dean by the department, and approved by the dean. If approved, the time of the leave shall not count against the total time allowed for the degree being sought by the student. Readmission following an approved leave of absence is a formality.

University Regulations

Regulations Governing Graduate Study at the University of Pittsburgh

Regulations Pertaining to Master's Degrees

Regulations Pertaining to Doctoral Degrees

Career Services

Pitt Public Health Career Services is dedicated to providing informative programs, individualized career counseling services, and networking opportunities to help masters and doctoral students effectively prepare for, develop and manage a career related to their field of study. We offer a broad range of resources to achieve these goals including participation in Handshake, Pitt's comprehensive career services platform and job board. A career counselor is available to meet with students and alumni on a daily basis. Appointments can be scheduled online.

Ombudsperson

The ombudsperson assists SPH students with resolving conflicts and issues that arise in the course of their education and training that they believe have not or cannot be addressed within their academic department or program. The ombudsperson can help mediate conflicts and provides information about institutional policies related to the student's issues, including the University's grievance procedures. The

ombudsperson directs students to further resources on campus as appropriate. The SPH ombudsperson is a neutral contact person for students with whom they can engage in informal discussions.

The Pitt Public Health ombudsperson is Mike Dolinger, Director of Student Services. He can be reached at mikedolinger@pitt.edu to make an appointment.

Faculty

School of Public Health Primary Faculty

Program and Course Offerings

A number of courses of general interest to all departments are offered and linked below. A list of course offerings by department can be accessed through the departmental sections of this catalog.

Graduate Certificate

Disaster Preparedness Certificate

This certificate program is designed to link the University and community in practical applied evaluation initiatives at the community level. As a student in this program, you will:

- Demonstrate a solid working knowledge of public health preparedness policies and practice
- Demonstrate mastery of skills needed for public health emergency preparedness that ensure equity and enhance community resilience in emergency preparedness and disaster response

Contact Information

https://www.publichealth.pitt.edu/academics/graduate-certificates/disaster-preparedness

Certificate Director

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Certificate Staff

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Academic Requirements

Students must complete 15 credits, of which 12 are required and three are elective. Non-listed elective course options may be substituted for certificate electives with approval of the certificate director. Students are also encouraged to complete 12.5 contact hours of online asynchronous modules offered by the National Incident Management System prior to enrolling in their first class for the certificate.

Required Courses (12 Credits)

- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2572 - RISK COMMUNICATION
- EOH 2140 - CLIMATE CHANGE AND HUMAN HEALTH
- HPM 2130 - HEALTH LAW AND ETHICS

OR

- HPM 2131 - PUBLIC HEALTH LAW AND ETHICS
- IDM 2038 - PREVENTION, TREATMENT, AND CONTROL OF GLOBAL INFECTIOUS DISEASES

Elective Courses (3 Credits)

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- EOH 2260 - ENVIRONMENTAL JUSTICE AND HEALTH EQUITY: REGULATIONS, POLICIES, AND PRACTICES
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- IDM 2002 - MOLECULAR VIROLOGY
- IDM 2037 - ADVANCED VECTOR-BORNE INFECTIOUS DISEASES
- IDM 2161 - METHODS OF INFECTIOUS DISEASE EPIDEMIOLOGY
- PIA 2522 - CLIMATE POLICY - LOCAL & GLOBAL
- PIA 2553 - GLOBAL HEALTH POLICY
- PUBHLT 2350 - NAVIGATING PUBLIC HEALTH COMPLEXITIES IN SURINAME: IMPLICATIONS FOR POPULATION HEALTH

Total Credits: 15

Global Health Certificate

Global health refers to health issues that transcend national boundaries and have global impact. Unprecedented challenges brought on by shifting migration patterns, climate change, conflict, pandemics, technological advancement, global commerce, among other issues are at the center of today's work. A certificate in Global Health will prepare you to work in settings that increasingly demand interdisciplinary and global thinking skills and develop global solutions to the world's most pressing challenges and complex health problems.

The certificate emphasizes an integrative problem-solving approach to global health based in health equity. The certificate provides a global perspective to the degree through focused coursework and a field practicum. Certificate course content covers a range of issues relevant to global health such as community-engaged research and practice, health education, health equity, health policy, ethics, human rights, epidemiologic trends, infection prevention and control, evaluation of global health programs, international affairs, development, among many others.

Contact Information

https://www.publichealth.pitt.edu/academics/graduate-certificates/global-health

Certificate Director

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Required Courses

8 Credits

Certificate-required courses cannot overlap with any other program-required course. Overlap is permitted for the remaining elective courses.

- PUBHLT 2025 - CONCEPTS AND METHODS IN GLOBAL HEALTH
- PUBHLT 2173 - TRANSFORMING GLOBAL HEALTH EDUCATION INTO ACTION
- One of the following 3 credit courses. Students can request a substitute SPIA course with approval of the certificate director.
    - PIA 2448 - POLITICAL ECONOMY OF DEVELOPMENT
    - PIA 2502 - ENVIRONMENTAL POLICY: LOCAL & GLOBAL
    - PIA 2522 - CLIMATE POLICY - LOCAL & GLOBAL
    - PIA 2551 - GENDER AND DEVELOPMENT
    - PIA 2553 - GLOBAL HEALTH POLICY

Field Practicum

1 Credit (40 Hour) Minimum

Students must complete a field experience, which can be combined with the required practicum for their degree program provided that the experience is relevant to global health. Students have the opportunity to complete this global health practicum in the form of local opportunities or in an international setting. A minimum of 40 practicum hours required.

Elective Courses

1-6 Credits

Students select electives with guidance from the certificate director from a list of approved course recommendations for the certificate. Students select electives to align with their specific area of interest and intended skillset. Students can substitute electives with approval of the certificate director.

Total Credits: 15

Health Equity Certificate

Designed to increase the cultural competency of public health and other professionals, this innovative graduate certificate program addresses the systemic root causes of health disparities. While racial and ethnic health disparities are examples of the consequences of social and economic disadvantages, disparities may also be related to sexual orientation, religion, gender, native language, age, and disability status. Certificate students will:

- Assess the complexity of inequities among diverse groups of marginalized populations.
- Mobilize communities where disparities exist.
- Develop culturally tailored interventions and advocate for health public policy.
- Evaluate the impact/potential impact of policy measures on overall health, health care access, and quality of care for these populations.

Contact Information

https://www.publichealth.pitt.edu/academics/graduate-certificates/health-equity

Certificate Director

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Academic Requirements

The 15-credit certificate comprises 10 credits of required courses, 5 credits of approved electives, 6 hours of seminar, and an approved applied experience with a health equity component.

Required Courses

10 Credits

- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS
  S*tudents enrolled in the certificate are encouraged to substitute an approved methods course in their own discipline to satisfy this requirement.*
- PUBHLT 2500 - INTEGRATIVE SEMINAR IN HEALTH EQUITY *(6 hour minimum)*

Approved Substitutes for Methods Course

Behavioral and Community Health Sciences:

- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2551 - SOCIAL NETWORKS & HEALTH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH
- BCHS 3030 - MEASUREMENT IN THE SOCIAL AND BEHAVIORAL SCIENCES
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3503 - PREVENTION SCIENCE: TRANSLATING KNOWLEDGE TO PRACTICE

Biostatistics:

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2162 - CLINICAL TRIALS: METHODS AND PRACTICE

Epidemiology:

- EPIDEM 2144 - AGENT-BASED EPIDEMIOLOGICAL MODELING OF SOCIAL DETERMINANTS OF HEALTH
- EPIDEM 2161 - METHODS INFECTIOUS DISEASES EPIDEMIOLOGY
- EPIDEM 2180 - FUNDAMENTALS OF EPIDEMIOLOGICAL METHODS
- EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
- EPIDEM 2189 - EPIDEMIOLOGICAL METHODS OF LONGITUDINAL & TIME-TO-EVENT ANALYSES
- EPIDEM 2221 - GEOSPATIAL MAPPING AND SPATIAL ANALYSIS IN EPIDEMIOLOGY

- EPIDEM 2230 - SECONDARY DATA ANALYSIS: A CAPSTONE COURSE
- EPIDEM 2981 - EPIDEMIOLOGY OF AGING-METHODS

Health Policy and Management:

- HPM 2064 - HEALTH POLICY ANALYSIS *(master's students)*
- HPM 3064 - HEALTH POLICY ANALYSIS *(doctoral students)*
- HPM 2063 - THE POLITICS OF HEALTH POLICY
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE
- HPM 2905 - QUASI-EXPERIMENTAL DESIGN FOR HEALTH SERVICES RESEARCH
- HPM 3125 - INTERMEDIATE HEALTH ECONOMICS

School of Public and International Affairs:

- PIA 2022 - QUANTITATIVE METHODS
- PIA 2730 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS
- PIA 2250 - WORKING WITH PUBLIC INTEREST TECHNOLOGIES AND CIVIC DATA
- PIA 2715 - GIS FOR PUBLIC POLICY

School of Nursing:

- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

Elective Courses

5 Credits

- BCHS 2532 - DIMENSIONS OF AGING: CULTURE AND HEALTH
- BCHS 2560 - INTRODUCTION TO POPULATION PROBLEMS
- BCHS 2993 - MODELING HEALTH BEHAVIOR CHANGE
- EPIDEM 2400 - PSYCHOSOCIAL FACTORS IN DISEASE
- EPIDEM 2143 - SOCIAL EPIDEMIOLOGY
- EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY
- EPIDEM 2162 - INFECTIOUS DISEASES AND GLOBAL HEALTH
- EPIDEM 2260 - EPIDEMIOLOGICAL BASIS DISEASE CONTROL
- EPIDEM 2709 - EPIDEMIOLOGY OF WOMEN'S HEALTH
- EPIDEM 2719 - REPRODUCTIVE EPIDEMIOLOGY
- EPIDEM 2981 - EPIDEMIOLOGY OF AGING-METHODS
- IDM 2032 - HUMAN DIVERSITY AND PUBLIC HEALTH
- CLRES 2200 - INTRODUCTION TO RESEARCH DISPARITIES ON HEALTH CARE
- MEDEDU 2240 - CULTURAL COMPETENCE MEDICAL EDUCATION
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
- NUR 3013 - ETHICS IN HEALTHCARE
- PUBHLT 2025 - CONCEPTS AND METHODS IN GLOBAL HEALTH
- PUBHLT 2018 - OVERVIEW OF LESBIAN, GAY, BISEXUAL AND TRANSGENDER HEALTH DISPARITIES
- PUBHLT 2020 - ADVANCED TOPICS IN LESBIAN, GAY, BISEXUAL, AND TRANSGENDER RESEARCH
- GSWS 2252 - THEORIES OF GENDER AND SEXUALITY
- HPS 2245 - EUGENICS AND SOCIAL DARWINISM
- PIA 2210 - RACE, GENDER, LAW AND POLICY
- SOC 3493 - TOPICS IN SOCIOLOGY OF RACE & ETHNICITY

Applied Experience

Certificate students are required to complete an approved applied experience with a health equity component.

Total Credits: 15

Lesbian, Gay, Bisexual, and Transgender (LGBT) Health and Wellness Certificate

This certificate is designed for post-baccalaureate and graduate students like you who desire a focus on public health perspectives concerning the social, cultural and individual factors that influence the health and well-being of LGBTQIA+ communities. Conceptual and practical skills such as the design, implementation, and evaluation of programs are utilized to improve health levels among LGBTQIA+ populations. As a student in this program, you will:

- Learn from and work with leading faculty and researchers in the field of LGBTQIA+ health including faculty of the Center for LGBT Health Research.
- Apply interventional research, epidemiological research, and policy analysis to enhance the health and well-being of individuals related to sexual orientation and/or gender identity/presentation.
- Demonstrate how provision of health and wellness services to LGBTQIA+ populations results in overall lower health care costs in a larger community.
- Understand the process of affecting change or influencing policy decision making.
- Apply ethical principles to research and program practices with a specific focus on confidentiality and a primary responsibility to securing a healthier and safer future for the community.

Contact Information

https://www.publichealth.pitt.edu/academics/graduate-certificates/lesbian-gay-bisexual-and-transgender-individuals-health-and

Certificate Directors

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Certificate Staff

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Required Courses

5 Credits

- PUBHLT 2018 - OVERVIEW OF LESBIAN, GAY, BISEXUAL AND TRANSGENDER HEALTH DISPARITIES
- PUBHLT 2020 - ADVANCED TOPICS IN LESBIAN, GAY, BISEXUAL, AND TRANSGENDER RESEARCH

Elective Courses

10 Credits

Other electives may be taken with the approval of the certificate director.

- BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 3002 - HEALTH SURVEY METHODS
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- EPIDEM 2400 - PSYCHOSOCIAL FACTORS IN DISEASE
- HPM 2010 - ORGANIZATION STUDIES: THEORY AND APPLICATIONS TO HEALTH CARE SYSTEMS
- IDM 2032 - HUMAN DIVERSITY AND PUBLIC HEALTH
- IDM 2034 - CONTROL AND PREVENTION OF HIV/AIDS
- IDM 2161 - METHODS OF INFECTIOUS DISEASE EPIDEMIOLOGY

Practicum

Students must complete a practicum which can be combined with the required practicum for their degree program provided that the experience is relevant to LGBT health and wellness.

Essay/Thesis or Research Project

Certificate students must complete and essay/thesis or research project related to LGBT health and wellness with an oral presentation of the essay/thesis or research for peers and members of the Center for LGBT Health Research, or at approved scientific meeting. Students enrolled in degree programs typically fulfill this requirement with the essay, thesis, or dissertation required for their degree program.

Total Credits: 15

Maternal and Child Health (MCH) Certificate

The graduate certificate in Maternal and Child Health (MCH) prepares students to lead in advancing the health and equity of women, children and families. Engage in a vibrant, equity-focused MCH student community and develop methodological skills and a core knowledge base in the unique health needs facing MCH populations. Gain the ability to demonstrate knowledge, skills and abilities in identifying and addressing health inequities/disparities through experiential learning opportunities.

- 300+ hours of training including 15 credits didactic learning (core coursework plus electives)
- participation in Maternal and Child Health Equity Scholars
- writing labs and skill building workshops
- doctoral students present work at a conference or author a manuscript
- annual symposium participation

Contact Information

https://www.publichealth.pitt.edu/academics/graduate-certificates/maternal-and-child-health

Certificate Director

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Required Courses

6-8 Credits

- BCHS 2575 - SEMINAR MATERNAL AND CHILD HEALTH
- PUBHLT 2091 - MATERNAL AND CHILD HEALTH LEADERSHIP 1
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH

  or
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH

Elective Courses

7-9 Credits

Alternate elective courses may be substituted for certificate electives with approval of the certificate director.

- EPIDEM 2709 - EPIDEMIOLOGY OF WOMEN'S HEALTH
- EPIDEM 2725 - REPRODUCTIVE DEVELOPMENT FROM MODEL ORGANISMS TO HUMANS
- EPIDEM 2719 - REPRODUCTIVE EPIDEMIOLOGY
- EPIDEM 2310 - PSYCHIATRIC EPIDEMIOLOGY
- NUR 3075 - STATE OF THE SCIENCE: WOMEN'S HEALTH
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- HUGEN 2020 - INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2060 - CHROMOSOMES - STRUCTURE AND FUNCTION
- HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS

- HUGEN 2056 - GENETIC CONDITIONS AND PUBLIC HEALTH PROGRAMS
- PUBHLT 2500 - INTEGRATIVE SEMINAR IN HEALTH EQUITY
- PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2025 - CONCEPTS AND METHODS IN GLOBAL HEALTH
- EOH 2140 - CLIMATE CHANGE AND HUMAN HEALTH
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE
- IDM 2038 - PREVENTION, TREATMENT, AND CONTROL OF GLOBAL INFECTIOUS DISEASES
- ECON 3430 - TOPICS IN LABOR AND HEALTH ECONOMICS

Experiential Learning

Certificate students will engage in 300 hours of experiential learning under the mentorship of faculty or community partners specializing in maternal and child health equity.

Total Credits: 15

Joint Degree

Infectious Diseases and One Health, MPH/MD

The joint degree program requires students to complete all the core requirements for the MD and Infectious Diseases and One Health MPH (IDM-OH MPH) degrees allowing students to blend clinical training with training in Infectious Diseases and One Health. Students complete coursework for the MPH core during summer terms (online asynchronous) and MPH core and electives embedded within the fall and spring terms (in-person) in the MD program. Students are required to complete a 200-hour minimum practicum (fulfilled by Family Medicine Clerkship) that will integrate public health concepts into clinical practice and prepare an essay (fulfilled by the longitudinal research project) that addresses an issue of public health significance that demonstrates the ability to synthesize information from numerous sources.

The MD/IDM-OH MPH program is designed to be completed in four years of full-time study. The IDM-OH MPH requirements for the joint degree are listed below. Students should refer to the School of Medicine for the most current MD requirements.

- 42 Public Health Credits
- Practicum (200-hour minimum)
- Essay

Admissions

Students must apply separately to the School of Medicine and School of Public Health.

MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING

  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS *(preferred)*
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH

- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

IDM-OH MPH

- IDM 2004 - VIRAL PATHOGENESIS
- IDM 2007 - PUBLIC HEALTH COMMUNICABLE DISEASE PRACTICUM *(1 credit)*
  Family Medicine Clerkship can be taken in place of IDM 2007; students are required to complete and submit all Pitt Public Health practicum requirements.
- IDM 2010 - PATHOGEN BIOLOGY
- IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY *(2 credits)*
  The longitudinal research project can be taken in place of IDM 2021; students are required to complete and submit all Pitt Public Health essay requirements.
- IDM 2025 - MICROBIOLOGY SEMINAR
- IDM 2103 - HOST RESPONSE TO MICROBIAL INFECTION
- IDM 2161 - METHODS OF INFECTIOUS DISEASE EPIDEMIOLOGY

Elective Courses

Students select graduate-level electives as recommended and approved by their academic advisor.

Total Joint Degree Credits: 42

Multidisciplinary, MPH/MD

The joint degree program requires students to complete all the core requirements for the MD and Multidisciplinary MPH (MMPH) degrees allowing students to blend clinical training with population-based approaches to improving health. Students complete coursework for the MPH core during summer terms (online asynchronous) and MPH core and electives embedded within the fall and spring terms (in-person) in the MD program. Students are required to complete a 200-hour minimum practicum (fulfilled by Family Medicine Clerkship) that will integrate public health concepts into clinical practice and prepare an essay (fulfilled by the longitudinal research project) that addresses an issue of public health significance that demonstrates the ability to synthesize information from numerous sources.

The MD/MMPH program is designed to be completed in four years of full-time study. The MMPH requirements for the joint degree are listed below. Students should refer to the School of Medicine for the most current MD requirements.

- 42 Public Health Credits
- Practicum (200-hour minimum)
- Essay

Admissions

Students must apply separately to the School of Medicine and School of Public Health.

MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

MMPH Required Courses

- PUBHLT 2002 - ESSAY-MMPH *(1-2 credits)*
  The longitudinal research project can be taken in place of PUBHLT 2002; students are required to complete and submit all Pitt Public Health essay requirements.
- PUBHLT 2029 - MMPH PRACTICUM *(1-3 credits)*
  Family Medicine Clerkship can be taken in place of PUBHLT 2029; students are required to complete and submit all Pitt Public Health practicum requirements.

Elective Courses

Students select graduate-level electives as recommended and approved by their academic advisor.

Total Joint Degree Credits: 42

Master's

Multidisciplinary, MPH

The mission of the Multidisciplinary Master of Public Health (MMPH) program is to prepare doctoral level health professionals to blend clinical or other professional training with population-based approaches to improving health. This MPH degree gives students the flexibility to pursue customized competencies tailored to their career goals.

Students are required to complete a 200-hour practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The program is designed to be completed in one year of full-time study. The requirements for the MMPH degree are listed below.

- 42 Credits
- Practicum (200-hour minimum)
- Essay

Contact Information

https://www.publichealth.pitt.edu/academics/masters-programs/multidisciplinary-master-public-health

Program Director

Michael J. Deem

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Program Staff

Renee Valenti

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MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

MMPH Required Courses

- PUBHLT 2002 - ESSAY-MMPH *(1-2 credits)*
- PUBHLT 2029 - MMPH PRACTICUM *(1-3 credits)*

Elective Courses

Students select graduate-level electives as recommended and approved by their academic advisor.

Total Credits: 42

Department of Behavioral and Community Health Sciences

The Department of Behavioral and Community Health Sciences at the University of Pittsburgh examines the social determinants of health, that is, the set of social and behavioral factors that either promote or threaten public health. Our interventions alter these social and behavioral factors (such as housing, health literacy, or care management) to assess effects on community health. The BCHS mission statement summarizes our approach:

Vision

Healthy people living in thriving and equitable communities.

Mission

Improve and promote health and equity by engaging individuals, communities, and systems through our research, teaching, and practice.

Values

Open communication; active collaboration; integrated and strength-based approaches; social justice and health equity; application of knowledge in the context of people's lives.

The primary educational mission of the Department is to prepare students for positions of responsibility and leadership in public health practice, research, and training. Our students learn to employ the most current health behavior theories and community development strategies in approaching public health challenges. They develop applied research skills in community health assessment and planning, program implementation and evaluation, health education, and health communication. They learn how to design programs and conduct community-based research, and to work as part of interdisciplinary teams examining behavioral interventions and community assessment strategies. These educational and practice experiences prepare our graduates to move into leadership positions at the local, national, and international levels.

The department has a world-class faculty that is involved in teaching, research, and community service on the local, national, and international level. We collaborate with local and regional public health systems, and many of the leadership staff in these organizations also have faculty appointments and teach classes in the department.

Contact Information

https://www.publichealth.pitt.edu/bchs

Department Chair

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Admissions & Aid

All new applicants must apply through SOPHAS. Instructions on how to apply, deadlines and requirements, information for international applicants, frequently asked questions, and financial aid information can be found by visiting Pitt Public Health Admissions and Aid. Please visit Behavioral and Community Health Sciences Admissions for department and program-specific application requirements.

Joint Degrees

Students in the BCHS MPH program can pursue two graduate degrees simultaneously, through partnerships with other schools and departments at the University of Pittsburgh. Joint programs typically reduce the number of credits needed for each degree, allowing students to earn two degrees in three years for master's programs and four to five years for MPH/PhD programs.

To participate in a joint degree program, students apply separately to both schools and must meet all of the usual admissions requirements.

Although it is possible to apply to both schools at the same time, currently enrolled students can still apply for a joint degree as long as they have not yet completed one year of full-time study.

Accelerated Bachelor's/Master's Program

Designed to allow students to complete a bachelor's and master's degree in approximately 5 years. Qualified Pitt undergraduates can apply to an accelerated program in their third year. Accelerated program details, application instructions, and requirements can be found by visiting Pitt Public Health Accelerated Bachelor's/Master's Program.

Certificate

Evaluation of Public Health Promotion and Health Education Programs Certificate

This certificate program is designed to link the University and community in practical applied evaluation initiatives at the community level. As a student in this program you will:

- Acquire skills to participate in various types of evaluation projects in the public health arena.
- Work on evaluation projects with support from an expert in the field of program evaluation.

Contact Information

https://www.publichealth.pitt.edu/academics/graduate-certificates/evaluation-public-health-programs

Certificate Director

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Certificate Staff

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Academic Requirements

15 credits is required, including a 3-credit applied evaluation internship experience under the supervision of evaluation faculty or the certificate program director and in collaboration with a community preceptor.

Required Courses

9 Credits

- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2503 - PRACTICUM *(3 credits, 320-400 hours minimum)*

Elective Courses

6 Credits

Master's students must choose six credits of electives from the following list of options within and outside of BCHS.

Doctoral students must choose one of the following courses:

- BCHS 2511 INDEPENDENT STUDY *(3 credits with approval of certificate director)*
- BCHS 3003 SEMINAR IN ADVANCED EVALUATION TECHNIQUES

Additionally, doctoral students must choose three credits of electives from the following list of options within and outside of BCHS.

An updated list is available each year, and students are welcome to propose additional electives from elsewhere in the University.

- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
- BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3030 - MEASUREMENT IN THE SOCIAL AND BEHAVIORAL SCIENCES

Total Credits: 15

Doctoral

Behavioral and Community Health Sciences, PhD

The Doctor of Philosophy (PhD) program prepares students to conduct research and teach in the social and behavioral sciences areas of public health and in academic settings. The PhD is focused on training researchers in the behavioral and community health sciences to integrate state-of-the art theory, designs, and analysis approaches to examine current problems in public health.

The program is designed to be completed in four years. The requirements for the BCHS PhD degree are listed below.

- 72 Credits
- Preliminary Evaluation
- Comprehensive Examination
- Overview/Prospectus Meeting
- Admission to Candidacy
- Final Oral Examination - Dissertation Defense

Contact Information

https://www.publichealth.pitt.edu/bchs/degree-programs/bchs-phd

Program Director

Jaime Sidani

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BCHS PhD Requirements

Theories of Behavior & Community

6 Credits

- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 3555 - DOCTORAL SEMINAR IN BEHAVIORAL AND COMMUNITY HEALTH SCIENCES THEORIES AND MODELS

Research Design & Methods

12 Credits

- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
  OR
- HPM 2905 - QUASI-EXPERIMENTAL DESIGN FOR HEALTH SERVICES RESEARCH
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3200 - SCALE DEVELOPMENT AND SURVEY DESIGN IN SOCIAL AND BEHAVIORAL SCIENCES
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY

Elective: Theory & Methods

3 Credits

3 credits from the list below or 3 credits of relevant graduate-level coursework as recommended by academic advisor.

- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
  AND
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
  AND
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- HPM 2010 - ORGANIZATION STUDIES: THEORY AND APPLICATIONS TO HEALTH CARE SYSTEMS

Statistical Analysis

9 Credits

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- BCHS 3707 - APPLIED MULTIPLE REGRESSION ANALYSIS AND CAUSAL MODELING FOR THE BEHAVIORAL AND COMMUNITY HEALTH SCI

Interventions

5-6 Credits

- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 3506 - IMPLEMENTATION SCIENCE IN PUBLIC HEALTH
  OR
- CLRES 2214 - FOUNDATIONS OF IMPLEMENTATION SCIENCE PT 1 & 2

Integration of Public Health Research & Practice

5-10 Credits

- BCHS 3100 - GRANT WRITING
- HPM 3501 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS 1
- FACDEV 2200 - PRACTICUM ON UNIVERSITY TEACHING
  OR
- BCHS 2511 - INDEPENDENT STUDY *Students must complete 6 UCTL Workshops (1-3 credits)*
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH *students with MPH from CEPH-accredited school are eligible to waive*

Milestones

2-4 Credits

- BCHS 3888 - PREPARATION FOR COMPREHENSIVE EXAMINATION *(up to 3 credits)*
- BCHS 3010 - RESEARCH AND DISSERTATION PHD *(up to 1 credit)*
  OR
- FTDR 3999 - FULL-TIME DISSERTATION STUDY

Electives

1-6 Credits

As recommended by academic advisor.

Other Requirements

Preliminary (Qualifying) Evaluation

Occurs at the end of the 1st year of full-time study (2 semesters); for part-time students, typically occurs at the end of the 2nd year of part-time study.

- **Requirements, general:**
- GPA >= 3.3
- Completion of first IDP
- Completion of no more than 30 credits in the program
- Completion of online ethics modules
- Submission of final transcript from Master's degree (if admitted pending receipt)
- **Requirements, coursework:**
- BCHS 2525 INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2558 HEALTH PROGRAM EVALUATION
- BCHS 3007 ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3555 DOCTORAL SEMINAR IN BEHAVIORAL AND COMMUNITY HEALTH SCIENCES THEORIES AND MODELS
- BIOST 2041 INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 PRINCIPLES OF EPIDEMIOLOGY
- **Format of evaluation:** Written paper with oral defense
- **Other information, outcomes:**
- Pass without changes
- Pass with revisions

- Fail (one additional attempt allowed)

Comprehensive Examination

Occurs after 2nd year of full-time study (4 semesters); for part-time students, typically occurs at the end of 3rd or 4th year of part-time study.

- **Requirements, general:**
- Passed Preliminary Evaluation
- **Format of evaluation:** Written paper with oral defense
- **Other information, outcomes:**
- Pass without changes
- Pass with revisions
- Fail (one additional attempt allowed)

Overview/Prospectus Meeting

Occurs after 2nd year of full-time study (4 semesters); for part-time students, typically occurs at the end of 3rd or 4th year of part-time study. May be completed at the same time or after the Comprehensive Examination

- **Requirements, general:**
- Passed Preliminary Evaluation
- Passed Comprehensive Examination (if completed together, Comprehensive Examination is evaluated first)
- Completion of all required coursework
- **Format of evaluation:** Written paper with oral defense
- **Other information, outcomes:**
- Pass without changes
- Pass with revisions
- Fail (one additional attempt allowed)

Admission to Candidacy

Occurs after successful defense (pass) of the dissertation overview.

Final Oral Examination - Dissertation Defense

Occurs at a minimum of 8 months after successfully passing the dissertation overview.

- **Requirements, general:**
- Passed dissertation overview.
- **Format of evaluation:** Written paper with oral defense
- Format option 1: traditional single integrated document
- Format option 2: three articles of publishable quality with an overarching introduction and discussion/conclusion

Total Credits: 72

Joint Degree

Behavioral and Community Health Sciences, MPH/MID

This program is a collaboration between the School of Public and International Affairs and the School of Public Health, Department of Behavioral and Community Health Sciences. The MPH/MID joint degree program prepares students for careers as public health practitioners in emerging economies where health issues are closely linked to social, political, and economic problems.

Students are required to complete a 300-hour field placement practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The BCHS MPH/MID joint degree is designed to be completed in three years of full-time study. The BCHS requirements for the MPH/MID joint degree are listed below. Students should refer to the School of Public and International Affairs for the most current MID requirements.

- 45 Public Health Credits *(6 credits of public health-relevant electives taken in SPIA can be applied to the 45-credit requirement)*
- 78 Total Credits
- Practicum (300-hour minimum)
- Essay or Thesis

Contact Information

https://www.publichealth.pitt.edu/bchs/degree-programs/mphmid-mpa-or-mpia

Program Director

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Admissions

Students must apply separately to the School of Public & International Affairs and the School of Public Health.

MPH Core Required Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/MID Required Courses

- BCHS 2503 - PRACTICUM *(1-3 credits)*
- BCHS 2521 - ESSAY *(1-3 credits)*
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2519 - APPLYING THEORY AND SYSTEMS THINKING IN PUBLIC HEALTH

Elective Courses

Minimum 6 credits from list below. Additional electives must be added, as recommended by academic advisor, to earn total number of credits required for degree program. Students can apply a maximum of 6 credits of public health-relevant coursework taken in SPIA to meet elective requirements.

- BCHS 2504 - THEORY AND PRACTICE OF HEALTH COMMUNICATIONS
- BCHS 2516 - VIDEO FOR HEALTH PROMOTION
- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- BCHS 2551 - SOCIAL NETWORKS & HEALTH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2572 - RISK COMMUNICATION
- BCHS 2605 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
- BCHS 2660 - HARM REDUCTION APPROACHED IN HEALTH & PUBLIC HEALTH SETTINGS
- BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3021 - SOCIAL NETWORKS AND HEALTH II: COMPUTER METHODS
- BCHS 3506 - IMPLEMENTATION SCIENCE IN PUBLIC HEALTH
- PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS

Total School of Public Health Credits: 45

Total Joint Degree Credits: 78

Behavioral and Community Health Sciences, MPH/MPA

This program is a collaboration between the School of Public and International Affairs and the School of Public Health, Department of Behavioral and Community Health Sciences. The MPH/MPA joint degree program prepares students for careers as public health practitioners in emerging economies where health issues are closely linked to social, political, and economic problems.

Students are required to complete a 300-hour field placement practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The BCHS MPH/MPA joint degree is designed to be completed in three years of full-time study. The BCHS requirements for the MPH/MPA joint degree are listed below. Students should refer to the School of Public and International Affairs for the most current MPA requirements.

- 45 Public Health Credits *(6 credits of public health-relevant electives taken in SPIA can be applied to the 45-credit requirement)*
- 78 Total Credits
- Practicum (300-hour minimum)
- Essay or Thesis

Contact Information

https://www.publichealth.pitt.edu/bchs/degree-programs/mphmid-mpa-or-mpia

Program Director

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Admissions

Students must apply separately to the School of Public & International Affairs and the School of Public Health.

MPH Core Required Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/MPA Required Courses

- BCHS 2503 - PRACTICUM *(1-3 credits)*
- BCHS 2521 - ESSAY *(1-3 credits)*
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2519 - APPLYING THEORY AND SYSTEMS THINKING IN PUBLIC HEALTH

Elective Courses

Minimum 6 credits from list below. Additional electives must be added, as recommended by academic advisor, to earn total number of credits required for degree program. Students can apply a maximum of 6 credits of public health-relevant coursework taken in SPIA to meet elective requirements.

- BCHS 2504 - THEORY AND PRACTICE OF HEALTH COMMUNICATIONS
- BCHS 2516 - VIDEO FOR HEALTH PROMOTION
- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- BCHS 2551 - SOCIAL NETWORKS & HEALTH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2572 - RISK COMMUNICATION
- BCHS 2605 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION

- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
- BCHS 2660 - HARM REDUCTION APPROACHED IN HEALTH & PUBLIC HEALTH SETTINGS
- BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3021 - SOCIAL NETWORKS AND HEALTH II: COMPUTER METHODS
- BCHS 3506 - IMPLEMENTATION SCIENCE IN PUBLIC HEALTH
- PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS

Total School of Public Health Credits: 45

Total Joint Degree Credits: 78

Behavioral and Community Health Sciences, MPH/MPIA

This program is a collaboration between the School of Public and International Affairs and the School of Public Health, Department of Behavioral and Community Health Sciences.

Students are required to complete a 300-hour field placement practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The BCHS MPH/MPIA joint degree is designed to be completed in three years of full-time study. The BCHS requirements for the MPH/MPIA joint degree are listed below. Students should refer to the School of Public and International Affairs for the most current MPIA requirements.

- 45 Public Health Credits *(6 credits of public health-relevant electives taken in SPIA can be applied to the 45-credit requirement)*
- 78 Total Credits
- Practicum (300-hour minimum)
- Essay or Thesis

Contact Information

https://www.publichealth.pitt.edu/bchs/degree-programs/mphmid-mpa-or-mpia

Program Director

Thistle I. Elias

6123 PUBHL

130 DeSoto St.

412-720-6973

elias@pitt.edu

Admissions

Students must apply separately to the School of Public & International Affairs and the School of Public Health.

MPH Core Required Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/MPIA Required Courses

- BCHS 2503 - PRACTICUM *(1-3 credits)*
- BCHS 2521 - ESSAY *(1-3 credits)*
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2519 - APPLYING THEORY AND SYSTEMS THINKING IN PUBLIC HEALTH

Elective Courses

Minimum 6 credits from list below. Additional electives must be added, as recommended by academic advisor, to earn total number of credits required for degree program. Students can apply a maximum of 6 credits of public health-relevant coursework taken in SPIA to meet elective requirements.

- BCHS 2504 - THEORY AND PRACTICE OF HEALTH COMMUNICATIONS
- BCHS 2516 - VIDEO FOR HEALTH PROMOTION
- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- BCHS 2551 - SOCIAL NETWORKS & HEALTH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2572 - RISK COMMUNICATION
- BCHS 2605 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
- BCHS 2660 - HARM REDUCTION APPROACHED IN HEALTH & PUBLIC HEALTH SETTINGS
- BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3021 - SOCIAL NETWORKS AND HEALTH II: COMPUTER METHODS
- BCHS 3506 - IMPLEMENTATION SCIENCE IN PUBLIC HEALTH
- PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS

Total School of Public Health Credits: 45

Total Joint Degree Credits: 78

Behavioral and Community Health Sciences, MPH/MSW

This program is collaboration between the School of Social Work and the School of Public Health, Department of Behavioral and Community Health Sciences. Students graduate with both Master of Social Work and Master of Public Health degrees and are prepared to pursue a wide range of social work and public health careers to improve the health of a target population and/or community.

Students are required to complete a 200-hour practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The BCHS MPH/MSW joint degree typically is completed with a three-year curriculum plan for Direct Practice or COSA. The BCHS requirements for the MPH/MSW joint degree are listed below. Students should refer to the School of Social Work for the most current MSW program requirements.

- 45 Public Health Credits *(9 credits taken in Social Work can be applied to the 45-credit requirement; 3 credits of field placement in place of BCHS 2503 and 6 credits of public health-relevant electives)*
- 33 Social Work Credits *(plus 18 field placement credits)*
- Practicum (200-hour minimum)
- Essay or Thesis

Contact Information

https://www.publichealth.pitt.edu/bchs/degree-programs/mphmsw

Department Chair

Mary Hawk

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412-648-2342

meh96@pitt.edu

Admissions

Students must apply separately to the School of Social Work and the School of Public Health.

MPH Core Required Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY

- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/MSW Required Courses

- BCHS 2503 - PRACTICUM *(1-3 credits)*
  3 credits of field placement can be taken in place of BCHS 2503, students are required to complete and submit all Pitt Public Health practicum requirements
- BCHS 2521 - ESSAY *(1-3 credits)*
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2519 - APPLYING THEORY AND SYSTEMS THINKING IN PUBLIC HEALTH

Elective Courses

Minimum 6 credits from list below. Additional electives must be added, as recommended by academic advisor, to earn total number of credits required for degree program. Students can apply a maximum of 6 credits of public health-relevant coursework taken in social work to meet elective requirements.

- BCHS 2504 - THEORY AND PRACTICE OF HEALTH COMMUNICATIONS
- BCHS 2516 - VIDEO FOR HEALTH PROMOTION
- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- BCHS 2551 - SOCIAL NETWORKS & HEALTH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2572 - RISK COMMUNICATION
- BCHS 2605 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
- BCHS 2660 - HARM REDUCTION APPROACHED IN HEALTH & PUBLIC HEALTH SETTINGS
- BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3021 - SOCIAL NETWORKS AND HEALTH II: COMPUTER METHODS
- BCHS 3506 - IMPLEMENTATION SCIENCE IN PUBLIC HEALTH
- PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS

Total School of Public Health Credits: 45

Total Joint Degree Credits: 87

Behavioral and Community Health Sciences, MPH/PhD, Anthropology

This program is a collaboration between the Dietrich School of Arts and Sciences, Department Anthropology and the School of Public Health, Department of Behavioral and Community Health Sciences. The MPH/PhD joint degree program prepares anthropologists for

research, teaching, and program planning/evaluation for specialization in the cultural, social, and behavioral aspects of health and health care in either a domestic or international setting.

Students are required to complete a 200-hour practicum in a public health setting (Anthropology fieldwork fulfills this requirement) and prepare an essay or thesis (Anthropology dissertation fulfills this requirement) that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The MPH/PhD joint degree is designed to be completed in four to five years including time for dissertation research. The BCHS requirements for the MPH/PhD joint degree are listed below. Students should refer to the Department of Anthropology for the most current PhD requirements.

- 45 Public Health Credits *(6 credits of public health-relevant electives taken in Anthropology can be applied to the 45-credit requirement)*
- 87 Total Credits *(reduction in total credits to 81 expected to be approved for AY 26-27)*
- Practicum (200-hour minimum)
- Essay or Thesis

Contact Information

https://www.publichealth.pitt.edu/bchs/degree-programs/mphphd-anthropology

Program Director

Zoé Mistrale Hendrickson

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412-648-7536

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Admissions

Students must apply separately to the Dietrich School of Arts and Sciences and the School of Public Health.

MPH Core Required Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/PhD Anthropology Required Courses

- BCHS 2503 - PRACTICUM *(1-3 credits)*

Anthropology field placement can be taken in place of BCHS 2503, students are required to complete and submit all Pitt Public Health practicum requirements

- BCHS 2521 - ESSAY *(1-3 credits)*
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2519 - APPLYING THEORY AND SYSTEMS THINKING IN PUBLIC HEALTH

Elective Courses

Minimum 6 credits from list below. Additional electives must be added, as recommended by academic advisor, to earn total number of credits required for degree program. Students can apply a maximum of 6 credits of public health-relevant coursework taken in Anthropology to meet elective requirements.

- BCHS 2504 - THEORY AND PRACTICE OF HEALTH COMMUNICATIONS
- BCHS 2516 - VIDEO FOR HEALTH PROMOTION
- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- BCHS 2551 - SOCIAL NETWORKS & HEALTH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2572 - RISK COMMUNICATION
- BCHS 2605 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
- BCHS 2660 - HARM REDUCTION APPROACHED IN HEALTH & PUBLIC HEALTH SETTINGS
- BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3021 - SOCIAL NETWORKS AND HEALTH II: COMPUTER METHODS
- BCHS 3506 - IMPLEMENTATION SCIENCE IN PUBLIC HEALTH
- PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS

Total School of Public Health Credits: 45

Total Joint Degree Credits: 87

Reduction in total credits to 81 expected to be approved for AY 26-27 with no impact on requirements listed above.

Behavioral and Community Health Sciences, MPH/PhD, Social Work

This joint program with the University of Pittsburgh's School of Social Work prepares students to fulfill leadership roles in public health systems or academic settings with a particular focus on maternal and child health. Students in this program have opportunities to work with local organizations on a variety of planning, evaluation, and research activities.

Students are required to complete a 200-hour practicum in a public health setting and prepare an essay or thesis (fulfilled by the social work dissertation) that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The MPH/PhD joint degree is designed to be completed in four to five years including time for dissertation research. The BCHS requirements for the MPH/PhD joint degree are listed below. Students should refer to the School of Social Work for the most current PhD requirements.

- 45 Public Health Credits *(6 credits of public health-relevant electives taken in Social Work can be applied to the 45-credit requirement)*
- 72 Total Credits
- Practicum (200-hour minimum)
- Essay or Thesis

Contact Information

https://www.publichealth.pitt.edu/bchs/degree-programs/mphphd-social-work

Department Chair

Mary Hawk

6120 PUBHL

130 DeSoto St.

412-648-2342

meh96@pitt.edu

Admissions

Students must apply separately to the School of Social Work and the School of Public Health.

MPH Core Required Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/PhD Social Work Required Courses

- BCHS 2503 - PRACTICUM (1-3 credits)
- BCHS 2521 - ESSAY (1-3 credits)
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2519 - APPLYING THEORY AND SYSTEMS THINKING IN PUBLIC HEALTH

Elective Courses

Minimum 6 credits from list below. Additional electives must be added, as recommended by academic advisor, to earn total number of credits required for degree program. Students can apply a maximum of 6 credits of public health-relevant coursework taken in Social Work to meet elective requirements.

- BCHS 2504 - THEORY AND PRACTICE OF HEALTH COMMUNICATIONS
- BCHS 2516 - VIDEO FOR HEALTH PROMOTION
- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- BCHS 2551 - SOCIAL NETWORKS & HEALTH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2572 - RISK COMMUNICATION
- BCHS 2605 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
- BCHS 2660 - HARM REDUCTION APPROACHED IN HEALTH & PUBLIC HEALTH SETTINGS
- BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3506 - IMPLEMENTATION SCIENCE IN PUBLIC HEALTH
- PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS

Total School of Public Health Credits: 45

Total Joint Degree Credits: 72

Master's

Behavioral and Community Health Sciences, MPH

The MPH in Behavioral and Community Health Sciences (BCHS) program prepares students for an applied public health career. In the MPH program you will learn and apply:

- community-engaged strategies
- social and behavioral concepts to assess the health status of populations
- applied social/behavioral theory
- social/behavioral science research methods to evaluate health promotion programs
- how to communicate with other researchers, communities, and policymakers.

The program emphasizes student learning and practicing assessment and research skills in the context of social and behavioral change at the individual, organizational, and community levels.

Students are required to complete a 200-hour practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The MPH program is designed to be completed in four semesters of full-time study. An option does exist for finishing in three semesters. The requirements for the BCHS MPH degree are listed below.

- 45 Credits
- Practicum (200-hour minimum)
- Essay

Contact Information

https://www.publichealth.pitt.edu/bchs/degree-programs/master-public-health-mph-bchs

Program Director

Elizabeth M. Felter

6122 PUBHL

130 DeSoto St.

412-383-9629

emfelter@pitt.edu

MPH Core Required Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH Required Courses

- BCHS 2503 - PRACTICUM *(1-3 credits)*
- BCHS 2521 - ESSAY *(1-3 credits)*
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2519 - APPLYING THEORY AND SYSTEMS THINKING IN PUBLIC HEALTH

Elective Courses

Minimum 6 credits from list below. Additional graduate-level electives must be added, as recommended by academic advisor, to earn total number of credits required for degree program.

- BCHS 2504 - THEORY AND PRACTICE OF HEALTH COMMUNICATIONS
- BCHS 2516 - VIDEO FOR HEALTH PROMOTION
- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- BCHS 2551 - SOCIAL NETWORKS & HEALTH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2572 - RISK COMMUNICATION
- BCHS 2605 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD

- BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
- BCHS 2660 - HARM REDUCTION APPROACHED IN HEALTH & PUBLIC HEALTH SETTINGS
- BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3021 - SOCIAL NETWORKS AND HEALTH II: COMPUTER METHODS
- BCHS 3506 - IMPLEMENTATION SCIENCE IN PUBLIC HEALTH
- PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS

Total Credits: 45

Department of Biostatistics and Health Data Science

Biostatistics is an innovative field that involves the design, analysis, and interpretation of data for studies in public health and medicine. Biostatistics experts play a crucial role in drawing insightful conclusions about disease and health risks by applying, adjusting, and developing mathematical and statistical methods to address factors that impact health.

Our students benefit from collaboration as statisticians with the renowned University of Pittsburgh School of Medicine and UPMC, Pennsylvania's largest academic medical center, and have access to real-world research opportunities and extensive University computing facilities. Through rigorous courses, students will

- gain a comprehensive understanding of statistical methods in the context of public health and medical problems;
- work with faculty on developing new and innovative methodologies and analytical techniques;
- have the opportunity through both research and service to apply these methods to current and pressing concerns in medicine and public health.

Mission

Our departmental mission is to (i) tackle contemporary biostatistical and health data science through innovative methodological research, (ii) advance biomedical and public health research and practice through multidisciplinary collaborations, (iii) cultivate the next generation of leaders in biostatistics and health data science through high-quality, inclusive education.

Vision

Leading data-driven science in public health via innovative methodology, interdisciplinary collaboration and impactful education.

Contact Information

https://www.publichealth.pitt.edu/biostatistics

Department Chair

Yan Ma

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Vice Chair for Education

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Academic Administrator

Helen Chen

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biostat@pitt.edu

Admissions & Aid

All new applicants must apply through SOPHAS. Instructions on how to apply, deadlines and requirements, information for international applicants, frequently asked questions, and financial aid information can be found by visiting Pitt Public Health Admissions and Aid. Please visit Biostatistics and Health Data Science Admissions for department and program-specific application requirements.

Accelerated Bachelor's/Master's Program

Designed to allow students to complete a bachelor's and master's degree in approximately 5 years. Qualified Pitt undergraduates can apply to an accelerated program in their third year. Accelerated program details, application instructions, and requirements can be found by visiting Pitt Public Health Accelerated Bachelor's/Master's Program.

Doctoral

Biostatistics, PhD

The PhD in biostatistics is an academic degree program for students with a background in mathematics and a strong interest in public health and medicine. The program emphasizes statistical theory and methods so that students are prepared to be effective statistical collaborators in interdisciplinary studies; lead the design and execution of studies; and develop biostatistics methodology.

The program is designed to be completed in four to five years. The requirements for the Biostatistics PhD degree are listed below.

- 72 Credits
- Preliminary Evaluation
- Comprehensive Examination
- Overview/Prospectus Meeting
- Admission to Candidacy

- Final Oral Examination - Dissertation Defense

Contact Information

https://www.publichealth.pitt.edu/biostatistics/degree-programs/doctor-philosophy-biostatistics

Program Director

Guan Yu

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412-624-1850

guy24@pitt.edu

Required Courses

- BIOST 2025 - BIOSTATISTICS SEMINAR *(3 terms)*
- BIOST 2141 - BIOSTATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- BIOST 2143 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- BIOST 2173 - SAS FOR DATA MANAGEMENT AND ANALYSIS
  OR a minimum 2-credit course in statistical programming
- BIOST 2179 - BIOSTATISTICS CONSULTING PRACTICUM
- BIOST 3000 - TEACHING PRACTICUM
- BIOST 3011 - INTRODUCTION TO STATISTICAL INFERENCE 1
- BIOST 3012 - INTRODUCTION TO STATISTICAL INFERENCE 2
- BIOST 3021 - ADVANCED STATISTICAL INFERENCE 1
- BIOST 3022 - ADVANCED STATISTICAL INFERENCE 2
- BIOST 3025 - LINEAR MODELS
- BIOST 3042 - MIXED MODELS
- BIOST 3050 - SURVIVAL ANALYSIS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(2 terms)*
- BIOST 3010 - RESEARCH AND DISSERTATION PHD *(3 credits)*
  OR
- FTDR 3999 - FULL-TIME DISSERTATION STUDY *(1 term)*

Elective Courses

In situations where a student's research interests or needs indicate alternative statistics, data science or machine learning courses outside the department are more appropriate, it may be substituted with the permission of the student's academic or dissertation advisor. Such courses should cover topics not already addressed by the electives listed below or may be considered if the listed courses are not offered during the desired term.

BIOST Elective Courses

Eighteen (18) credits of the following courses:

- BIOST 2067 - APPLIED META-ANALYSIS
- BIOST 2080 - ADVANCED STATISTICAL LEARNING
- BIOST 2151 - BAYESIAN DATA SCIENCE
- BIOST 2154 - STATISTICAL METHODS FOR OMICS DATA
- BIOST 2155 - INTRODUCTORY STATISTICAL LEARNING FOR HEALTH SCIENCES
- BIOST 2162 - CLINICAL TRIALS: METHODS AND PRACTICE
- BIOST 2165 - STATISTICAL EVALUATION OF BIOMARKERS AND CLASSIFICATION TOOLS
- BIOST 2168 - INTRODUCTION TO CAUSAL INFERENCE
- BIOST 2174 - ADVANCED R COMPUTING
- BIOST 2181 - HEALTH DATA SCIENCE: DATA MANAGEMENT AND PROGRAMMING
- BIOST 2182 - HEALTH DATA SCIENCE: DATA VISUALIZATION AND BIG DATA
- BIOST 2183 - HEALTH DATA SCIENCE: STATISTICAL LEARNING AND ARTIFICIAL INTELLIGENCE
- BIOST 3065 - ANALYSIS OF DATA WITH MISSING VALUES
- STAT 2221 - ADVANCED APPLIED MULTIVARIATE ANALYSIS
- STAT 2240 - APPLIED SAMPLING
- STAT 2320 - APPLIED TIME SERIES
- STAT 2651 - BAYESIAN ANALYSIS

Domain Knowledge and Career Development Electives

Students must complete at least three (3) credits outside of the Department of Biostatistics and Health Data Science, in an area that best aligns with their research domain or career goal.

Other Requirements

Preliminary (Qualifying) Evaluation

Students are expected to take the preliminary examination at the end of the first year if they enter the program with a prior graduate degree in related fields, or at the end of the second year if they enter without a graduate

degree in related fields.

The PhD preliminary examination is a written exam consisting of two separate components: theory and application (including public health based on epidemiology). In order to pass the preliminary examination, students must receive passing scores for both components of the examination.

Required Coursework

Theory (Part 1 of 2)

BIOST 3021 ADVANCED STATISTICAL INFERENCE 1

BIOST 3022 ADVANCED STATISTICAL INFERENCE 2

BIOST 3025 LINEAR MODELS

BIOST 3042 MIXED MODELS

Application (Part 2 of 2)

BIOST 2141 BIOSTATISTICAL METHODS

BIOST 2142 APPLIED REGRESSION ANALYSIS

BIOST 2143 LONGITUDINAL AND CLUSTERED DATA ANALYSIS

BIOST 3042 MIXED MODELS

EPIDEM 2110 PRINCIPLES OF EPIDEMIOLOGY

Comprehensive Examination

The comprehensive examination should be passed at least one academic term before scheduling the dissertation defense. The examination is oral and attended only by the student and the doctoral committee. The student takes the comprehensive examination after presenting a dissertation overview to members of the doctoral committee and all interested members of the Department of Biostatistics and Health Data Science.

Overview/Prospectus Meeting

The dissertation overview should be passed at least one academic term before scheduling the dissertation defense. Doctoral students must prepare and present a dissertation proposal to members of the doctoral committee and all interested members of the Department of Biostatistics and Health Data Science. The purpose of the overview is for a student to demonstrate that he/she is prepared to complete a dissertation by showing a general breadth of biostatistical knowledge and deep understanding of particular area(s) of biostatistics, demonstrating the ability to use biostatistical research methods and presenting a carefully formulated plan of novel dissertation research.

An announcement advertising the time and location of the dissertation overview should be disseminated to the Department at least one week prior to the presentation. The doctoral committee must unanimously approve the dissertation topic and research plan before the student is admitted to candidacy for the doctoral degree.

Admission to Candidacy

Admission to candidacy should occur at least one academic term before the defense of the dissertation in order to provide an opportunity for the dissertation committee members to review, criticize, and monitor the proposed research.

To qualify for admission to candidacy a student must:

- be in full graduate status
- have satisfied the requirement of preliminary examination
- have completed all required coursework with a minimum quality point average (QPA) of 3.00
- shown proficiency in a research or investigative tool
- have received approval of the proposed dissertation subject and plan following successful completion of the dissertation overview and comprehensive examination requirements

Students are informed of admission to candidacy by written notification from the Pitt Public Health Office of Student Affairs.

Final Oral Examination - Dissertation Defense

The final oral examination in defense of the doctoral dissertation is conducted by the student's dissertation committee. One copy of the dissertation must be submitted to each member of the dissertation committee at least two weeks before the scheduled doctoral defense. The defense may not be scheduled earlier than two weeks following submission of the dissertation but must be held at least two weeks before the degree is conferred.

At least one month before the scheduled defense, the student must provide the department registrar with the defense time, date, place, dissertation title and abstract for school-wide advertisement. The final copy of the dissertation must be prepared and submitted according to University requirements.

Total Credits Required for Degree: 72

Master's

Biostatistics, MS

The MS in Biostatistics is an academic degree program for students with a background in math and a strong interest in public health. The program emphasizes statistical theory and methods so that students are prepared to be effective statistical collaborators in interdisciplinary studies; and lead the design and execution of studies.

Full-time students normally complete graduation requirements for the MS degree within three to five terms (18 to 24 months). The requirements for the Biostatistics MS degree are listed below.

- 40 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/biostatistics/degree-programs/master-science-biostatistics

Program Director

Andriy I. Bandos

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Required Courses

- BIOST 2025 - BIOSTATISTICS SEMINAR
- BIOST 2081 - MATHEMATICAL METHODS FOR STATISTICS
- BIOST 2131 - FOUNDATIONS OF STATISTICAL THEORY
- BIOST 2141 - BIOSTATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- BIOST 2143 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- BIOST 2150 - APPLIED SURVIVAL ANALYSIS: METHODS AND PRACTICE
- BIOST 2173 - SAS FOR DATA MANAGEMENT AND ANALYSIS
  OR SAS programming equivalent
- BIOST 2179 - BIOSTATISTICS CONSULTING PRACTICUM
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- BIOST 2198 - MS THESIS PREPARATION
  FOLLOWED BY (in the next term)
- BIOST 2199 - MS THESIS

Elective Courses

Students add electives from the list below to earn total credits required for the degree program. In situations where a student's special interests or needs indicate an alternative course is more appropriate it may be substituted with the permission of the student's academic advisor. BIOST 2025 cannot be used to fulfill elective credits.

- BIOST 2067 - APPLIED META-ANALYSIS
- BIOST 2080 - ADVANCED STATISTICAL LEARNING
- BIOST 2151 - BAYESIAN DATA SCIENCE
- BIOST 2154 - STATISTICAL METHODS FOR OMICS DATA
- BIOST 2155 - INTRODUCTORY STATISTICAL LEARNING FOR HEALTH SCIENCES
- BIOST 2162 - CLINICAL TRIALS: METHODS AND PRACTICE
- BIOST 2165 - STATISTICAL EVALUATION OF BIOMARKERS AND CLASSIFICATION TOOLS
- BIOST 2168 - INTRODUCTION TO CAUSAL INFERENCE
- BIOST 2174 - ADVANCED R COMPUTING
- BIOST 2181 - HEALTH DATA SCIENCE: DATA MANAGEMENT AND PROGRAMMING
- BIOST 2182 - HEALTH DATA SCIENCE: DATA VISUALIZATION AND BIG DATA
- BIOST 2183 - HEALTH DATA SCIENCE: STATISTICAL LEARNING AND ARTIFICIAL INTELLIGENCE

Other Requirements

Comprehensive Examination

MS students must pass a written comprehensive examination offered annually at the end of the first year of study in early May. The MS comprehensive examination covers applied methods as well as theoretical concepts in a 3-hour exam. The examination is a proctored closed book exam.

A student is eligible to take the comprehensive examination if the student:

- is enrolled in the MS Program in Biostatistics with good standing (3.00 QPA or greater)
- did not fail the comprehensive examination more than once
- completed the required courses (listed below) with a B or better, or equivalent coursework which the student has obtained transfer credits or exemption
- BIOST 2131 FOUNDATIONS OF STATISTICAL THEORY
- BIOST 2141 BIOSTATISTICAL METHODS
- BIOST 2142 APPLIED REGRESSION ANALYSIS
- EPIDEM 2110 PRINCIPLES OF EPIDEMIOLOGY

Oral Examination - Thesis Defense

After successful completion of the MS Comprehensive Examination requirement, MS students must complete for two semesters (three credits total) of faculty-guided thesis research (BIOST 2198 and BIOST 2199). Thesis work includes analysis, writing, and defending a master's thesis.

Total Credits: 40

Biostatistics, MS - Health Data Science (HDS) Concentration

The MS in Biostatistics with area of concentration in Health Data Science (HDS) is designed for students with a background in math, some experience with a programming language, and a strong interest in public health and data science. The HDS concentration emphasizes biostatistical theory and statistical computational methods for analyzing, processing and interpreting large-scale data sets so that students are prepared to clean, store, manage, manipulate, visualize and process high dimensional data as well as be effective statistical collaborators in interdisciplinary studies; and lead the design and execution of studies.

Full-time students normally complete graduation requirements for the MS degree within three to five terms (18 to 24 months). The requirements for the Biostatistics MS degree with HDS concentration are listed below.

- 40 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/biostatistics/degree-programs/ms-hds-concentration

Program Director

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Required Courses

- BIOST 2025 - BIOSTATISTICS SEMINAR
- BIOST 2081 - MATHEMATICAL METHODS FOR STATISTICS
- BIOST 2131 - FOUNDATIONS OF STATISTICAL THEORY
- BIOST 2141 - BIOSTATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- BIOST 2181 - HEALTH DATA SCIENCE: DATA MANAGEMENT AND PROGRAMMING
- BIOST 2155 - INTRODUCTORY STATISTICAL LEARNING FOR HEALTH SCIENCES
  OR
- BIOST 2183 - HEALTH DATA SCIENCE: STATISTICAL LEARNING AND ARTIFICIAL INTELLIGENCE
- BIOST 2182 - HEALTH DATA SCIENCE: DATA VISUALIZATION AND BIG DATA
- BIOST 2179 - BIOSTATISTICS CONSULTING PRACTICUM
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- BIOST 2198 - MS THESIS PREPARATION
  FOLLOWED BY (in the next term)
- BIOST 2199 - MS THESIS

Elective Courses

Students add electives from the list below to earn total credits required for the degree program. In situations where a student's special interests or needs indicate an alternative course is more appropriate it may be substituted with the permission of the student's academic advisor. BIOST 2025 cannot be used to fulfill elective credits.

- BCHS 2551 - SOCIAL NETWORKS & HEALTH
- BCHS 3021 - SOCIAL NETWORKS AND HEALTH II: COMPUTER METHODS
- BIOST 2080 - ADVANCED STATISTICAL LEARNING
- BIOST 2151 - BAYESIAN DATA SCIENCE
- BIOST 2173 - SAS FOR DATA MANAGEMENT AND ANALYSIS

- BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON
- BMIS 2588 - DATA BASE MANAGEMENT
- COBB 2060 - MACHINE LEARNING FOR BIOMEDICAL APPLICATIONS
- INFSCI 2160 - DATA MINING
- INFSCI 2410 - INTRODUCTION TO NEURAL NETWORKS
- INFSCI 2591 - ALGORITHM DESIGN
- INFSCI 2595 - MACHINE LEARNING
- INFSCI 2710 - DATABASE MANAGEMENT
- INFSCI 2725 - DATA ANALYTICS *(Prior R, Java, or Python programming experience required)*
- PHARM 5834 - PYTHON FOR DATA MANAGEMENT AND ANALYTICS
- STAT 2240 - APPLIED SAMPLING
- STAT 2270 - DATA MINING
- STAT 2280 - DATA SCIENCE WITH PYTHON
- STAT 2310 - APPLIED MULTIVARIATE ANALYSIS

Other Requirements

Comprehensive Examination

MS students must pass a written comprehensive examination offered annually at the end of the first year of study in early May. The MS comprehensive examination covers applied methods as well as theoretical concepts in a 3-hour exam. The examination is a proctored closed book exam.

A student is eligible to take the comprehensive examination if the student:

- is enrolled in the MS Program in Biostatistics Health Data Science concentration with good standing (3.00 QPA or greater)
- did not fail the comprehensive examination more than once
- completed the required courses (listed below) with a B or better, or equivalent coursework which the student has obtained transfer credits or exemption
- BIOST 2131 FOUNDATIONS OF STATISTICAL THEORY
- BIOST 2141 BIOSTATISTICAL METHODS
- BIOST 2142 APPLIED REGRESSION ANALYSIS
- EPIDEM 2110 PRINCIPLES OF EPIDEMIOLOGY

Oral Examination - Thesis Defense

After successful completion of the MS Comprehensive Examination requirement, MS students must complete for two semesters (three credits total) of faculty-guided thesis research (BIOST 2198 and BIOST 2199). Thesis work includes analysis, writing, and defending a master's thesis.

Total Credits: 40

Biostatistics, MS - Statistical and Computational Genomics (SCG) Concentration

The MS in Biostatistics with area of concentration in Statistical and Computational Genomics (SCG) is designed for students with a background in math, some experience with programming, and a strong interest in public health and genomics. The SCG concentration emphasizes biostatistical theory and statistical computational methods for analyzing and interpreting 'omics data so that students are prepared to be effective statistical collaborators in interdisciplinary studies; and lead the design and execution of studies.

Full-time students normally complete graduation requirements for the MS degree within three to five terms (18 to 24 months). The requirements for the Biostatistics MS degree with SCG concentration are listed below.

- 40 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/biostatistics/degree-programs/ms-scg-concentration

Program Director

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Required Courses

- BIOST 2025 - BIOSTATISTICS SEMINAR
- BIOST 2081 - MATHEMATICAL METHODS FOR STATISTICS
- BIOST 2131 - FOUNDATIONS OF STATISTICAL THEORY
- BIOST 2141 - BIOSTATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- BIOST 2154 - STATISTICAL METHODS FOR OMICS DATA
- BIOST 2155 - INTRODUCTORY STATISTICAL LEARNING FOR HEALTH SCIENCES
  OR
- BIOST 2183 - HEALTH DATA SCIENCE: STATISTICAL LEARNING AND ARTIFICIAL INTELLIGENCE
- BIOST 2182 - HEALTH DATA SCIENCE: DATA VISUALIZATION AND BIG DATA
- BIOST 2179 - BIOSTATISTICS CONSULTING PRACTICUM
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- BIOST 2198 - MS THESIS PREPARATION
  FOLLOWED BY (in the next term)
- BIOST 2199 - MS THESIS

Elective Courses

Students add electives from the list below to earn total credits required for the degree program. In situations where a student's special interests or needs indicate an alternative course is more appropriate it may be substituted with the permission of the student's academic advisor. BIOST 2025 cannot be used to fulfill elective credits.

- BIOINF 2016 - FOUNDATIONS OF TRANSLATIONAL INFORMATICS
- BIOINF 2061 - SINGLE-CELL AND SPATIAL GENOMICS DATA ANALYSIS
- BIOINF 2062 - FOUNDATIONS OF ALGORITHMS
- BIOINF 2105 - ARTIFICIAL INTELLIGENCE FOR BIOMEDICAL INFORMATICS
- BIOINF 2134 - PUBLICATION AND PRESENTATION IN BIOMEDICAL INFORMATICS

- BIOSC 2140 - GENOMICS
- BIOSC 2940 - MOLECULAR BIOLOGY
- BIOST 2080 - ADVANCED STATISTICAL LEARNING
- BIOST 2181 - HEALTH DATA SCIENCE: DATA MANAGEMENT AND PROGRAMMING
- COBB 2020 - SYSTEMS BIOLOGY 1
- COBB 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON
- COBB 2060 - MACHINE LEARNING FOR BIOMEDICAL APPLICATIONS
- HUGEN 2022 - HUMAN POPULATION GENETICS
- HUGEN 2029 - INTRODUCTION TO GENE MAPPING
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2071 - GENOMIC DATA PROCESSING AND STRUCTURE
- HUGEN 2072 - GENOMIC DATA PIPELINES AND TOOLS
- HUGEN 2073 - GENOMIC DATA VISUALIZATION AND INTEGRATION
- HUGEN 2080 - STATISTICAL GENETICS
- MSCBIO 2027 - BIOIMAGING, ANALYSIS AND SPATIAL BIOLOGY

Other Requirements

Comprehensive Examination

MS students must pass a written comprehensive examination offered annually at the end of the first year of study in early May. The MS comprehensive examination covers applied methods as well as theoretical concepts in a 3-hour exam. The examination is a proctored closed book exam.

A student is eligible to take the comprehensive examination if the student:

- is enrolled in the MS Program in Biostatistics Statistical and Computational Genomics concentration with good standing (3.00 QPA or greater)
- did not fail the comprehensive examination more than once
- completed the required courses (listed below) with a B or better, or equivalent coursework which the student has obtained transfer credits or exemption
- BIOST 2131 FOUNDATIONS OF STATISTICAL THEORY
- BIOST 2141 BIOSTATISTICAL METHODS
- BIOST 2142 APPLIED REGRESSION ANALYSIS
- EPIDEM 2110 PRINCIPLES OF EPIDEMIOLOGY

Oral Examination - Thesis Defense

After successful completion of the MS Comprehensive Examination requirement, MS students must complete for two semesters (three credits total) of faculty-guided thesis research (BIOST 2198 and BIOST 2199). Thesis work includes analysis, writing, and defending a master's thesis.

Total Credits: 40

Department of Environmental and Occupational Health

The Department of Environmental and Occupational Health at Pitt Public Health is dedicated to understanding the health effects of biological, chemical, and physical agents through cutting-edge research in molecular and biochemical toxicology, epigenetics, gene-environment interactions, and computational toxicology. Embracing the concept of the exposome, our faculty investigates environmental and occupational exposures and their interactions with genetic and epigenetic factors over a lifetime. Beyond theoretical research, we emphasize environmental health practice, pollution prevention, policy or management with a focus on applied science and more practical

problem solving. The department engages in active collaborations with community partners, other faculties, and national and global research centers, enriching our teaching and research endeavors. Our academic programs, characterized by rigorous mentoring and a flexible curriculum, offer students hands-on research opportunities and practical experiences, shaping them for careers in public health policy, consulting, risk assessment, academia, regulatory compliance & enforcement, industry, and beyond. Our graduates are well-equipped to work collaboratively with multidisciplinary professionals and are often employed in leading health organizations, contributing significantly to the field of environmental and occupational health.

Mission and Vision Statement

To lead visionary ventures in education, research, and practice that ensure a safe and healthy environment for all, now and in the future.

Goals

- Train an outstanding and empowered environmental and occupational health workforce
- Lead paradigm-shifting fundamental, applied, and community-engaged research
- Apply our teaching and transdisciplinary research excellence to promote practices and policies that advance equitable community and global environmental health
- Foster an equitable, collaborative, inclusive culture for students, staff, and faculty

Contact Information

https://www.publichealth.pitt.edu/eoh

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Vice Chair for Education
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Student Services Director
Lauren Murn
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Admissions & Aid

All new applicants must apply through SOPHAS. Instructions on how to apply, deadlines and requirements, information for international applicants, frequently asked questions, and financial aid information can be found by visiting Pitt Public Health Admissions and Aid. Please visit Environmental and Occupational Health Admissions for department and program-specific application requirements.

Accelerated Bachelor's/Master's Program

Designed to allow students to complete a bachelor's and master's degree in approximately 5 years. Qualified Pitt undergraduates can apply to an accelerated program in their third year. Accelerated program details, application instructions, and requirements can be found by visiting Pitt Public Health Accelerated Bachelor's/Master's Program.

Certificate

Environmental Health Risk Assessment Certificate

Risk assessment, a process developed in 1983 by the National Academy of Sciences, provides the framework for most current studies of environmental health concerns. As a student in this certificate program, you will be provided concentrated graduate education that will enable you to:

- Specify/measure the magnitude, duration and route of human exposure to selected hazardous environmental/occupational agents.
- Describe methods for quantifying dose and specify how this knowledge can be used to estimate probability of developing environmental/occupational disease outcomes.

Contact Information

https://www.publichealth.pitt.edu/academics/graduate-certificates/environmental-health-risk-assessment

Certificate Director

Nesta Bortey-Sam
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Certificate Staff
Lauren Murn
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lauren.murn@pitt.edu

Required Courses

11 Credits

- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS
- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2181 - RISK ASSESSMENT PRACTICUM
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE

Suggested Elective Courses

Minimum 4 credits

A statistics course is not required, however experience in statistical applications will assist students in understanding some of the program concepts.

- BCHS 2572 - RISK COMMUNICATION
- EOH 2180 - INTRODUCTION TO RISK SCIENCES
- EOH 2309 - ENVIRONMENTAL HEALTH CHEMISTRY
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY

Total Credits: 15

Doctoral

Environmental and Occupational Health, PhD

The PhD in Environmental and Occupational Health (EOH) offers a comprehensive theoretical and hands-on education designed for individuals pursuing advanced careers in academia, industry, or government within the diverse discipline of environmental health sciences. The program integrates instruction in toxicology, environmental exposure pathways, environmental epidemiology, and risk assessment, and remains at the cutting edge by incorporating the continuously evolving fields of cellular and molecular pathobiology related to environmental diseases.

Our PhD training program is committed to nurturing research proficiency and science communication skills. We achieve this through the use of laboratory-based model systems or population-based analyses. The objective is to foster a deep understanding of how exposures of relevance, in conjunction with social and genetic factors, can be deciphered and applied to the investigation of disease causation. This enriching approach equips our graduates with the skills necessary to confront the environmental health challenges of the 21st century.

The program is designed to be completed in four years. The requirements for the EOH PhD degree are listed below.

- 72 Credits
- Preliminary Evaluation
- Comprehensive Examination
- Overview/Prospectus Meeting
- Admission to Candidacy
- Final Oral Examination - Dissertation Defense

Contact Information

https://www.publichealth.pitt.edu/eoh/degree-programs/phd-environmental-and-occupational-health

Program Director

Winnie Tang

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Required Core Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2109 - ENVIRONMENTAL AND OCCUPATIONAL HEALTH SCIENCES JOURNAL CLUB *(four terms)*
- EOH 2110 - ROTATION/PRACTICUM *(Students with established dissertation research program are exempt with approval)*
- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS
- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2180 - INTRODUCTION TO RISK SCIENCES
- EOH 2181 - RISK ASSESSMENT PRACTICUM
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE
- EOH 2605 - MOLECULAR ENVIRONMENTAL BIOLOGY
- EOH 2805 - EPIGENETICS AND EPIGENOMICS OF ENVIRONMENTAL HEALTH
- EOH 3111 - PROFESSIONAL DEVELOPMENT
- EOH 3210 - PATHOPHYSIOLOGY OF ENVIRONMENTAL DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- EPIDEM 2223 - INTRODUCTION TO ENVIRONMENTAL EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 3100 - GRANT AND THESIS PROPOSAL WRITING FOR PUBLIC HEALTH
- FTDR 3999 - FULL-TIME DISSERTATION STUDY

Research & Dissertation

- EOH 3010 - RESEARCH AND DISSERTATION PHD *(up to 17 credits)*

Elective Courses

Students must register for at a minimum of 12 elective credits in consultation with their advisor to earn the total number of credits required for the degree program.

Total Credits: 72

Environmental and Occupational Health, PhD, Public Health Practice (PHP)

The PhD with concentration in Public Health Practice (PhD PHP) emphasizes environmental health practice, policy or management with a focus on applied science and more practical problem solving. The PhD PHP provides a broad education for individuals who may desire positions in academia, industry, consulting, non-governmental or government organizations, education & advocacy, regulatory & legislative design, and regulatory compliance & enforcement. Some major emphases are on the environmental origin of human disease and disease susceptibility, pollution prevention, and integration of environmental health considerations into economic and social decision-making. This professional degree emphasizes a practice-oriented, interdisciplinary approach to research that encompasses in its coursework the competencies of the five core areas of public health: environmental health, biostatistics, epidemiology, health policy and management, and behavioral and community health.

The program is designed to be completed in four years. The requirements for the PhD degree with PHP concentration are listed below.

- 72 Credits
- Preliminary Evaluation
- Comprehensive Examination
- Overview/Prospectus Meeting
- Admission to Candidacy
- Final Oral Examination - Dissertation Defense

Contact Information

https://www.publichealth.pitt.edu/eoh/degree-programs/phd-php

Program Director

Nesta Bortey-Sam

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Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- BIOST 2143 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- EOH 2024 - MPH ESSAY/THESIS *(2 credits)*
- EOH 2108 - ENVIRONMENTAL AND OCCUPATIONAL HEALTH PRACTICUM
- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS
- EOH 2140 - CLIMATE CHANGE AND HUMAN HEALTH
- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2180 - INTRODUCTION TO RISK SCIENCES
- EOH 2181 - RISK ASSESSMENT PRACTICUM
- EOH 2260 - ENVIRONMENTAL JUSTICE AND HEALTH EQUITY: REGULATIONS, POLICIES, AND PRACTICES
- EOH 2309 - ENVIRONMENTAL HEALTH CHEMISTRY
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE
- EOH 3210 - PATHOPHYSIOLOGY OF ENVIRONMENTAL DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- EPIDEM 2223 - INTRODUCTION TO ENVIRONMENTAL EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(2 terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH
- EOH 3010 - RESEARCH AND DISSERTATION PHD
  AND/OR
- FTDR 3999 - FULL-TIME DISSERTATION STUDY

Elective Courses

Add electives as recommended by academic advisors to earn total credits required for the program.

Total Credits: 72

Master's

Environmental and Occupational Health, MPH

The MPH in Environmental and Occupational Health (EOH) program provides an opportunity for students interested in environmental and occupational health to become familiar with the relevant concepts as they apply to public health practice. The program will also be an opportunity for working health professionals to achieve an in-depth environmental perspective as well as a degree in public health. The degree may be tailored towards the desires of individual students, focusing on various aspects of environmental health science, such as risk assessment, occupational hygiene, global environmental health or other emerging topics within environmental and occupational health.

Students are required to complete a 200-hour practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The MPH program is designed to be completed in four semesters of full-time study. The requirements for the EOH MPH degree are listed below.

- 47 Credits
- Practicum (200-hour minimum)
- Essay or Thesis

Contact Information

https://www.publichealth.pitt.edu/eoh/degree-programs/mph-environmental-and-occupational-health

Program Director

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130 DeSoto St.

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MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

EOH MPH Required Courses

- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- EOH 2024 - MPH ESSAY/THESIS *(2 credits)*
- EOH 2108 - ENVIRONMENTAL AND OCCUPATIONAL HEALTH PRACTICUM

- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS
- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2180 - INTRODUCTION TO RISK SCIENCES
- EOH 2181 - RISK ASSESSMENT PRACTICUM
- EOH 2309 - ENVIRONMENTAL HEALTH CHEMISTRY
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE

Elective Courses

Add electives as recommended by academic advisors to earn total credits required for the program.

Total Credits: 47

Environmental and Occupational Health, MS

The emphasis of the MS in Environmental and Occupational Health (EOH) is directed towards the theoretical underpinnings of environmental health sciences and toxicology with more limited involvement in laboratory-based research. The program is designed as an integrated modern curriculum combining the training in the toxicological and environmental biophysics disciplines that are traditional to the Department of Environmental and Occupational Health with the new and continually developing fields of cellular and molecular pathobiology of environmental disease and gene environment interactions.

The program provides an understanding of how relevant environmental exposures, laboratory based model systems, and gene-environment responses can be interpreted and applied to the study of disease etiology in exposed and potentially exposed human populations.

The program typically takes approximately 2 years to complete. The requirements for the EOH MS degree are listed below.

- 42 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/eoh/degree-programs/ms-environmental-and-occupational-health

Program Director

Winnie Tang

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- EOH 2025 - MS THESIS *(2 credits)*
- EOH 2109 - ENVIRONMENTAL AND OCCUPATIONAL HEALTH SCIENCES JOURNAL CLUB *(four terms)*
- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS
- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2605 - MOLECULAR ENVIRONMENTAL BIOLOGY
- EOH 3111 - PROFESSIONAL DEVELOPMENT
- EOH 3210 - PATHOPHYSIOLOGY OF ENVIRONMENTAL DISEASE

Elective Courses

Students add electives from the list below to earn total credits required for the degree program. In situations where a student's special interests or needs indicate an alternative course is more appropriate it may be substituted with the permission of the student's academic advisor.

Other Requirements

Comprehensive Examination

The comprehensive examination must be scheduled for the end of the term prior to graduating term or the beginning of the graduating term and must be taken at least one month prior to the last day of the term in which the degree is to be conferred.

The format of the comprehensive examination is a written document consisting of the first draft of the thesis, including the introduction and methods. The written examination serves as a formal assessment of the student's ability to formulate a substantive research question and address it through rigorous laboratory or non-laboratory analysis.

Oral Examination - Thesis Defense

The MS thesis defense consists of a final written thesis and an open oral examination.

The oral examination should be scheduled at least two weeks prior to the SPH deadline for the term. During the oral examination, the student will present their thesis research, and the committee will judge the adequacy of the research and its findings. A final copy of the written thesis must be submitted to the thesis committee at least one week before the oral examination.

Total Credits: 42

Department of Epidemiology

Epidemiology is the application of the scientific method to the study of disease in populations for the purpose of prevention or control. It is a key basic science of public health and preventive medicine. Epidemiologists play a fundamental role in public health and preventive medicine by identifying variabilities in human situations that may have a critical influence on the occurrence of disease within populations.

The epidemiological method for studying a problem involves three approaches:

- Description of the frequency and determinants of a disease in a defined population;
- Evaluation of factors that may cause a disease; and
- Experimental studies of the effects of modifying risk factors on the subsequent frequency of a disease.

Mission

The Department of Epidemiology strives to improve local, national and global public health through the generation of knowledge which can be used to prevent and reduce disease, infection and injury. This is accomplished through high quality, interdisciplinary research, hands-on training of the next generation of epidemiologists, and providing a broad range of expertise to organizations that promote public health. Our work is based on the belief that all people are entitled to a healthy life.

Contact Information

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Admissions & Aid

All new applicants must apply through SOPHAS. Instructions on how to apply, deadlines and requirements, information for international applicants, frequently asked questions, and financial aid information can be found by visiting Pitt Public Health Admissions and Aid. Please visit Epidemiology Admissions for department and program-specific application requirements.

Accelerated Bachelor's/Master's Program

Designed to allow students to complete a bachelor's and master's degree in approximately 5 years. Qualified Pitt undergraduates can apply to an accelerated program in their third year. Accelerated program details, application instructions, and requirements can be found by visiting Pitt Public Health Accelerated Bachelor's/Master's Program.

Doctoral

Epidemiology, PhD

The Epidemiology PhD program provides students with an advanced level of academic preparation to conduct research, teach, and mentor students. This includes concentrated training in epidemiological concepts and methodology and the completion of a research-based dissertation. Due to the wide range of ongoing faculty research within the department, students have the ability to select an area of emphasis on which to focus and to conduct research under the mentorship of an epidemiology faculty member.

Please note that the Epidemiology PhD program can be adapted to have an applied focus. Through elective coursework, internship opportunities, and the dissertation, PhD candidates can obtain the essential skills required for public health practice.

The program is designed to be completed in four years. The requirements for the Epidemiology PhD degree are listed below.

- 72 Credits
- Preliminary Evaluation
- Comprehensive Examination
- Overview/Prospectus Meeting
- Admission to Candidacy
- Final Oral Examination - Dissertation Defense

Contact Information

https://www.publichealth.pitt.edu/epidemiology/academics/epidemiology-phd-program

Program Director

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Required Courses

- EPIDEM 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
  OR
- EOH 3210 - PATHOPHYSIOLOGY OF ENVIRONMENTAL DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY
- EPIDEM 2180 - FUNDAMENTALS OF EPIDEMIOLOGICAL METHODS
- EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
- EPIDEM 2185 - INTRODUCTION TO SAS
  OR
- EPIDEM 2186 - INTRODUCTION TO R
- EPIDEM 2189 - EPIDEMIOLOGICAL METHODS OF LONGITUDINAL & TIME-TO-EVENT ANALYSES
- EPIDEM 2192 - CAUSAL INFERENCE IN EPIDEMIOLOGIC RESEARCH
- EPIDEM 2193 - MACHINE LEARNING IN EPIDEMIOLOGICAL RESEARCH
- EPIDEM 2215 - TEACHING PRACTICUM
- EPIDEM 2230 - SECONDARY DATA ANALYSIS: A CAPSTONE COURSE
- EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY
- EPIDEM 2260 - EPIDEMIOLOGICAL BASIS DISEASE CONTROL
- EPIDEM 2600 - INTRODUCTION TO MOLECULAR EPIDEMIOLOGY
- EPIDEM 2921 - GRANT WRITING
- EPIDEM 3183 - READING, ANALYZING, AND INTERPRETING THE PUBLIC HEALTH AND MEDICAL LITERATURE
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH
- **One advanced quantitative course is required.** Choose one from the following:
  BCHS 2991, BCHS 3002, BCHS 3015, BIOST 2016 , BIOST 2143, BIOST 2150, EFOP 3408, HPM 3505, HUGEN 2080
- EPIDEM 3100 - RESEARCH AND DISSERTATION PHD *(3 credits)*
  OR
- FTDR 3999 - FULL-TIME DISSERTATION STUDY

These training requirements must also be completed:

- Pitt Public Health Academic Integrity Module
- Internal Review Board (IRB) Training
- Independent Development Plan (IDP) Requirement
- Primary Data Collection & Management Requirement
- Presentation Training-Competency in Communication Requirement

Elective Courses

Select electives as recommended by academic advisors to earn total credits required for the program.

Other Requirements

Preliminary (Qualifying) Evaluation

The preliminary evaluation is a written examination generally administered at the end of the first year of doctoral study.

Completion of the following (or equivalent) courses is required before sitting for the preliminary evaluation:

- EPIDEM 2110 PRINCIPLES OF EPIDEMIOLOGY
- BIOST 2041 INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2180 FUNDAMENTALS OF EPIDEMIOLOGICAL METHODS
- BIOST 2142 APPLIED REGRESSION ANALYSIS

Prior completion of EPIDEM 3183 READING, ANALYZING, AND INTERPRETING THE PUBLIC HEALTH AND MEDICAL LITERATURE strongly recommended

Comprehensive Examination

All Doctoral candidates must have their dissertation topic and outline of proposed research approved by their doctoral committee. The Comprehensive Meeting is the first official meeting of students with their doctoral committees. The Comprehensive Exam may or may not be combined with the Overview Exam. Combining the two exams is advised only when:

- The student has worked closely with all doctoral committee members, and
- All committee members are familiar with and have approved the dissertation aims.

The student should present the dissertation topic and research plan. The meeting should allow for the committee members to approve the dissertation aims and provide guidance in the conceptualization and methodology of the plan.

Eligibility

- Preliminary Exam must have been passed.
- The doctoral committee for the Comprehensive exam must be formed and approved.
- A general research area for the dissertation must have been chosen.
- A basic literature review for the chosen research area should be completed.
- Academic advisor must agree that the student is ready for this exam.

Minimum required written material submitted to the approved Dissertation Committee two weeks before the Comprehensive include:

- A basic literature review to demonstrate how the proposed research fills a void in the existing literature in the topic area. The length and format are at the discretion of the dissertation chair; however, it is expected that it should be at least 10 pages.
- Suggested dissertation aims, hypothesis, and methods to be discussed and finalized with the dissertation committee.

Exam parameters:

- Oral format.
- A basic literature review should be submitted to the committee at least two weeks prior to the oral exam to demonstrate how the proposed research fills a void in the existing literature in the topic area.
- Relationship of student project to ongoing departmental projects (if any) must be explained.
- Data may be included in this exam, but is not required. Where applicable, the use of data to demonstrate feasibility or support for proposed evaluations is encouraged.
- Proposal may be to carry out research elsewhere under direct supervision of person selected by dissertation committee, under special circumstances. This alternative should be discussed with committee chairperson prior to proposal presentation.

Overview/Prospectus Meeting

During the Overview exams, students must present material to demonstrate mastery of the general topic of study and depth and breadth of knowledge in the area of specialization in that topic area. They must also show the ability to use the research methods of epidemiology appropriately for the dissertation plan.

Eligibility

- Preliminary Examinations must have been passed.

- Students must have obtained Dissertation Comprehensive Exam approval.
- Overview Exams may be combined with Dissertation Comprehensive or Prospectus Meetings at committee chair discretion (please see Comprehensive Exam above).
- Exam cannot be taken in the same term in which graduation will occur.

Minimum required written material submitted to the Dissertation Committee at least two weeks before the Overview Exams include:

- A completed literature review addressing strengths and weaknesses of the topic area and identifying gaps in knowledge (in 2024, the average length of the literature review of dissertations submitted was 62 pages, with a median length of 59 pages).
- Dissertation aims, hypothesis, and how they address gaps in knowledge in the topic area.

Exam parameters:

- Oral format.
- Focus is primarily on student knowledge in the area of the dissertation topic.
- The literature review in the Overview Exam should address strengths and weaknesses of the topic area and identify gaps in knowledge in this topic area.
- If a systematic review is performed, it may count as one of the three papers in the 3-paper dissertation format, provided that it is of publishable quality.

Admission to Candidacy

Students are required to meet the following criteria for Admission to Candidacy:

- Be in full (not provisional) graduate status
- Successfully complete the Preliminary Evaluation
- Successfully complete the Comprehensive Examination
- Successfully complete the Overview Examination
- Committee approval of dissertation proposal
- All formal course work completed with minimum 3.0 grade point average

Final Oral Examination - Dissertation Defense

Students are required to be admitted to candidacy before advancing to the Dissertation Defense stage.

During the Dissertation defense, doctoral candidates must present the completed dissertation project and defend the validity of the work under examination from the committee members. The completed dissertation document can follow one of two formats:

- Traditional format: In the traditional format, students prepare a dissertation proposal to describe the background, methods, results, and interpretation of one research project. The written dissertation document should include an introduction, a meaningful literature review, a clear presentation of the methods and results of the project, and an appropriate discussion of the meaning of the results.
- Three Paper format: In the three-paper format, students prepare a dissertation proposal focused on the development of three research papers addressing original research in a chosen topic area. The document should include the relevant background to the dissertation work, the results of the work accomplished by the student (presented in the document as the three individual research papers), and a general discussion of the meaning of the work.

Students should present results of the dissertation and a discussion of the meaning of these results in the topic area of study.

The Dissertation defense may be scheduled no earlier than two weeks following submission of the dissertation and must be held at least two weeks prior to the end of term of graduation and degrees are awarded.

Total Credits: 72

Master's

Epidemiology, MPH

The MPH in Epidemiology program provides students with an epidemiological approach to public health, which includes a broad overview to epidemiology, biostatistics, and the environmental influences on health, public health planning, and health services.

Students are required to complete a 200-hour practicum in a public health setting and prepare an essay that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The MPH program is designed to be completed in as few as three semesters of full-time study (excluding 4+1 students). The requirements for the Epidemiology MPH degree are listed below.

- 45 Credits
- Practicum (200-hour minimum)
- Essay

Contact Information

https://www.publichealth.pitt.edu/epidemiology/degree-programs/mph-epidemiology

Program Director

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MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

EPIDEM MPH Required Courses

- BIOST 2142 - APPLIED REGRESSION ANALYSIS

- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY
- EPIDEM 2180 - FUNDAMENTALS OF EPIDEMIOLOGICAL METHODS
- EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
- EPIDEM 2210 - SPECIAL STUDIES - ESSAY *(1-2 credits)*
- EPIDEM 2214 - PUBLIC HEALTH INTERNSHIP *(1-2 credits)*
- EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY

These training requirements must also be completed:

- Pitt Public Health Academic Integrity Module
- Human Subjects Internal Review Board (IRB) Module
- Oral Presentation Communications Competency Requirement

Elective Courses

Select electives as recommended by academic advisor to earn total credits required for the degree program.

Total Credits: 45

Epidemiology, MS (30 Credit)

The MS in Epidemiology program provides concentrated training in epidemiological concepts, skills, and methodology with a research focus. It includes a flexible mix of courses in epidemiology and biostatistics. For those who hold a professional health degree or a related doctoral degree from the U.S. (with some exceptions for non-U.S. trained students), the department offers this 30-credit condensed MS program.

The program typically takes approximately one year to complete. The requirements for the Epidemiology 30-credit MS degree are listed below.

- 30 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/epidemiology/degree-programs/ms-epidemiology

Program Director

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
  OR
- EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY
  OR
- EPIDEM 2260 - EPIDEMIOLOGICAL BASIS DISEASE CONTROL
- EPIDEM 2180 - FUNDAMENTALS OF EPIDEMIOLOGICAL METHODS
- EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
- EPIDEM 2185 - INTRODUCTION TO SAS
  OR
- EPIDEM 2186 - INTRODUCTION TO R
- EPIDEM 2210 - SPECIAL STUDIES - ESSAY *(3-5 credits, credits may be split over multiple terms)*
- EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
  These training requirements must also be completed:
- Pitt Public Health Academic Integrity Module
- Human Subjects Internal Review Board (IRB) Module
- Oral Presentation Communications Competency Requirement

Elective Courses

Select electives as recommended by academic advisor to earn total credits required for the degree program.

Other Requirements

Comprehensive Examination

The comprehensive examination is completed approximately two months before the last day of the graduation term. Students must select committee members before the end of term prior to graduation term.

Students are required to submit a written document of the first chapters of their Master's thesis, including expanded Introduction and detailed Methods sections. The Master's thesis must be original research (using primary or secondary data). Literature review papers are not acceptable. Best practice is for students to submit their written document to their committee two weeks prior to the oral portion of the Comprehensive Examination but can be later with prior committee approval.

If the candidate passes, committee members sign the Report on Requirements for Master's Degree form certifying the milestone has been satisfactorily completed.

Thesis

Students are required to successfully complete the Comprehensive Examination before advancing to the Thesis stage. The Final Oral Defense of the master's thesis is approximately three weeks prior to the school-wide graduation final paperwork deadline. The written master's thesis should be submitted to the committee at least two weeks prior to the oral defense date, or closer to the defense date with prior committee approval.

If the candidate passes the thesis defense, committee members sign the Report on Requirements for Master's Degree form certifying the successful oral defense and approval of the final written document.

Total Credits: 30

Epidemiology, MS (45 Credit)

The MS in Epidemiology program provides concentrated training in epidemiological concepts, skills, and methodology with a research focus. It includes a flexible mix of courses in epidemiology and biostatistics.

The program typically takes up to 2 years to complete. The requirements for the Epidemiology 45-credit MS degree are listed below.

- 45 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/epidemiology/degree-programs/ms-epidemiology

Program Director

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY
- EPIDEM 2180 - FUNDAMENTALS OF EPIDEMIOLOGICAL METHODS
- EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
- EPIDEM 2185 - INTRODUCTION TO SAS

  OR
- EPIDEM 2186 - INTRODUCTION TO R
- EPIDEM 2189 - EPIDEMIOLOGICAL METHODS OF LONGITUDINAL & TIME-TO-EVENT ANALYSES

  OR *one of the following approved alternative courses:*
- BIOST 2143 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- BIOST 2150 - APPLIED SURVIVAL ANALYSIS: METHODS AND PRACTICE
- EPIDEM 2210 - SPECIAL STUDIES - ESSAY *(3-5 credits, credits may be split over multiple terms)*
- EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH

- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*

These training requirements must also be completed:

- Pitt Public Health Academic Integrity Module
- Human Subjects Internal Review Board (IRB) Module
- Oral Presentation Communications Competency Requirement

Elective Courses

Select electives as recommended by academic advisor to earn total credits required for the degree program.

Other Requirements

Comprehensive Examination

The comprehensive examination is completed approximately two months before the last day of the graduation term. Students must select committee members before the end of term prior to graduation term.

Students are required to submit a written document of the first chapters of their Master's thesis, including expanded Introduction and detailed Methods sections. The Master's thesis must be original research (using primary or secondary data). Literature review papers are not acceptable. Best practice is for students to submit their written document to their committee two weeks prior to the oral portion of the Comprehensive Examination but can be later with prior committee approval.

If the candidate passes, committee members sign the Report on Requirements for Master's Degree form certifying the milestone has been satisfactorily completed.

Thesis

Students are required to successfully complete the Comprehensive Examination before advancing to the Thesis stage. The Final Oral Defense of the master's thesis is approximately three weeks prior to the school-wide graduation final paperwork deadline. The written master's thesis should be submitted to the committee at least two weeks prior to the oral defense date, or closer to the defense date with prior committee approval.

If the candidate passes the thesis defense, committee members sign the Report on Requirements for Master's Degree form certifying the successful oral defense and approval of the final written document.

Total Credits: 45

Department of Health Policy and Management

The Department of Health Policy and Management (HPM) prepares individuals to assume roles of leadership, policy development, and management within the health industry and in the broader field of public health. Its educational programs are grounded in the faculty's contributions in advancing the state of knowledge and professional practice in health system leadership and in the development, advocacy, analysis, and implementation of health policy. The HPM Faculty are engaged in interdisciplinary research addressing a range of problems relevant to public policy, organization, and management as applied to health care organizations and systems and in various professional and community service activities.

Mission

The Department of Health Policy and Management's mission is to educate and advance policy and research to improve health and health care.

Vision

The Department of Health Policy and Management aspires to transform population health, health care, and health policy through equitable research, education and practice.

Values

Inclusion, Collaboration, Curiosity, Integrity

Contact Information

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Admissions & Aid

All new applicants must apply through SOPHAS. Instructions on how to apply, deadlines and requirements, information for international applicants, frequently asked questions, and financial aid information can be found by visiting Pitt Public Health Admissions and Aid. Please visit Health Policy and Management Admissions for department and program-specific application requirements.

Accelerated Bachelor's/Master's Program

Designed to allow students to complete a bachelor's and master's degree in approximately 5 years. Qualified Pitt undergraduates can apply to an accelerated program in their third year. Accelerated program details, application instructions, and requirements can be found by visiting Pitt Public Health Accelerated Bachelor's/Master's Program.

Doctoral

Health Services Research and Policy, PhD

The Health Services Research and Policy (HSRP) PhD program meets an ongoing need for public health researchers who focus on cost, access and quality of the health care system. Graduates will be prepared to conduct research on policy issues affecting the organization, financing, and delivery of health care and public health services.

The program is designed to be completed in four years. The requirements for the HSRP PhD degree are listed below.

- 72 Credits
- Preliminary Evaluation
- Comprehensive Examination
- Overview/Prospectus Meeting
- Admission to Candidacy
- Final Oral Examination - Dissertation Defense

Contact Information

https://www.publichealth.pitt.edu/hpm/degree-programs/health-services-research-and-policy-phd-program

Program Director

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Required Courses

- BCHS 3100 - GRANT WRITING
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY

- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH *Students who have recently taken a course in microeconomics can request to waive this course*
- HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM 1 *Students with previous experience in health care can request to waive this course*
- HPM 2905 - QUASI-EXPERIMENTAL DESIGN FOR HEALTH SERVICES RESEARCH
- HPM 3000 - DOCTORAL RESEARCH AND PROFESSIONAL DEVELOPMENT SEMINAR PART 1 *(2 terms)*
- HPM 3001 - DOCTORAL RESEARCH AND PROFESSIONAL DEVELOPMENT SEMINAR PART 2 *(2 terms)*
- HPM 3064 - HEALTH POLICY ANALYSIS
- HPM 3065 - ADVANCED HEALTH POLICY ANALYSIS: IMPLEMENTATION, EVALUATION, AND TRANSLATION
- HPM 3125 - INTERMEDIATE HEALTH ECONOMICS
- HPM 3501 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS 1
- HPM 3505 - ADVANCED EMPIRICAL MICROECONOMICS METHODS WITH APPLICATIONS FOR HEALTHCARE RESEARCH
- HPM 3506 - DISSERTATION GRANT WRITING CAPSTONE
- HPM 3508 - RESEARCH AND DISSERTATION PHD *(3 credits)*

OR

- FTDR 3999 - FULL-TIME DISSERTATION STUDY
- HPM 3511 - DOCTORAL TEACHING PRACTICUM
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

Elective Courses

Minimum of 12 elective credits recommended by academic advisor. Must include one methods focused course.

Other Requirements

Preliminary (Qualifying) Evaluation

Timing The preliminary exam must be completed before the start of year two and typically begins in March of year one. Students have from March 1st through September 1st to complete the written component of the exam.

Requirements Before Sitting for the Milestone Students must have full academic status (any admissions provisions must be cleared before sitting for the exam), a minimum GPA of 3.3, and have completed all required Year One courses: BIOST 2041, BIOST 2142, EPIDEM 2110, HPM 2028, HPM 2905, HPM 3000, HPM 3001, HPM 3064, and HPM 3501. Students must also have completed the required CITI online training modules, at minimum "Research Integrity" and "Human Subjects Research in Social and Behavioral Sciences," and submitted the certificate of completion to the program coordinator.

Form of Evaluation The preliminary exam consists of two components: a 4,000-6,000 word research paper and a 15-minute oral presentation to the Examination Committee. The oral presentation is scheduled within approximately one to two weeks of paper submission.

Comprehensive Examination

Timing The comprehensive exam must be completed before the start of year three and is typically administered in late May or early June, following four semesters of full-time study or the equivalent in part-time credits (approximately 48-52 credits).

Requirements Before Sitting for the Milestone Students must have passed the preliminary examination, completed all required departmental and school core courses, achieved a minimum GPA of 3.3, and be registered during the semester in which they take the exam.

Form of Evaluation The exam is a proctored, in-person, open-note, timed assessment spanning two days, drawing on core coursework completed during the first two years of the program. It is designed to evaluate students' knowledge and analytical abilities.

Other Pertinent Information The use of generative AI is not permitted on the comprehensive exam, as responses must reflect each student's individual understanding and synthesis of core HSRP coursework.

Overview/Prospectus Meeting

Timing Students should aim to complete the Dissertation Overview by Spring of Year 3 or Fall of Year 4. The committee should receive a final draft of the dissertation proposal at least two weeks before the scheduled Overview Presentation.

Requirements Before Sitting for the Milestone Students must have completed all required coursework and planned electives and passed both the preliminary and comprehensive examinations before scheduling the Dissertation Overview.

Form of Evaluation The Dissertation Overview has three components: committee formation, development of a written dissertation proposal, and an Overview Presentation. The presentation is an in-person oral presentation to the Dissertation Committee, typically scheduled for two hours, with the student presenting for no more than 30-45 minutes. The committee may require revisions to the proposal before granting approval.

Other Pertinent Information Upon successful completion, the student is admitted to candidacy for the Ph.D. The dissertation proposal should outline the conceptualization, rationale, and methodology for three manuscripts and typically ranges from 20 to 60 pages. IRB clearance must be in place before research begins, though it is not required prior to the Overview itself. The Overview is scheduled through the program coordinator.

Admission to Candidacy

Timing Admission to candidacy is granted upon successful completion of the Dissertation Overview, provided the student has completed at least 72 credits. This is typically accomplished in Spring of Year 3 or Fall of Year 4.

Requirements Before Sitting for the Milestone To be admitted to candidacy, students must have completed all required coursework, accumulated at least 72 credits, and successfully completed all prior milestones: the preliminary examination, comprehensive examination, and dissertation overview.

Form of Evaluation Admission to candidacy is conferred upon successful completion of the Dissertation Overview. For details on the form of evaluation, see the Overview/Prospectus section above.

Final Oral Examination - Dissertation Defense

Timing The dissertation defense typically takes place in year four or five of the program, after all other milestones have been met and the student's committee determines they are ready to defend. A final draft of the dissertation must be provided to each committee member at least two weeks prior to the scheduled defense.

Requirements Before Sitting for the Milestone Students must have committee chair approval to schedule the defense and must have submitted a final draft of the dissertation to all committee members at least two weeks prior. IRB clearance must be in place before research commences. All written work must conform to the University of Pittsburgh style manual and be submitted electronically through the Electronic Theses and Dissertations (ETD) system.

Form of Evaluation The dissertation defense is a public, oral presentation and examination conducted by the doctoral dissertation committee. Students should provide an overview of the three thematically linked manuscripts that form the dissertation and highlight the thematic connections between them. All committee members must be present, though only committee members may participate in final deliberations and voting. A Report on Requirements for a Doctoral Degree form must be completed, signed by the committee, and submitted to the department chair and Office of Student Affairs.

Other Pertinent Information

- The dissertation consists of three thematically linked manuscripts with an introductory overview, and must represent original, independent research.

- Students may use a professional editor for language only, not subject matter or interpretation, and must acknowledge all editorial assistance in the document.
- If the written dissertation or defense performance does not meet committee expectations, the student will have one additional opportunity to revise and defend.
- Appeals of committee decisions may be directed to the doctoral program director(s), department chair, or Dean in accordance with school and University policy.

Total Credits: 72

Joint Degree

Health Policy and Management, JD/MPH

The joint juris doctor and master of public health in health policy and management (JD/MPH) program between Pitt Public Health and Pitt's School of Law (LAW) provides students with an interdisciplinary curriculum in law and public health, integrating law, health policy, and management. The program emphasizes the relationship between the legal system and the protection and promotion of population health. Graduates are well prepared for careers at the intersection of law and public health, in government settings, private practice, health care institutions, and beyond.

JD/MPH students complete a 200-hour practicum in a practice-based, public health setting as well as an essay or thesis addressing a significant public health issue that uses empirical data and/or valid references to demonstrate their ability to critically examine and synthesize information from existing sources. The JD/MPH joint degree is designed to be completed in four years of full-time study. The HPM requirements for the JD/MPH joint degree are summarized below. Students should refer to the School of Law for the most current JD requirements.

- 45 Public Health Credits *(3 credits of public health-relevant electives taken in LAW can be applied to the 45-credit requirement)*
- Practicum (200-hour minimum)
- Essay
- Note: Combined with LAW coursework/requirements, JD/MPH students complete a total of 121 credits

Contact Information

https://www.publichealth.pitt.edu/hpm/degree-programs/master-public-health-mph-hpm/jd-mph-joint-degree

Program Directors

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Admissions

Students must apply separately to the School of Law and the School of Public Health.

MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

HPM JD/MPH Required Courses

- HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1
- HPM 2021 - PROFESSIONAL DEVELOPMENT SEMINAR 2
- HPM 2025 - HPM PRACTICUM *(1 credit)*
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2037 - ESSAY-HA *(LAW Upper-level Legal Writing requirement, with appropriate modifications/revisions to meet MPH essay requirements, satisfies this course requirement.)*
- HPM 2055 - MANAGING HEALTH PROGRAMS AND PROJECTS
- HPM 2063 - THE POLITICS OF HEALTH POLICY
- HPM 2064 - HEALTH POLICY ANALYSIS
- HPM 2082 - PUBLIC HEALTH AGENCY MANAGMENT
- HPM 2100 - HEALTH ANALYTICS
- HPM 2131 - PUBLIC HEALTH LAW AND ETHICS

Elective Courses

Add electives as recommended by academic advisors to earn total credits required for the program. Students can apply a maximum of 3 credits of public health-relevant coursework taken in LAW to meet joint degree requirements.

Total School of Public Health Credits: 45

Total Joint Degree Credits: 121

Health Policy and Management, MHA/MBA

The MHA/MBA program offers students a competency-based curriculum and an array of professional development resources and activities to prepare graduates for managerial roles in a broad array of health industry settings. Uniting the strengths of the University of Pittsburgh's School of Public Health and School of Business, the program builds 20 management competencies that serve as a foundation for ongoing

career growth and professional development. Upon completion of the MHA/MBA program, our graduates obtain full-time employment, including post-graduate fellowships, in health industry organizations such as health systems, physician practices, durable medical equipment, biotechnology, pharmaceutical companies, health insurance plans, and consulting firms. The MHA/MBA also prepares graduates for specialized roles such as finance, human resources, marketing, strategy, etc.

Students must complete applications for, and be accepted into, both the School of Public Health and the Joseph M. Katz Graduate School of Business. Application to Pitt Public Health must be submitted through SOPHAS at www.sophas.org. Application to the School of Business should be made at www.business.pitt.edu/katz/apply.

Our highly trained graduates will be fully prepared to assume fast-track leadership positions in a variety of health industry organizations. The Bureau of Labor Statistics estimates that the demand for health industry managers will grow by 17 percent in the next decade. The U.S. health system is the largest industry in the United States, currently consuming nearly 18 percent of GDP. At the same time, there remain significant problems with access to care and quality of care. The joint training in business and health administration should provide a strong foundation for long-term career success.

The curriculum is a 73-credit course of study leading to the joint degree. The MHA/MBA can be completed within three years as a full-time student and five years as a part-time student. The competency-based curriculum emphasizes both professional and leadership development, as well as functional management skills, blending courses across both the School of Business (MBA) and Pitt Public Health's Department of Health Policy and Management (MHA) in six academic terms.

Students are required to complete a management residency. These supervised placements in health industry organizations are an invaluable integrative experience that also provides many opportunities for professional development and networking. The student must complete applied management projects at the residency site.

Contact Information

https://www.publichealth.pitt.edu/hpm/degree-programs/master-health-administration-mha/mha-mba-joint-degree

Program Director

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Required Courses

- BACC 2401 - FINANCIAL ACCOUNTING
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT

- HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1
- HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM 1
- HPM 2090 - INNOVATION IN THE BUSINESS OF HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY
- HPM 2021 - PROFESSIONAL DEVELOPMENT SEMINAR 2
- HPM 2141 - MANAGERIAL EPIDEMIOLOGY
- HPM 2216 - HEALTH INSURANCE: FINANCING HEALTH CARE
- BMKT 2409 - MARKETING MANAGEMENT
- BOAH 2421 - HUMN RESORC COMPETITIVE ADVNTG
- BOAH 2517 - INTERPERSONAL SKILLS FOR MANAGERS
- HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2130 - HEALTH LAW AND ETHICS
- BMIS 2409 - INFORMATION SYSTEMS
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BSPP 2409 - STRATEGIC MANAGEMENT
- HPM 2014 - APPLICATIONS AND ISSUES IN FINANCIAL MANAGEMENT OF HEALTH CARE INSTITUTIONS
- HPM 2100 - HEALTH ANALYTICS
- BIND 2454 - INTEGRATED MBA CAPSTONE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- HPM 2017 - QUANTITATIVE METHODS: DECISION TECHNOLOGIES AND OPERATIONS MANAGEMENT IN HEALTH CARE
- HPM 2114 - ADVANCED LEADERSHIP PHILOSOPHY
- HPM 2115 - HEALTH POLICY AND MANAGEMENT RESIDENCY
- HPM 2207 - QUALITY ASSESSMENT AND PATIENT SAFETY
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- HPM 2160 - MARKETING AND STRATEGIC MANAGEMENT OF HEALTH INDUSTRY ORGANIZATIONS
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH

Elective Courses

Remaining MBA elective credits may be taken in spring of 2nd or 3rd year. Students may enroll in an additional 1 credit of HPM 2115 if they choose.

Total Joint Degree Credits: 73

Master's

Health Policy and Management, MHA

The MHA program offers students a competency-based curriculum and an array of professional development resources and activities to prepare graduates for managerial roles in a broad array of health industry settings. The curriculum builds 20 management competencies that serve as a foundation for ongoing career growth and professional development. Upon completion of the MHA program, our graduates obtain full-time employment, including post-graduate fellowships, in health industry organizations such as hospitals, academic medical centers, physician practices, long-term care facilities, health plans, and consulting firms.

The program is designed to be completed in two years of full-time study. The requirements for the MHA degree are listed below.

- 60 Credits
- Management Residency (450-hour minimum)

Contact Information

https://www.publichealth.pitt.edu/hpm/degree-programs/master-health-administration-mha

Program Director

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Required Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
- HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- HPM 2014 - APPLICATIONS AND ISSUES IN FINANCIAL MANAGEMENT OF HEALTH CARE INSTITUTIONS
- HPM 2017 - QUANTITATIVE METHODS: DECISION TECHNOLOGIES AND OPERATIONS MANAGEMENT IN HEALTH CARE
- HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1
- HPM 2021 - PROFESSIONAL DEVELOPMENT SEMINAR 2
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2049 - HUMAN RESOURCES MANAGEMENT FOR HEALTH CARE AND PUBLIC HEALTH PROFESSIONALS
- HPM 2090 - INNOVATION IN THE BUSINESS OF HEALTH
- HPM 2100 - HEALTH ANALYTICS
- HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM 1
- HPM 2108 - LEADERSHIP
- HPM 2113 - LEADERSHIP APPLICATION (1 credit) *New course AY27-28; offered as HPM 2275 in Fall 2026*
- HPM 2114 - ADVANCED LEADERSHIP PHILOSOPHY
- HPM 2115 - HEALTH POLICY AND MANAGEMENT RESIDENCY
- HPM 2130 - HEALTH LAW AND ETHICS
- HPM 2141 - MANAGERIAL EPIDEMIOLOGY
- HPM 2144 - CLINICAL LEADERSHIP (2 credits) *New course AY27-28; offered as HPM 2275 in Fall 2026*
- HPM 2160 - MARKETING AND STRATEGIC MANAGEMENT OF HEALTH INDUSTRY ORGANIZATIONS
- HPM 2207 - QUALITY ASSESSMENT AND PATIENT SAFETY
- HPM 2216 - HEALTH INSURANCE: FINANCING HEALTH CARE
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*

Elective Courses

Add electives as recommended by academic advisor to earn total credits required for the program.

Total Credits: 60

Health Policy and Management, MPH

The Master of Public Health (MPH) in Health Policy and Management (HPM) trains students as public policy analysts, advocates, and professionals in health policy development. Through coursework, a year-long professional development seminar, a 200-hour practicum experience, and guest speakers and networking events, HPM students build new skills and receive comprehensive professional development. This two-year, 45-credit program prepares graduates for careers in health policy analysis, advocacy, and program management across various economic sectors. Graduates are well-prepared for employment in public health practice (nationally and globally) or to pursue further educational training, including clinical and doctoral programs.

MPH students complete a 200-hour practicum in a practice-based, public health setting as well as an essay or thesis addressing a significant public health issue that uses empirical data and/or valid references to demonstrate their ability to critically examine and synthesize information from existing sources. The MPH program is designed to be completed in two years of full-time study. The requirements for the HPM MPH degree are summarized below.

- 45 Credits
- Practicum (200-hour minimum), plus final report
- Essay (completed over two semesters)

Contact Information

https://www.publichealth.pitt.edu/hpm/degree-programs/master-public-health-mph-hpm

Program Directors

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MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY

- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

HPM MPH Required Courses

- HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1
- HPM 2021 - PROFESSIONAL DEVELOPMENT SEMINAR 2
- HPM 2025 - HPM PRACTICUM *(1 credit)*
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2037 - ESSAY-HA *(1 credit)*
- HPM 2055 - MANAGING HEALTH PROGRAMS AND PROJECTS
- HPM 2063 - THE POLITICS OF HEALTH POLICY
- HPM 2064 - HEALTH POLICY ANALYSIS
- HPM 2082 - PUBLIC HEALTH AGENCY MANAGMENT
- HPM 2100 - HEALTH ANALYTICS
- HPM 2131 - PUBLIC HEALTH LAW AND ETHICS

Elective Courses

Add electives as recommended by academic advisor to earn total credits required for the degree program (or consider a public health certificate). Recommended electives are listed below.

- HPM 2029 - HEALTH MANAGEMENT INFORMATION SYSTEMS
- HPM 2108 - LEADERSHIP
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE

Total Credits: 45

Health Services Research and Policy, MS

The Master of Science in Health Services Research and Policy (HSRP) program prepares graduates for positions in health services research and policy, analytics and also prepares them for higher level education (such as a PhD). This MS program is primarily intended for students interested in pursuing a PhD, but who would benefit from additional preparation before beginning doctoral studies. Graduates will be prepared to conduct research on policy issues affecting the organization, financing, and delivery of health care and public health services.

The MS program is designed to be completed in two years of full-time study. The requirements for the HSRP MS degree are listed below.

- 42 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/hpm/degree-programs/ms-health-services-research-and-policy

Program Director

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2142 - APPLIED REGRESSION ANALYSIS
- BIOST 2143 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- HPM 2905 - QUASI-EXPERIMENTAL DESIGN FOR HEALTH SERVICES RESEARCH
- HPM 3508 - RESEARCH AND DISSERTATION PHD *(1-2 credits)*
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*

Area of Focus Courses

Students work with their academic advisor to identify an area of focus with at least 11 credits that focuses on a discipline or area of interest.

Elective Courses

Students add electives as recommended by academic advisors to earn total credits required for the degree program.

Other Requirements

Comprehensive Examination

Timing The comprehensive exam is administered during the first semester of the second year of the program.

Requirements Before Sitting for the Milestone Students must be in good academic standing and enrolled in the program during the semester in which they sit for the examination.

Form of Evaluation Students must select a journal article relevant to Health Services Research and Policy, prepare a critical review, and deliver an oral presentation to their peers and department faculty.

Other Pertinent Information In the event of a failure, a student may apply to the Department Chair for re-examination. Students who are not permitted to retake the examination, or who do not pass the re-examination, will be released from the program.

Thesis

Timing The first thesis committee meeting must be held within five months of passing the comprehensive examination. A final draft of the thesis must be submitted to all committee members at least two weeks prior to the scheduled defense.

Requirements Before Sitting for the Milestone Students must have passed the comprehensive examination and received approval of their thesis committee from the school before any committee meetings can be held. Prior to each committee meeting, students must submit their research proposal or progress report to all committee members at least two weeks in advance.

Form of Evaluation The thesis is a written policy paper of publishable quality that reports on original scholarly research and incorporates analytic methodologies used during the program. Upon completion, the student presents their work in a seminar and defends it in an oral examination before the thesis committee.

Other Pertinent Information The thesis committee is selected by the student in consultation with their faculty advisor, in accordance with Pitt Public Health and University of Pittsburgh guidelines. The student is responsible for notifying the MS program coordinator of committee members and for scheduling all committee meetings. All theses must be submitted electronically through the Electronic Theses and Dissertations (ETD) system in accordance with university guidelines.

Total Credits: 42

Department of Human Genetics

Mission

The Department of Human Genetics at the University of Pittsburgh School of Public Health is dedicated to genetics research, teaching, and services. The department has three major research missions:

- To develop and use genetic methods to investigate the causes and treatment of hereditary and acquired human illness.
- To understand and explore the impact of genetics on public health, education, and disease prevention.
- To appreciate the role of genetic diversity within human populations.

The department offers degrees at both the master's and PhD level in human genetics, as well as a Master of Science degree in genetic counseling, a Master of Science degree in genome bioinformatics, and a Master of Public Health in public health genetics. Students gain a strong background in all aspects of human genetics as a result of a broad-based curriculum and research opportunities in basic, applied, or clinical genetics. The program emphasizes the study of genetic mechanisms related to the transition from normal to disease states, and how genes and the environment interact to affect the distribution of health and disease in human populations

Contact Information

https://www.publichealth.pitt.edu/hugen

Department Chair

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Admissions & Aid

All new applicants must apply through SOPHAS. Instructions on how to apply, deadlines and requirements, information for international applicants, frequently asked questions, and financial aid information can be found by visiting Pitt Public Health Admissions and Aid. Please visit Human Genetics Admissions for department and program-specific application requirements.

Accelerated Bachelor's/Master's Program

Designed to allow students to complete a bachelor's and master's degree in approximately 5 years. Qualified Pitt undergraduates can apply to an accelerated program in their third year. Accelerated program details, application instructions, and requirements can be found by visiting Pitt Public Health Accelerated Bachelor's/Master's Program.

Certificate

Public Health Genetics Certificate

Advances in genetics are occurring at a pace that challenges our collective ability to respond to the many social, legal, ethical, and public health policy implications generated by this revolution of knowledge. The purpose of this certificate is to provide graduates with a basic grounding in public health genetics that will enable them to function as public health professionals at the cutting edge of this important new area. You will be trained to incorporate knowledge of how genes, together with the environment and behavior, influence health and apply this insight into their area of practice or research. Additionally, you will:

- Demonstrate basic knowledge of the role that genetics plays in the development of disease
- Identify the limits of your genetic expertise
- Identify ethical and medical limitations to genetic testing, including uses that don't benefit the individual
- Determine the role that cultural, social, behavioral, environmental, and genetic factors play in the development and prevention of genetic-related diseases

Contact Information

https://www.publichealth.pitt.edu/academics/graduate-certificates/public-health-genetics

Certificate Director

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Certificate Staff

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Required Courses

10 Credits

- HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS
- HUGEN 2059 - CURRENT TOPICS IN PUBLIC HEALTH

Basic Science of Genetics Competency Courses

At least 6 credits from the following six courses are required to achieve competency in the basic science of genetics.

- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2020 - INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2060 - CHROMOSOMES - STRUCTURE AND FUNCTION
- HUGEN 2090 - MOLECULAR BASIS OF COMPLEX DISEASES
- HUGEN 2091 - GENETICS OF COMPLEX DISEASES

Elective Courses

5 Credits

Maximum 2 Credits

The following courses can be taken to fulfill the certificate program, but a maximum of 2 credits may come from these courses.

- HUGEN 2021 - SPECIAL STUDIES
  → Can be taken if a student's essay/thesis/dissertation project is related to Human Genetics or Public Health Genetics or if the student wishes to conduct a small independent research project on a topic in Public Health Genetics. A final written document

must be submitted and reviewed. This can be in the form of the student's essay/thesis/dissertation or a research paper on the independent project.

→ If a public health genetics HUGEN course is being offered as a "current topics" course under HUGEN 2021 - Special Studies, students may take the course and have all special studies credits count towards the certificate.

- HUGEN 2028 - HUMAN GENETICS JOURNAL CLUB AND PEER REVIEW
- HUGEN 2047 - CLINICAL GENETICS CASE CONFERENCE
- HUGEN 2050 - PUBLIC HEALTH GENETICS PRACTICUM

→ Can be taken if the student's practicum or other practice-based experience is related to Human Genetics or Public Health Genetics. A written document summarizing the experience and the Human Genetics competencies that the student worked on must be submitted to Certificate Leadership.

Additional Courses to Fulfill 15 Credit Requirement

Additional courses permitted for the certificate to fulfill the 15 credit requirement include, but are not limited to, the following courses. Other courses may be permitted but must be pre-approved by the Director of the Public Health Genetics Certificate Program in the Department of Human Genetics.

- ALL OTHER HUGEN COURSES
- EOH 2805 - EPIGENETICS AND EPIGENOMICS OF ENVIRONMENTAL HEALTH
- EPIDEM 2600 - INTRODUCTION TO MOLECULAR EPIDEMIOLOGY
- BCHS 2572 - RISK COMMUNICATION
- IDM 2001 - MOLECULAR BIOLOGY OF MICROBIAL PATHOGENS
- IDM 2002 - MOLECULAR VIROLOGY
- IDM 2010 - PATHOGEN BIOLOGY
- IDM 2014 - FUNCTIONAL GENOMICS OF MICROBIAL PATHOGENS
- IDM 2032 - HUMAN DIVERSITY AND PUBLIC HEALTH

Total Credits: 15

Certificate Requirements for Students in a HUGEN Degree Program

Students in a HUGEN degree program other than the MPH are eligible to receive the Public Health Genetics Certificate by meeting the requirements below:

- Students must complete six credits of coursework not already required by the student's degree program
- Students must complete the following courses:
- HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS
- HUGEN 2059 - CURRENT TOPICS IN PUBLIC HEALTH
- The additional two credits of coursework can come from any of the following:
- The list of HUGEN core courses, the list of approved additional courses, or must be approved by the Public Health Genetics Certificate Program Director in the Department of Human Genetics.
- Up to two credits of a project or practicum work (HUGEN 2050 or HUGEN 2021). A paper (8-10 double-spaced pages, plus references) describing the project or practicum is required to receive a grade for these credit hours. Writing guidelines will be provided to students.
- If a public health genetics HUGEN course is being offered as a "current topics" course under HUGEN 2021 - Special Studies, students may take the course and have all special studies credits count towards the certificate.

Total Credits for Students in a HUGEN Degree Program: 15

Doctoral

Human Genetics, PhD

The doctoral program in human genetics prepares students for careers leading genetics and genomics research in academia or industry. The flexible curriculum provides a broad background in the field while allowing customized emphasis on molecular genetics/genomics, statistical genetics and genetic epidemiology, or genetic counseling. In addition to core coursework and advanced classes in a chosen area of concentration, doctoral students pursue mentored research projects culminating in the production and defense of a dissertation.

The program is designed to be completed in four years. The requirements for the HSRP PhD degree are listed below.

- 72 Credits
- Preliminary Evaluation
- Comprehensive Examination
- Overview/Prospectus Meeting
- Admission to Candidacy
- Final Oral Examination - Dissertation Defense

Contact Information

https://www.publichealth.pitt.edu/hugen/degree-programs/doctor-philosophy-human-genetics

Program Director

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2011 - SCIENTIFIC WRITING IN HUMAN GENETICS
- HUGEN 2020 - INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2025 - HUMAN GENETICS SEMINAR *(four terms)*
- HUGEN 2028 - HUMAN GENETICS JOURNAL CLUB AND PEER REVIEW
- HUGEN 2029 - INTRODUCTION TO GENE MAPPING
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2060 - CHROMOSOMES - STRUCTURE AND FUNCTION
- HUGEN 2090 - MOLECULAR BASIS OF COMPLEX DISEASES
- HUGEN 2091 - GENETICS OF COMPLEX DISEASES
- HUGEN 3020 - DOCTORAL RESEARCH AND PROFESSIONAL SKILLS DEVELOPMENT *(two terms, must present at least once)*
- HUGEN 2021 - SPECIAL STUDIES
  AND/OR
- HUGEN 3010 - RESEARCH AND DISSERTATION PH.D.
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

HUGEN Elective Courses

Students must complete one of the following electives. In situations where a student's special interests or needs indicate an alternative course is more appropriate, it may be substituted for an elective course with the permission of the student's academic advisor.

- HUGEN 2080 - STATISTICAL GENETICS
- HUGEN 2071 - GENOMIC DATA PROCESSING AND STRUCTURE
- HUGEN 2072 - GENOMIC DATA PIPELINES AND TOOLS
- HUGEN 2073 - GENOMIC DATA VISUALIZATION AND INTEGRATION
- HUGEN 2051 - INBORN ERRORS OF DEVELOPMENT

Additional Elective Courses

In addition to the courses listed above, students are expected to select, in consultation with their academic advisor and research mentor, additional courses appropriate for their areas of concentration. In addition, a student's Dissertation Committee may require that a student register for elective courses within or outside the Department of Human Genetics to gain knowledge in an area relevant to the student's area of concentration. Furthermore, students who are not fluent in English are strongly recommended to take a University course in conversational English.

Other Requirements

Preliminary (Qualifying) Evaluation

The qualifying exam comprises two parts. The first part is a written exam covering the foundational knowledge in the field, which takes place after completion of the introductory courses (HUGEN 2010, HUGEN 2020, HUGEN 2040, HUGEN 2060, EPIDEM 2110, BIOST 2041), usually after then first year of study. The second part is a presentation and oral exam that assesses the transfer of foundational knowledge to the interpretation of research from the primary literature and evaluates intellectual profundity and capacity for doctoral-level depth of thought. The presentation and oral exam occurs in the same semester following successful completion of the written exam. Satisfactory performance in both parts is required to pass the qualifying exam. The PhD qualifying exam follows a format similar to the MS Comprehensive Examination but uses different criteria and applies more rigorous grading standards.

Comprehensive Exam & Overview/Prospectus Meeting

The comprehensive exam and prospectus take place concurrently, usually after completion of the required coursework and after development of the dissertation research project. The format of the example is a written research proposal followed by a presentation and oral examination.

Admission to Candidacy

To qualify for admission to candidacy, students must:

- be in full graduate status
- have satisfied the requirement of the preliminary evaluation
- have completed formal coursework with a minimum grade point average of 3.00
- have passed the comprehensive examination
- received approval of the proposed subject and plan of the dissertation from the doctoral committee following the overview/prospectus meeting

Final Oral Examination - Dissertation Defense

The dissertation defense takes place when the student has completed the mentored research project and submitted the written document to the dissertation committee for review. The defense comprises a public seminar presenting the research followed by a closed-door oral examination with the dissertation committee.

Total Credits: 72

Joint Degree

Genetic Counseling and Public Health Genetics Dual-Degree Program, MS/MPH

The Master of Public Health in Public Health Genetics and Master of Science in Genetic Counseling is a first-of-its-kind program building on two decades of excellence. The dual degree program enables students to build upon the clinical skills that they acquire through the Genetic Counseling Program to understand the importance of genetics, genomics, and genetic counseling in the field of public health.

Given the rapid expansion of available genetic and genomic testing, the current focus on precision medicine, and the increasing interest of national organizations, state public health offices, and hospitals in the application of genomics to public health, there is a growing need for professionals with skills in both disciplines. Graduates of the dual degree program are well-prepared to integrate public health genetics into clinical, research, public health, and industry settings. The dual degree program also benefits students by broadening their areas of expertise and career qualifications in other areas of public health including program development, evaluation, and policy.

There are a variety of options for completing the dual degree, but most students are able to complete the dual degree program in 22 months, just one additional term beyond the typical time to complete the MS. The requirements for the MPH in Public Health Genetics and MS in Genetic Counseling joint degree are listed below.

- 62 Credits
- Practicum (200-hour minimum)
- Essay
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/hugen/degree-programs/dual-mphms-genetic-counseling

Program Directors

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Dual-Degree Requirements

Students interested in both genetic counseling and public health genetics can pursue both degrees in a combined 62-credit program. All requirements for each individual program must be completed. All required courses for both degrees must be taken by dual degree students, with the exception of PUBHLT 2011 Essentials of Public Health and HUGEN 2062 Ethical Issues in Public Health Genetics and Research.

Given that some of the curriculum overlaps, the dual degree requires the completion of a minimum of 62 credits. In addition to completing all rotation and thesis requirements of the MS in Genetic Counseling degree, students enrolled in the dual degree will fulfill the MPH practicum and MPH essay requirements. Students using their clinical rotations for their practicum do not need to take HUGEN 2050 Practicum as these credits are represented in HUGEN 2036 Genetic Counseling Internship.

The required courses for the dual-degree program are outlined below. Schedules are discussed on an individual basis with Program Leadership in the MPH in Public Health Genetics and MS in Genetic Counseling Programs.

MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

Required Human Genetics Courses

- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2012 - WRITING IN CLINICAL AND PUBLIC HEALTH GENETICS
- HUGEN 2020 - INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2021 - SPECIAL STUDIES *(1-3 credits)*
- HUGEN 2025 - HUMAN GENETICS SEMINAR *(two terms)*
- HUGEN 2032 - GENETIC TECHNIQUES
- HUGEN 2035 - PRINCIPLES OF GENETIC COUNSELING
- HUGEN 2036 - GENETIC COUNSELING INTERNSHIP *(two terms - fall and spring of 2nd year)*
  Fulfills the MPH practicum requirement, students must complete and submit all materials required for the MPH practicum
- HUGEN 2037 - GENETIC COUNSELING PROFESSIONAL DEVELOPMENT AND RESEARCH SERIES
- HUGEN 2038 - INTERVENTION SKILLS FOR GENETIC COUNSELING
- HUGEN 2039 - GENETIC COUNSELING RISK ASSESSMENT AND APPLICATION
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2047 - CLINICAL GENETICS CASE CONFERENCE *(two terms)*
- HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS
- HUGEN 2052 - ETHICAL ISSUES IN GENETIC COUNSELING
- HUGEN 2054 - APPLICATIONS IN PUBLIC HEALTH GENETICS AND GENOMICS
- HUGEN 2063 - GENETIC COUNSELING IN PRACTICE: SIMULATION AND SKILL BUILDING

At Least 3 Credits from the Following Courses

- HUGEN 2090 - MOLECULAR BASIS OF COMPLEX DISEASES
- HUGEN 2091 - GENETICS OF COMPLEX DISEASES
- HUGEN 2060 - CHROMOSOMES - STRUCTURE AND FUNCTION
- HUGEN 2061 - CANCER GENETIC COUNSELING
- HUGEN 2029 - INTRODUCTION TO GENE MAPPING
- HUGEN 2056 - GENETIC CONDITIONS AND PUBLIC HEALTH PROGRAMS

Elective Courses

Add electives as needed recommended by academic advisor to earn total credits required for the degree program.

Other Requirements

Comprehensive Examination

The written comprehensive examination occurs at the end of the first year of study. Students must complete the following courses to be eligible to sit for the exam:

- BIOST 2041 INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 PRINCIPLES OF EPIDEMIOLOGY
- HUGEN 2020 INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2040 MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2035 PRINCIPLES OF GENETIC COUNSELING
- HUGEN 2025 HUMAN GENETICS SEMINAR *(2 terms)*
- HUGEN 2047 CLINICAL GENETICS CASE CONFERENCE
- PUBHLT 2011 ESSENTIALS OF PUBLIC HEALTH *(2 terms)*
- HUGEN 2032 GENETIC TECHNIQUES
- HUGEN 2060 CHROMOSOMES - STRUCTURE AND FUNCTION
- HUGEN 2038 INTERVENTION SKILLS FOR GENETIC COUNSELING
- HUGEN 2052 ETHICAL ISSUES IN GENETIC COUNSELING
- HUGEN 2010 BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2061 CANCER GENETIC COUNSELING
- PUBHLT 2011 ESSENTIALS OF PUBLIC HEALTH
- HUGEN 2063 GENETIC COUNSELING IN PRACTICE: SIMULATION AND SKILL BUILDING
- HUGEN 2037 GENETIC COUNSELING PROFESSIONAL DEVELOPMENT AND RESEARCH SERIES
- HUGEN 2039 GENETIC COUNSELING RISK ASSESSMENT AND APPLICATION

A student failing a minimum score of 70% must repeat the written examination within 90 days and/or undergo a series of supervised tutorial sessions to overcome areas of deficiencies. For the student who undergoes the tutorial sessions, they must retake the exam and achieve a minimum score of 70% after completion of the sessions.

Failure to pass the comprehensive examination in two attempts may lead to dismissal from the program.

Oral Examination - Thesis Defense

Students being writing their thesis in Spring of the 1st year and it must be completed before graduation. Students must complete the following courses before their thesis defense:

- HUGEN 2037 GENETIC COUNSELING PROFESSIONAL DEVELOPMENT AND RESEARCH SERIES
- HUGEN 2021 SPECIAL STUDIES
- HUGEN 2012 WRITING IN CLINICAL AND PUBLIC HEALTH GENETICS

A final copy of the thesis must be submitted to the Thesis Advisory Committee for evaluation at least one week prior to the thesis defense. The Thesis Advisory Committee will judge the adequacy of the thesis by an open oral examination covering the subject of the thesis. Successful completion of the MS thesis requires unanimous agreement by the Thesis Advisory Committee.

Must register for at least one credit during the term in which they intend to graduate. Students intending to graduate must file an application to graduate by the deadline specified in the University Calendar. The final copy of the MS thesis must be prepared and submitted according to the University guidelines for Electronic Theses and Dissertations (ETD).

Thesis and Essay Requirements

Students in the dual degree program will complete both the thesis requirement for the MS in Genetic Counseling degree and the Essay requirement for the MPH in Public Health Genetics degree. Depending on the thesis and essay topics, sometimes these documents can be combined into one document comprising the student's thesis project with additional background on public health genetics relevance and, at least one additional, extensive chapter focusing on an application of public health genetics. The student's thesis committee and the Program Director for the MPH in Public Health Genetics will work with the student to identify the additional components or topics that are needed to satisfy the MPH Essay requirement.

Total Credits: 62

Master's

Genetic Counseling, MS

The MS in Genetic Counseling is committed to providing cutting edge training in the complex science of genetics while fostering a strong foundation in counseling. This unique program is constantly evolving to ensure the continued success of graduates entering a dynamic workforce. We welcome 10 and 12 students per year to be trained by world-renowned faculty in an exciting and challenging program.

The program is grounded in three important elements: scientific training in human genetics and genomics, comprehensive clinical experience, and understanding the psychological and social aspects of counseling-with an added focus on integrating up to the minute discoveries in genetics and genomics as well as valuable concepts from other academic disciplines.

The Genetic Counseling Program is accredited by the Accreditation Council for Genetic Counseling and our comprehensive program helps students to achieve and often surpass the practice based competencies outlined by the ACGC.

The MS in Genetic Counseling program is designed to be completed in two years of full-time study. The requirements for the MS in Genetic Counseling degree are listed below.

- 45 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/hugen/degree-programs/ms-genetic-counseling

Program Director

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2012 - WRITING IN CLINICAL AND PUBLIC HEALTH GENETICS
- HUGEN 2020 - INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2021 - SPECIAL STUDIES *(2 Total Credits)*
- HUGEN 2025 - HUMAN GENETICS SEMINAR *(two terms)*
- HUGEN 2032 - GENETIC TECHNIQUES
- HUGEN 2035 - PRINCIPLES OF GENETIC COUNSELING
- HUGEN 2036 - GENETIC COUNSELING INTERNSHIP *(two terms - fall and spring of 2nd year)*
- HUGEN 2037 - GENETIC COUNSELING PROFESSIONAL DEVELOPMENT AND RESEARCH SERIES
- HUGEN 2038 - INTERVENTION SKILLS FOR GENETIC COUNSELING
- HUGEN 2039 - GENETIC COUNSELING RISK ASSESSMENT AND APPLICATION
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2047 - CLINICAL GENETICS CASE CONFERENCE *(two terms)*
- HUGEN 2052 - ETHICAL ISSUES IN GENETIC COUNSELING
- HUGEN 2060 - CHROMOSOMES - STRUCTURE AND FUNCTION
- HUGEN 2061 - CANCER GENETIC COUNSELING
- HUGEN 2063 - GENETIC COUNSELING IN PRACTICE: SIMULATION AND SKILL BUILDING
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*

Clinical Rotations

Genetic counseling students have the opportunity to participate in patient care at world-renowned medical facilities. They typically see 100 cases or more and are exposed to a variety of genetic referral types as well as diverse medical systems.

All students participate in rotations in Cancer genetics, Prenatal genetics, Pediatric genetics, Adult/Specialty genetics, Primary Care, Precision Medicine and a thesis focused block. In addition, students spend three weeks at an optional rotation site. This allows students the opportunity to select specific training experiences to develop a higher level of expertise based on their interests.

Other Requirements

Comprehensive Examination

The written comprehensive examination occurs at the end of the first year of study. Students must complete the following courses to be eligible to sit for the exam:

- BIOST 2041 INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 PRINCIPLES OF EPIDEMIOLOGY
- HUGEN 2020 INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY

- HUGEN 2040 MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2035 PRINCIPLES OF GENETIC COUNSELING
- HUGEN 2025 HUMAN GENETICS SEMINAR *(2 terms)*
- HUGEN 2047 CLINICAL GENETICS CASE CONFERENCE
- PUBHLT 2022 THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(2 terms)*
- HUGEN 2032 GENETIC TECHNIQUES
- HUGEN 2060 CHROMOSOMES - STRUCTURE AND FUNCTION
- HUGEN 2038 INTERVENTION SKILLS FOR GENETIC COUNSELING
- HUGEN 2052 ETHICAL ISSUES IN GENETIC COUNSELING
- HUGEN 2010 BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2061 CANCER GENETIC COUNSELING
- PUBHLT 2011 ESSENTIALS OF PUBLIC HEALTH
- HUGEN 2063 GENETIC COUNSELING IN PRACTICE: SIMULATION AND SKILL BUILDING
- HUGEN 2037 GENETIC COUNSELING PROFESSIONAL DEVELOPMENT AND RESEARCH SERIES
- HUGEN 2039 GENETIC COUNSELING RISK ASSESSMENT AND APPLICATION

A student failing a minimum score of 70% must repeat the written examination within 90 days and/or undergo a series of supervised tutorial sessions to overcome areas of deficiencies. For the student who undergoes the tutorial sessions, they must retake the exam and achieve a minimum score of 70% after completion of the sessions.

Failure to pass the comprehensive examination in two attempts may lead to dismissal from the program.

Oral Examination - Thesis Defense

Students being writing their thesis in Spring of the 1st year and it must be completed before graduation. Students must complete the following courses before their thesis defense:

- HUGEN 2037 GENETIC COUNSELING PROFESSIONAL DEVELOPMENT AND RESEARCH SERIES
- HUGEN 2021 SPECIAL STUDIES
- HUGEN 2012 WRITING IN CLINICAL AND PUBLIC HEALTH GENETICS

A final copy of the thesis must be submitted to the Thesis Advisory Committee for evaluation at least one week prior to the thesis defense. The Thesis Advisory Committee will judge the adequacy of the thesis by an open oral examination covering the subject of the thesis. Successful completion of the MS thesis requires unanimous agreement by the Thesis Advisory Committee.

Must register for at least one credit during the term in which they intend to graduate. Students intending to graduate must file an application to graduate by the deadline specified in the University Calendar. The final copy of the MS thesis must be prepared and submitted according to the University guidelines for Electronic Theses and Dissertations (ETD).

Total Credits: 45

Genome Bioinformatics, MS

The Master of Science in Genome Bioinformatics (MSGB) program prepares students for careers analyzing the human genome both in academia and in pharmaceutical and genomic testing industries. Graduates will meet the growing need for computational analysts with expertise in manipulating, annotating, and interpreting human genome data.

Students can take advantage of resources and research opportunities afforded by other health science schools, especially Pitt Medicine, where researchers are carrying out cutting-edge genomic studies using next-generation sequence data and bioinformatics tools and methods.

Graduates are experts in applying computation tools for studying and interpreting the human genome in a future where genomics is central to precision medicine and biomedical research.

The MS program is designed to be completed in two years of full-time study. The requirements for the MSGB degree are listed below.

- 45 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/hugen/degree-programs/ms-genome-bioinformatics

Program Director

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2020 - INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2025 - HUMAN GENETICS SEMINAR *(two terms)*
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2071 - GENOMIC DATA PROCESSING AND STRUCTURE
- HUGEN 2072 - GENOMIC DATA PIPELINES AND TOOLS
- HUGEN 2073 - GENOMIC DATA VISUALIZATION AND INTEGRATION
- HUGEN 2075 - GENOME BIOINFORMATICS THESIS AND WRITING
- HUGEN 2076 - GENOME BIOINFORMATICS CAPSTONE
- HUGEN 2077 - GENOME BIOINFORMATICS PROFESSIONAL SKILLS
- HUGEN 2079 - GENOMIC DATA ANALYSIS WITH MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

HUGEN Elective Courses

5 or more credits

- HUGEN 2029 - INTRODUCTION TO GENE MAPPING

- HUGEN 2060 - CHROMOSOMES - STRUCTURE AND FUNCTION
- HUGEN 2090 - MOLECULAR BASIS OF COMPLEX DISEASES
- HUGEN 2091 - GENETICS OF COMPLEX DISEASES

Additional Elective Courses and Internship

In addition to the required courses listed above, MS in Genome Bioinformatics students are expected to select at least 6 additional credits of elective courses approved by the Program Director and must complete an internship in an industry, academic, or governmental setting after the first year.

Other Requirements

Comprehensive Examination

The written comprehensive examination occurs at the end of the first year of study. Students must complete the following courses to be eligible to sit for the exam:

- HUGEN 2010 BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2020 INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2040 MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2071 GENOMIC DATA PROCESSING AND STRUCTURE
- HUGEN 2072 GENOMIC DATA PIPELINES AND TOOLS
- HUGEN 2073 GENOMIC DATA VISUALIZATION AND INTEGRATION
- BIOST 2041 INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 PRINCIPLES OF EPIDEMIOLOGY

Oral Examination - Thesis Defense

The written thesis oral defense occurs in the final term of study. Students must complete the following courses before their thesis defense:

- HUGEN 2075 GENOME BIOINFORMATICS THESIS AND WRITING
- HUGEN 2076 GENOME BIOINFORMATICS CAPSTONE

A final copy of the thesis must be submitted to the Thesis Advisory Committee for evaluation at least one week prior to the thesis defense. The Thesis Advisory Committee will judge the adequacy of the thesis by an open oral examination covering the subject of the thesis. Successful completion of the MS thesis requires unanimous agreement by the Thesis Advisory Committee.

Must register for at least one credit during the term in which they intend to graduate. Students intending to graduate must file an application to graduate by the deadline specified in the University Calendar. The final copy of the MS thesis must be prepared and submitted according to the University guidelines for Electronic Theses and Dissertations (ETD).

Total Credits: 45

Human Genetics, MS

The MS in Human Genetics (MSHG) program prepares students for careers as contributing members of genetics and genomics research teams in academia or industry. Graduates of the program often go on to PhD level study and become independent scientists. The flexible curriculum provides a broad background in the field while allowing customized emphasis on laboratory genetics or genetic data analysis. In addition to core coursework and advanced classes in a chosen area of concentration, MS students pursue mentored research projects culminating in the production and defense of a thesis.

The MS program is designed to be completed in two years of full-time study. The requirements for the MSHG degree are listed below.

- 36 Credits
- Comprehensive Examination
- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/hugen/degree-programs/ms-human-genetics

Program Director

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2011 - SCIENTIFIC WRITING IN HUMAN GENETICS
- HUGEN 2020 - INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2021 - SPECIAL STUDIES *(two credits)*
- HUGEN 2025 - HUMAN GENETICS SEMINAR *(two terms)*
- HUGEN 2028 - HUMAN GENETICS JOURNAL CLUB AND PEER REVIEW
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2060 - CHROMOSOMES - STRUCTURE AND FUNCTION
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

HUGEN Elective Courses

3 or more credits

- HUGEN 2029 - INTRODUCTION TO GENE MAPPING
- HUGEN 2090 - MOLECULAR BASIS OF COMPLEX DISEASES
- HUGEN 2091 - GENETICS OF COMPLEX DISEASES

Additional Elective Courses

In addition to the required courses listed above, students must complete at least 11 credits through elective courses within or outside the Department of Human Genetics, HUGEN 2021 Special Studies research credits, or transfer credits from previous graduate level coursework. Elective courses and transfer credits counting toward the degree must be discussed and approved by the student's academic

and research advisors. Students who are not fluent in English are strongly recommended to take a University course in conversational English.

Other Requirements

Comprehensive Examination

The Comprehensive exam comprises two parts. The first part is a written exam covering the foundational knowledge in the field, which takes place after completion of the introductory courses (HUGEN 2010, HUGEN 2020, HUGEN 2040, HUGEN 2060, EPIDEM 2110, BIOST 2041) usually after then first year of study. The second part is a presentation and oral exam that assesses the transfer of foundational knowledge to the interpretation of research from the primary literature. The presentation and oral exam occur in the same semester following successful completion of the written exam. Satisfactory performance in both parts is required to pass the comprehensive exam.

Oral Examination - Thesis Defense

The thesis defense takes place when the student has completed the mentored research project and submitted the written document to the thesis committee for review. The defense comprises a presentation of the research followed by a closed-door oral examination with the thesis committee.

Total Credits: 36

Public Health Genetics, MPH

The Master of Public Health (MPH) in Public Health Genetics program integrates human genetics and the public health science disciplines of epidemiology, behavioral and community health sciences, biostatistics, environmental health, and health services research with ethics, social sciences, public affairs, and law to prepare students for a career in the evolving field of public health genetics. Public health genetics encompasses issues at the forefront of promoting diversity, equity, and inclusion in the implementation of genetic initiatives including access to genetic services, genetic literacy, genetic policy, and patient advocacy. It addresses society's legal, ethical, financial, regulatory, and organizational responsibilities in offering genetic services and conducting genetic resources.

Students are required to complete a 200-hour practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The MPH program is designed to be completed in two years of full-time study. The requirements for the MPH degree in Public Health Genetics are listed below.

- 47 Credits
- Practicum (200-hour minimum)
- Essay

Contact Information

https://www.publichealth.pitt.edu/hugen/degree-programs/mph-public-health-genetics

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MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

Human Genetics Required Courses

- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2020 - INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY
- HUGEN 2021 - SPECIAL STUDIES *(4 credits) Students can take up to 3 credits for their essay/thesis, but only 1 credit is required*
- HUGEN 2025 - HUMAN GENETICS SEMINAR *(two terms)*
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS
- HUGEN 2050 - PUBLIC HEALTH GENETICS PRACTICUM *(1 credit)*
- HUGEN 2054 - APPLICATIONS IN PUBLIC HEALTH GENETICS AND GENOMICS
- HUGEN 2062 - ETHICAL ISSUES IN PUBLIC HEALTH GENETICS AND RESEARCH

At Least 3 Credits from the Following Courses

- HUGEN 2090 - MOLECULAR BASIS OF COMPLEX DISEASES
- HUGEN 2091 - GENETICS OF COMPLEX DISEASES
- HUGEN 2060 - CHROMOSOMES - STRUCTURE AND FUNCTION
- HUGEN 2061 - CANCER GENETIC COUNSELING
- HUGEN 2029 - INTRODUCTION TO GENE MAPPING
- HUGEN 2056 - GENETIC CONDITIONS AND PUBLIC HEALTH PROGRAMS

Additional Elective Courses

Students fulfill the remaining credits with electives from the School of Public Health based on their interests and future career goals. Elective courses outside of the School of Public Health are permitted with Program Leadership approval.

Total Credits: 47

Department of Infectious Diseases and Microbiology

Mission

Our mission is to advance the understanding and control of infectious diseases through cutting-edge research, comprehensive training programs, and exceptional public health services.

Vision

We strive to be a world-renowned center of excellence in infectious diseases research, training, and public health solutions.

Strategic Priorities

- **One Health:** Promote interdisciplinary collaboration to combat zoonotic diseases and play a key role in the development of One Health strategies that drive policy changes at the national and international levels.
- **Emerging and Vector-Borne Infectious Diseases:** Publish influential research on emerging and vector borne-pathogens, develop innovative prevention strategies, and contribute to reducing disease burden in vulnerable populations.
- **HIV and Tuberculosis (TB):** Become a recognized center of excellence for HIV and TB research and prevention, generate impactful research outcomes, foster innovative prevention strategies, and contribute to measurable public health outcomes.
- **Climate Change and Global Health:** Conduct groundbreaking research on the impact of climate change on infectious diseases and influence policies and interventions that enhance resilience and adaptation to climate-related health challenges.
- **Pandemic Prevention and Preparedness:** Enhance pandemic preparedness by developing early detection systems, novel surveillance approaches, and strong partnerships with public health agencies.

Degree programs in IDM integrate molecular biology, immunology, epidemiology, medicine, health education, and community intervention. Through these collaborative approaches, our students are provided with opportunities for engaging in cross-disciplinary research.

Program graduates pursue careers in academia, industry, government, NGOs and community service. You will find IDM graduates working with prestigious employers in the USA and worldwide. Examples include the National Institutes of Health, the Centers for Disease Control and Prevention, state and local health departments, pharmaceutical companies, hospitals, and major universities and other academic institutions.

Contact Information

https://www.publichealth.pitt.edu/idm

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Admissions & Aid

All new applicants must apply through SOPHAS. Instructions on how to apply, deadlines and requirements, information for international applicants, frequently asked questions, and financial aid information can be found by visiting Pitt Public Health Admissions and Aid. Please visit Infectious Diseases and Microbiology Admissions for department and program-specific application requirements.

Accelerated Bachelor's/Master's Program

Designed to allow students to complete a bachelor's and master's degree in approximately 5 years. Qualified Pitt undergraduates can apply to an accelerated program in their third year. Accelerated program details, application instructions, and requirements can be found by visiting Pitt Public Health Accelerated Bachelor's/Master's Program.

Doctoral

Infectious Diseases and Microbiology, PhD

The PhD program in the Department of Infectious Diseases and Microbiology prepares students for competitive research and teaching careers in academia, government agencies, and private industry. PhD students complete coursework that emphasizes the fundamentals of pathogen biology, immunology, cell biology, and molecular biology, which provides the necessary educational basis to conduct independent research mentored by faculty.

The program is designed to be completed in four to five years. The requirements for the IDM PhD degree are listed below.

- 72 Credits
- Preliminary Evaluation
- Comprehensive Examination
- Overview/Prospectus Meeting
- Admission to Candidacy

- Final Oral Examination - Dissertation Defense

Contact Information

https://www.publichealth.pitt.edu/idm/degree-programs/phd

Program Director

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- EPIDEM 2161 - METHODS INFECTIOUS DISEASES EPIDEMIOLOGY
- IDM 2001 - MOLECULAR BIOLOGY OF MICROBIAL PATHOGENS
- IDM 2002 - MOLECULAR VIROLOGY
- IDM 2004 - VIRAL PATHOGENESIS
- IDM 2014 - FUNCTIONAL GENOMICS OF MICROBIAL PATHOGENS
- IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY *(six terms)*
- IDM 2024 - PRINCIPLES OF MOLECULAR METHODS
- IDM 2025 - MICROBIOLOGY SEMINAR *(four terms)*
- IDM 2038 - PREVENTION, TREATMENT, AND CONTROL OF GLOBAL INFECTIOUS DISEASES
- IDM 2041 - RESEARCH ETHICS AND SCIENTIFIC COMMUNICATION
- IDM 2103 - HOST RESPONSE TO MICROBIAL INFECTION
- IDM 3440 - VACCINES AND IMMUNITY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*

Elective Courses

Students add electives as recommended by academic advisors to earn total credits required for the degree program.

Total Credits: 72

Other Requirements

Preliminary (Qualifying) Evaluation

- Taken at end of first year (generally June after 1st year)
- Must have GPA of 3.0 or higher
- Format: Students are assigned a published manuscript that is outside of their current lab research area. Students must be able to present and critique the manuscript to a committee of 3 faculty.

- Through the exam, the student must show an ability to analyze and interpret data and breadth and depth of understanding of associated concepts.

Comprehensive Examination

- Taken at end of second year (generally July after 2nd year)
- Must have GPA of 3.0 or higher
- Format: Students must write an R21-style proposal of original research related to their dissertation work. The exam consists of an oral presentation and defense of the proposal to a committee of 3 faculty.
- Through the comprehensive examination, the student must demonstrate mastery of the general field of doctoral study, acquisition of both breadth and depth around specialization within the general fields, and the ability to use the research methods of the discipline.
- Upon passing the exam, students enter FTDR status.

Overview/Prospectus Meeting

After passing the Comprehensive Examination, students must form their dissertation committee in accordance with University and school guidelines and have it approved by the school. The Overview/Prospectus must occur by January following the Comprehensive Examination. The overview requires the student to carefully formulate a plan and permits the doctoral committee members to provide guidance in shaping the conceptualization and methodology of that plan. The doctoral committee must unanimously approve the dissertation topic and research plan before the student may be admitted to candidacy for the doctoral degree. Approval of the proposal does not imply either the acceptance of a dissertation prepared in accord with the proposal or the restriction of the dissertation to this original proposal. The student is responsible for ensuring that all appropriate regulatory approvals are obtained for the proposed research. The dissertation committee is required to meet yearly to monitor dissertation progress.

Admission to Candidacy

To qualify for admission to candidacy a student must:

- be in full graduate status
- have satisfied the requirement of the preliminary evaluation
- have completed formal course work with a minimum grade point average of 3.00
- have passed the comprehensive examination
- have received approval of the proposed subject and plan of the dissertation from the doctoral committee following an overview or prospectus meeting of the committee

Final Oral Examination - Dissertation Defense

Students are required to have at least 1 first author publication with original research. Each student must write a dissertation that presents the results of a research project carried out by the student. The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and need not be confined to materials in and related to the dissertation. The doctoral committee confers with the student before providing approval to schedule the dissertation defense. The doctoral dissertation defense must be announced at least 3 weeks in advance in accordance with school policy. final copy of the dissertation must be prepared and submitted according to University requirements.
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Master's

Infection Prevention, MPH

The MPH in Infection Prevention (IDM-IP MPH) aims to equip students to function as infection preventionists in clinical and community settings by providing a tailored educational experience in infection prevention and infectious diseases prevention, treatment, and response. The program fosters competencies for practice, research, and education in infectious diseases and related public health issues. Students take coursework in infection prevention, global and domestic infectious diseases, HIV, STIs, emerging pathogens, neglected tropical diseases as well as response and mitigation of outbreaks, epidemics and pandemics through design of interventions, approaches, and policies to reduce the burden of infectious diseases in the US and internationally. Coursework paired with hands-on internships in infection prevention prepares students for careers in infection prevention, and in public health positions where prevention and treatment of infectious diseases is critical.

Students are required to complete a 200-hour practicum/internship in infection prevention specifically infection prevention in a clinical setting including hospitals, clinics and community settings. Students prepare an essay or thesis that addresses an issue related to infectious diseases that demonstrates the ability to synthesize information from numerous sources. The MPH-IP program is designed to be completed in four semesters of full-time study. The requirements for the IDM-IP MPH are listed below.

- 42 Credits
- Practicum (200-hour minimum)
- Essay

Contact Information

https://www.publichealth.pitt.edu/idm/degree-programs/mph-infection-prevention

Program Directors

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MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH

- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

IDM-IP MPH Required Courses

- IDM 2068 - INFECTION PREVENTION AND CONTROL PRACTICUM/INTERNSHIP
- IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY *(2-3 credits)*
- IDM 2025 - MICROBIOLOGY SEMINAR *(two terms)*
- IDM 2037 - ADVANCED VECTOR-BORNE INFECTIOUS DISEASES
- IDM 2038 - PREVENTION, TREATMENT, AND CONTROL OF GLOBAL INFECTIOUS DISEASES
- IDM 2069 - INFECTION PREVENTION AND CONTROL IN HEALTH CARE SETTINGS
- IDM 2134 - PREVENTION AND CONTROL OF SEXUALLY TRANSMITTED INFECTIONS

Electives

4-5 elective credits are required. The courses below are suggestions; students are encouraged to select electives from Pitt Public Health or other Pitt schools relevant to their research area. Students work with their academic advisor to identify electives that fulfill the total credits required for the degree program.

- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- EPIDEM 2180 - FUNDAMENTALS OF EPIDEMIOLOGICAL METHODS
- EPIDEM 2260 - EPIDEMIOLOGICAL BASIS DISEASE CONTROL
- PUBHLT 2173 - TRANSFORMING GLOBAL HEALTH EDUCATION INTO ACTION
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- HPM 2029 - HEALTH MANAGEMENT INFORMATION SYSTEMS
- HPM 2108 - LEADERSHIP
- LAW 2089 - PUBLIC HEALTH LAW
- ISSP 2160 - FOUNDTNS OF ARTIFICIAL INTELLGNC
- PIA 2640 - HUMANITARIAN ACTION: CHALLENGES, RESPONSES, RESULTS (WASHINGTON DC)

Total Credits: 42

Infectious Diseases and Microbiology, MS

he Master of Science in Infectious Diseases and Microbiology program provides students with a unique education in basic science within the School of Public Health. Trainees in the MS program develop expertise in laboratory skills and analytic techniques that prepare them to become competitive applicants for medical school, doctoral programs, and research positions in academia, government, and industry.
This two-year program emphasizes coursework in immunology, cell biology, microbiology, and virology, as well as hands-on experience in these disciplines as students conduct research under the supervision of a faculty advisor. At the end of the program, MS students prepare a thesis based on their research for presentation to their faculty advisory committee and department members.

The requirements for the IDM MS degree are listed below.

- 36 Credits
- Comprehensive Examination

- Oral Examination - Thesis Defense

Contact Information

https://www.publichealth.pitt.edu/idm/degree-programs/ms-infectious-diseases-and-microbiology

Program Director

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Required Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- EPIDEM 2161 - METHODS INFECTIOUS DISEASES EPIDEMIOLOGY
- IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY *(every term)*
- IDM 2022 - SPECIAL TOPICS *(3 credits)*
- IDM 2024 - PRINCIPLES OF MOLECULAR METHODS
- IDM 2025 - MICROBIOLOGY SEMINAR *(four terms)*
- IDM 2037 - ADVANCED VECTOR-BORNE INFECTIOUS DISEASES
- IDM 2041 - RESEARCH ETHICS AND SCIENTIFIC COMMUNICATION
- IDM 2103 - HOST RESPONSE TO MICROBIAL INFECTION
- IDM 3440 - VACCINES AND IMMUNITY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(two terms)*

Elective Courses

Students add electives as recommended by academic advisors to earn total credits required for the degree. Recommended electives can be found below.

- IDM 2001 - MOLECULAR BIOLOGY OF MICROBIAL PATHOGENS
- IDM 2002 - MOLECULAR VIROLOGY
- IDM 2004 - VIRAL PATHOGENESIS
- IDM 2014 - FUNCTIONAL GENOMICS OF MICROBIAL PATHOGENS

Other Requirements

Comprehensive Examination

The MS Comprehensive Exam is designed to assess a student's ability to understand the intellectual and technical framework of a recently published scientific paper. Students are given a paper to read and are expected to apply knowledge gained through their coursework and

laboratory training to interpret its results while answering questions from a faculty committee about the significance and technical merit of the study. For full-time MS students, the Comprehensive Exam is typically taken at the end of the first year, between the conclusion of the spring semester and the start of the second year, allowing time to complete the coursework needed to understand the assigned paper. Part-time MS students are eligible to take the Comprehensive Exam after completing the core MS requirements (BIOST 2041, IDM 2022 (one term), IDM 2024, IDM 2103, IDM 3440) and after giving a journal club presentation in IDM 2025, which usually places the exam at the end of their second year.

Thesis

At the end of the MS program, students synthesize their research results in the MS thesis. Students form a committee of at least two IDM faculty members and one non-IDM faculty member who can provide advice on the direction of their research project. The student presents their thesis proposal to the committee for input on their specific aims and overall research plan. After giving a departmental research-in-progress talk, the student can ask their committee for approval to begin writing the thesis. The student then works with their advisor to prepare a document that comprehensively details the hypothesis and specific aims that drive their research, and their results and interpretation. The student's thesis cohesively describes their work and situates it within a broader public health research priority. Upon completion, the student gives an oral presentation of their thesis research to their committee, peers, and the department in a public venue, followed by a closed session with committee members. Successful defense of the thesis and submission to the school for inclusion in the Electronic Theses and Dissertations (ETD) system are required for graduation.

Total Credits: 36

Infectious Diseases and One Health, MPH

The MPH in Infectious Diseases and One Health combines a broad education in Public Health with a rigorous curriculum in pathogen biology, infectious disease epidemiology, and immunology with a One Health focus, while leaving plenty of scope for students to choose electives that combine to produce an MPH degree that is uniquely tailored to each student's interests. It also provides a wide range of practicum and research opportunities in basic laboratory, clinical, health authority, and community settings. Students graduate from this program with the skills and competencies that enable them to go into medical school, PhD or DrPH programs, infectious disease epidemiologist positions, or other Public Health careers at the local, state, or federal levels.

Students are required to complete a 200-hour practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The MPH program is designed to be completed in four semesters of full-time study. The requirements for the Infectious Diseases and One Health MPH are listed below.

- 42 Credits
- Practicum (200-hour minimum)
- Essay

Contact Information

https://www.publichealth.pitt.edu/idm/degree-programs/mph-infectious-diseases-and-one-health

Program Director

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MPH Core Required Courses

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
  OR
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS *(preferred)*
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS *(2 terms)*
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

IDM-OH MPH Required Courses

- IDM 2004 - VIRAL PATHOGENESIS
- IDM 2007 - PUBLIC HEALTH COMMUNICABLE DISEASE PRACTICUM *(3 credits)*
- IDM 2010 - PATHOGEN BIOLOGY
- IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY *(2-3 credits)*
- IDM 2025 - MICROBIOLOGY SEMINAR
- IDM 2103 - HOST RESPONSE TO MICROBIAL INFECTION
- IDM 2161 - METHODS OF INFECTIOUS DISEASE EPIDEMIOLOGY

Elective Courses

Students add electives as recommended by academic advisor to earn total credits required for degree program.

Total Credits: 42

School of Social Work

School of Social Work

University of Pittsburgh School of Social Work

The School of Social Work at the University of Pittsburgh, established in 1918, is one of the oldest and most respected social work programs in the country. From its founding, the School has been committed to advancing knowledge through education, research, and community engagement.

An academic unit within the University, the School of Social Work offers undergraduate, master's, and doctoral programs, along with continuing education for practicing professionals. The Bachelor of Arts in Social Work (BASW) and Master of Social Work (MSW) programs are accredited by the Council on Social Work Education (CSWE), Board of Accreditation. Students and graduates are eligible for full membership in the National Association of Social Workers (NASW).

Visions of School of Social Work

Transforming our world, our future, ourselves

- Prepares courageous leaders to transform social work practice, policy, research, and education in a community-engaged and inclusive environment
- Develops and advances innovative approaches to understand, prevent, and ameliorate complex social problems
- Builds collaborative partnerships to promote social justice

Goals of the School of Social Work:

- Educate professional social workers with the knowledge, skills, and values needed to engage in culturally competent practice with diverse populations and communities, to critically analyze personal, familial and environmental factors affecting practice settings and practice techniques, and to advocate for those who confront barriers to maximizing the achievement of their fullest potential.
- Engage in scholarly activities that contribute to professional knowledge about complex social problems and innovative approaches to ameliorate those problems.
- Provide service to local, national, and international communities through the development of and participation in collaborations with social agencies, community-based organizations, government, and foundations.

Graduate Degree Options

The School of Social Work awards Master of Social Work (MSW) and Doctor of Philosophy (PhD) degrees.

MSW Program

Students can earn their MSW through two formats: **face-to-face and online**. Students may pursue their MSW through our standard program or with advanced standing (after successful completion of a Council on Social Work Education-accredited undergraduate social work degree)

The face-to-face **MSW program** option allows students to pursue full-time or part-time study.. Students may specialize in Direct Practice or in Community, Organization, and Social Action (COSA), and may be able to earn a certificate in one of the following areas:

- Direct Practice - Children, Youth and Families
- Direct Practice - Gerontology
- Direct Practice - Home and School Visitor/School Social Work
- Direct Practice - Integrated Healthcare
- Direct Practice - Mental Health
- COSA - Gerontology
- COSA - Human Services Management
- COSA - Community Organizing Practice
- MA Gender, Sexuality, and Women's Study

Face-to-Face may also elect to pursue joint or cooperative degrees. Students must apply and be admitted separately to each academic unit. Approved joint degree options include:

- Master of Social Work / Master of Divinity (MSW/MDiv)
- Master of Social Work / Master of Public Administration (MSW/MPA)
- Master of Social Work / Master of Public and International Affairs (MSW/MPIA)
- Master of Social Work / Master of International Development (MSW/MID)
- Master of Social Work / Doctor of Philosophy in Social Work (MSW/PhD)
- Master of Social Work / Master of Public Health (MSW/MPH)
- Master of Social Work / Master of Business Administration (MSW/MBA)

The **online MSW program** option offers is designed for part-time study in an asynchronous format. Online MSW students specialize in Direct Practice and may be able to earn a certificate in one of the following areas: Children, Youth and Families; Integrated Healthcare; or Mental Health.

PhD Program

The full-time PhD program prepares students for research and teaching careers in the field of Social Work. Students must hold an MSW degree to be eligible to apply directly to the PhD program. Applicants without an MSW degree, who wish to seek training to become full-time faculty or researchers in the field of Social Work, may apply to the joint MSW/PhD program.

Students may elect to pursue joint or cooperative degrees. Students must apply and be admitted separately to each academic unit. Approved joint degree options include:

- Master of Social Work / Doctor of Philosophy in Social Work (MSW/PhD)
- Master of Public Health / Doctor of Philosophy in Social Work (MPH/PhD)

Admissions

MSW Admissions

Applications are accepted both for our standard MSW program and for our Advanced Standing MSW program for students who have successfully completed an undergraduate social work degree from a CSWE-accredited BSW program.

All applicants to the MSW Program must meet the following criteria:

- A baccalaureate degree from a regionally accredited college or university
- A minimum GPA of 3.0 on a 4.0 scale in all undergraduate coursework
- Successful completion of a 3-credit course in statistics or quantitative analysis

Applicants with a GPA below 3.0 may be considered for provisional admission.

Required application materials include:

- A personal statement (3-5 pages) responding to specific prompts
- Twp references (one academic and one professional recommended)
- A signed praticum education participation agreement
- Official transcripts from all institutions of higher education attended

Applicants are also encouraged to have 30 undergraduate (or combined undergraduate and graduate) credits in credits in liberal arts and 30 in social sciences. These are recommended but not required.

Liberal arts areas include:

- Humanities (English, languages, literature, philosophy, religion, communication)
- Fine arts (art, photography, dance, theater)
- Natural sciences (biology, chemistry, physics, mathematics, statistics)

Social science areas include:

- Psychology, sociology, anthropology, economics, political science, social work, history, criminal justice

International Applicamts

The School of Social Work welcomes applications from students in other countries whose credentials meet the requirements and the standards of the School of Social Work and the Office of lnternational Services of the University.

MSW applican s from other countries must apply directly to the School of Social Work. Applicants must submit the completed application form, additional required forms, and other required materials in English. Additional University of Pittsburgh application procedures for international students are described at http://www.socialwork.pitt.edu/admissions-aid/international-students. Other information and assistance for international students can be found online at www.ois.pitt.edu/intladmissions.html.

International students who hold a baccalaureate degree in social work from a program that is not accredited by the Council on Social Work Education and who are interested in obtaining advanced standing credit must submit their transcript to the council for a determination of equivalency. Further Information can be found online at www.cswe.org.

MSW Financial Assistance

Students interested in financial assistance to meet tuition and/or living costs should direct inquiries to both the Office of Admissions of the School of Social Work and the University's Office of Admissions and Financial Aid.

Students should be advised that limited resources often preclude any one funding source from granting awards that meet total financial needs. As a result, students are strongly encouraged to seek financial aid packages consisting of partial awards (including loans and scholarships) from a variety of sources.

Applications for financial assistance are accepted only after an admissions decision has been made. Awards are made for a one-year period. New applications are required for each succeeding period

PHD Admissions

Persons seeking admission to the PhD Program must demonstrate the potential for doctoral studies. The doctoral program is open to applicants who have demonstrated intellectual capacity, critical thinking skills, and potential for research and scholarship.

Admission to the program is for the fall term only, and the application deadline is December 15. All applicants to the Doctoral Program in Social Work must provide the following (further details are provided on our PhD Admissions webpage):

- Completion of the PhD Application.
- Official copies of all official undergraduate and graduate transcripts.
- A personal statement
- A social justice statement
- A writing sample
- Three letters of reference from professors and others who have known the applicant in a professional capacity. Do not include personal references.

SSW Policy on Re-Admissions

Students who have not been registered in the school for one calendar year or longer for any reason are required to apply through the Admissions Office for re-admission. Re-admitted students enter the school under the curriculum requirements current at the time of their re-admission.

Academic Standards

MSW Academic Standards

Embodying the standards of professional social work, the School of Social Work has established expectations for student and faculty conduct in its **Academic and Professional Behavior Policy.** This policy, which outlines the professional behavior standards for MSW students and processes for addressing and resolving any violations of these standards, can be found in the MSW Student Handbook.

Students in the School of Social Work are required to adhere to the NASW Code of Ethics. Professional ethics are at the core of social work. The profession has an obligation to articulate its basic values, ethical principles, and ethical standards. The NASW Code of Ethics sets forth these values, principles, and standards to guide social workers' conduct. The Code is relevant to all social workers and social work students, regardless of their professional functions, the settings in which they work, or the populations they serve. The NASW code of ethics can be viewed online at www.naswdc.org/pubs/code/default.asp.

The School of Social Work maintains an Academic Integrity Policy that applies to all students and faculty members. The policy is designed to ensure that both students and faculty uphold the ethical standards expected of them in fulfilling their academic and professional responsibilities.

PhD Academic Standards

The PhD program abides by prevailing principles of academic integrity, research responsibility, and social work ethics. Doctoral students are viewed as professionals and colleagues who share in the collective responsibility for promoting, exemplifying, and continuing the ethical, professional, and academic standards of the profession, school, university, and academy. Students are expected to adhere to Pitt's Academic Integrity Guidelines, the School of Social Work's Academic and Professional Behavior Policy, the Pitt Student Code of Conduct, the principles of ethical and responsible research and standards set by the Office of Research Integrity and the Guidelines for the Responsible Conduct of Research, and the NASW Code of Ethics.

Advising

MSW Advising

Students are assigned an academic advisor when they matriculate into the MSW program. Academic advisors help students understand the overall course of study and the semester-by-semester coursework required to successfully meet academic requirements for graduation. Academic advisors also serve as the primary point of contact for navigating available resources and supports and support students with the problem-solving process when needed.

Practicum advising is provided through the Practicum Office and complements academic advising. While similar in structure and purpose, practicum advising supports students in securing internship placements that will support social work educational competencies.

PhD Advising

The PhD Program Director serves as academic advisor for all first- and second-year students. Doctoral students admitted to candidacy are advised by their faculty dissertation chair.

Special Academic Opportunities

The school offers several special opportunities for student learning and engagement, including New Student Orientation, student events and activities, and community lectures. Additional opportunities include:

Student Participation on School Committees

Students have opportunities to participate in the governance of the School of Social Work by volunteering to serve on school committees as full members of those committees. Information about the purposes and functions of the committees is distributed during the beginning of each fall term.

Student Executive Council (SEC)

All degree students in the School of Social Work comprise the membership of the student organization that elects the Student Executive Council. The council focuses on student life and serves as a liaison with the administration and faculty.

The Student Executive Council relies heavily on student participation, to be of service to the student body. Activities include publication of a student newsletter, developing discussion sessions around critical social issues, providing of opportunities for social action, helping to plan for orientation, and planning a variety of social events.

ISEC members, representing the student body, are also appointed to serve in the following organizations and/or committees: Black Action Society; Student Chapter, NASW; Student Chapter, NABSW; Alumni Association (Liaison); BASW Club; and Graduate and Professional Student Association (GPSA).

VanKirk Career Center

The VanKirk Career Center prepares students for the social work job market by providing contemporary workshops, individual consultation, and technical support. The center's services are constructed to develop greater self-confidence, expand awareness of career opportunities, and foster effective job search practices. All students can easily take full advantage of the professional development and career service opportunities offered by the VanKirk Career Center.

Center for Race and Social Problems

In 2002, then Dean of the School of Social Work Larry E. Davis established the Center on Race and Social Problems (CRSP) at the University of Pittsburgh to help lead America further along the path to social justice by conducting race-related research, mentoring emerging scholars, and disseminating race-related research findings and scholarship. CRSP is multidisciplinary in its approach and multiracial in its focus and was the first race-related research center to be housed in a school of social work.

Buhl Social Work Collection

The Buhl Social Work Collection is located on the first floor of Hillman Library. The Buhl Library is staffed by a part-time Social Work Librarian, whose office is located in Buhl Library.

School of Social Work Faculty

- TBD- Dean
- Yodit Betru, MSW, DSW - Director, MSW Program; Assistant Professor
- Jaime Booth, PhD - Associate Dean for Research; Associate Professor
- Laura Borish, MSW - Clinical Assistant Professor; CWEB/CWEL Agency Coordinator
- Cathy Breneman, Ph.D.- Director of Practicum
- Melvin Cherry, MSW, EdD - Practicum Assistant Professor
- Stevara Haley Clark, PhD - Director of Online Programs and Distance Education and Clinical Associate Professor
- Kyaien O. Conner, PhD - Donald M. Endowed Chair, Director of the Center on Race and Social Problems, Associate Dean for Justice, Equity, Diversity, and Inclusion, Professor
- Quinton D. Cotton, PhD - Assistant Professor
- John Dalessandro, MSW - Practicum Assistant Professor
- Amy DeGurian, MSW - Practicum Assistant Professor
- Aliya Durham, MSW, MPIA . PhD- Assistant Professor; Director of Community Engagement, Center on Race and Social Problem
- Shaun M. Eack, PhD - James and Noel Browne Endowed Chair; Professor of Social Work and Psychiatry
- Stephanie Eckstrom, MSW - MSW Regional Program Director, Pitt-Bradford MSW Program
- Rafael Engel, PhD - Associate Professor
- Victor Figuereo, PhD - Assistant Professor
- Rachel Gartner, PhD - Assistant Professor
- Sara Goodkind, PhD - Professor; PhD Program Director
- Catherine Greeno, PhD -Associate Professor
- Amy Herschell, PhD - Professor: Principal Investigator, Child Welfare Education Research Programs
- James Huguley, EdD - Associate Professor
- Ron Idoko, EdD - Associate Director, Center on Race and Social Problems; Founding Director of the Racial Equity Consciousness Institute, and Research Assistant Professor
- Leah Jacobs, PhD - Associate Professor
- Alicia Johnson, MSW, PhD - Clinical Assistant Professor; CWEL Academic Coordinator
- Nev Jones, PhD - Associate Professor
- Toya Jones, PMSW EdD - Assistant Professor; Dierctor BASW Program
- Travis Labrum, PhD - Associate Professor
- Hung-Peng Lin, PhD - Research Assistant Professor, Child Welfare Education and Research Programs
- Deborah Moon, PhD - Associate Professor
- Elizabeth Mulvaney, MSW - Clinical Assistant Professor; Direct Practice Chair
- Mary L. Ohmer, PhD - Professor; COSA Chair
- Marlo Perry, PhD - Research Associate Professor, Child Welfare Education and Research Programs
- Sarah Fateman Porter, PhD - Assistant Professor
- Shannon Powers, PhD - Assistant Professor
- Suzanne Pritzker, PhD - Professor; Associate Dean of Academic Affairs
- Brooke Rawls, MSW - Assistant Professor; Academic Coordinator, CWEB Program
- Deborah Robinson, MSW - Practicum Assistant Professor
- Jeffrey Shook, PhD - Professor
- Fengyan Tang, PhD - Professor

- John Wallace, PhD - David E. Epperson Chair; Professor; Vice Provost for Faculty Diversity and Development, David E. Epperson Chair and Professor, Joint Appointments: Kats School of Business, Department of Sociology, Dietrich School of Aars and Sciences
- Misha Zorich, MSW - Assistant Professor; MSW Regional Program Director, Pitt-Johnstown; Director of Student Engagement

Program and course Offerings

Master of Social Work Program

MSW Mission and Goals

The MSW Program's mission is grounded in the purpose and values of the social work profession as well as an understanding of the program's context. In furtherance of the University's and School's missions, the MSW Program strives to prepare graduates with the specialized knowledge and skills needed to engage in evidence-informed and culturally responsive advanced social work practice - either Direct Practice with Individuals, Families, and Small Groups)DP) or Community, Organization, and Social Action (COSA) - that promotes human and community well-being and is guided by a person-in-environment framework, a global perspective, respect for human diversity, and knowledge based on scientific inquiry. The MSW Program's mission reflects the social work profession's values of service, social justice, the dignity and worth of the person, the importance of human relationships, integrity, competence, human rights, and scientific inquiry.

The goals of the MSW Program are to prepare students to:

- Engage in evidence-informed advanced specialized social work practice within a multicultural society.
- Practice according to the principles, values, and ethics that guide the social work profession.
- Influence social policies with the goal of alleviating poverty, oppression, and social injustice as well as advocating for human rights
- Practice in a manner that enhances the quality of life for all persons, locally and globally, and that advances the struggle for social, economic, and environmental justice.
- Practice with cultural humility.

MSW Degree Requirements

The MSW Program requires a minimum of 60 credits for graduation, including coursework and practicum requirements.

Students can earn their MSW through two formats: **face-to-face and online**. Students may pursue their MSW through our standard program or with advanced standing (after successful completion of a Bachelors of Social Work degree).

The **Face-to-Face MSW program option** allows students to pursue full-time or part-time study (completion within four years) . Face-to-face students may specialize in Direct Practice or in Community, Organization, and Social Action (COSA), and may be able to earn a certificate in one of the following areas:

- Direct Practice: Children, Youth and Families; Gerontology; Home and School Visitor/School Social Work; Integrated Healthcare; Mental Health.; or MA Gender, Sexuality and Women's Study
- COSA: Human Services Management; Community Organizing Practice; Gerontology; or MA Gender, Sexuality and Women's Study.

Face-to-face students may elect to pursue joint or cooperative degrees. Students must apply and be admitted separately to each academic unit. Approved joint degree options include:

- Master of Social Work / Master of Divinity (MSW/MDiv)
- Master of Social Work / Master of Public Administration (MSW/MPA)
- Master of Social Work / Master of Public and International Affairs (MSW/MPIA)
- Master of Social Work / Master of International Development (MSW/MID)
- Master of Social Work / Doctor of Philosophy in Social Work (MSW/PhD)
- Master of Social Work / Master of Public Health (MSW/MPH)
- Master of Social Work / Master of Business Administration (MSW/MBA)

The **online MSW program option** is designed for part-time study in an asynchronous format. Online MSW students specialize in Direct Practice and may be able to earn a certificate in one of the following areas: Children, Youth and Families; Gerontology; Integrated Healthcare; or Mental Health.

Statute of Limitations and Leaves of Absence

There is a four-year limitation on the earning of the MSW degree. The four-year period is counted from the date of entry into the program for four full academic calendar years. Under extenuating circumstances, including the following, a student may complete a Leave of Absence Request form:

- extended illness of the student,
- extended personal emergency,
- involuntary mobilization into a U.S. military unit, and
- death of a close family member.

In these circumstances, one leave of absence may be approved, with a maximum leave of one full academic year. If approved, the time of the leave will not count against the total time allowed for the degree being sought by the student.

MSW Curriculum

The MSW curriculum emphasizes evidence-informed practice, cultural responsiveness, interdisciplinary collaboration, and public engagement. Graduates are equipped to lead and serve in a range of public and private settings, addressing complex social issues that promote social justice.

The MSW Program prepares students for advanced practice in two specialized practice areas: **Direct Practice with Individuals, Families, and Small Groups or in Community, Organization, and Social Action (COSA).**

Faculty in the School are nationally recognized scholars whose work informs policy and practice. Their research spans areas such as racial justice, child and family well-being, health equity, and economic justice. Their work is done in partnership with communities, agencies, and organizations across Pittsburgh and beyond.

Students, alumni, and faculty actively engage in collaborations with social agencies, grassroots organizations, government partners, and foundations, supporting the School's mission to create a more just and equitable society while training professionals who can lead in a rapidly changing world.

Certificate

COSA Community Organizing and Practice Certificate

The **COSA Community Organizing and Practice Certificate** acknowledges community as a social environment that is broadly defined and rich in diversity. MSWs often find themselves working in community organizing and practice settings addressing a variety of planning, development, and social change issues. To prepare students to become leaders in this field, the School of Social Work offers a national Community Organizing and Practice Certificate, through a partnership with the Association for Community Organization and Social Action (ACOSA). Building on the School of Social Work's historic strength as the first and longest-standing program in Community Organizing (CO), this national certificate helps to define and affirm community organizing and practice competencies that have become increasingly important to the careers and advancement of MSW professionals.

Students complete COSA specialization requirements as well as those of the certificate. COSA students pursuing this certificate complete 12 course credits and 12 practicum credits in the areas of community organizing; community planning; community development; and community social change. Students must complete a COSA specialization practicum placement in a community organizing and practice setting.

Certificate Requirements

COSA Skills Courses

- SWCOSA 2084 - HUMAN SERVICE ORGANIZATION MANAGEMENT
- SWCOSA 2088 - COMMUNITY ORGANIZING AND PLANNING

COSA Skill Electives

- SWCOSA 2090 - WORKING WITH GROUP AND INTERGROUP RELATIONS: FACILITATION/NEGOTIATION/MEDIATION
- SWCOSA 2096 - COMMUNITY PLANNING AND DEVELOPMENT

Practicum

The COSA specialization practicum placement (SWCOSA 2099; 12 credits - 720 clock hours) must be in a community organizing and practice setting.

COSA Gerontology Certificate

The **COSA Gerontology Certificate** prepares students with the knowledge and skills necessary to work and innovate in an aging society. An aging focus area has been a part of the school's curriculum since 1980. All Gerontology Certificate students are exposed to various roles and settings that constitute contemporary social work practice in aging. Emphasis is placed on understanding strengths and diversity among the aging population and the social, cultural, community, and policy contexts of aging including the opportunity that an aging society presents. COSA Gerontology Certificate students develop skills to work with task groups, programs, organizations, and communities to serve older adults and their families. The certificate offers a focus on leadership and advocacy.

Students complete COSA specialization requirements as well as those of the certificate. COSA students pursuing this certificate complete 12 course credits and 12 practicum credits focused on serving older adults and their families.

Certificate Requirements

2nd Level Gerontology Courses

- SWBEH 2060 - HUMAN BEHAVIOR: HEALTH & AGING
- SWWEL 2050 - POLICY ANALYSIS AND PRACTICE: HEALTH AND AGING SYSTEMS

COSA Skills Electives

Students must select two electives from this list and complete a project or assignment with gerontology with a focus in each of their selective electives. Students must submit a form with information about the assignment and topic to the Certificate Chair:

- SWCOSA 2040 - GRANT PROPOSAL WRITING
- SWCOSA 2090 - WORKING WITH GROUP AND INTERGROUP RELATIONS: FACILITATION/NEGOTIATION/MEDIATION
- SWCOSA 2096 - COMMUNITY PLANNING AND DEVELOPMENT
- SWCOSA 2086 - MANAGING FINANCIAL AND HUMAN RESOURCES

Practicum

The COSA specialization practicum placement (SWCOSA 2099; 12 credits - 720 clock hours) must be in a program, unit, or agency that has a primary focus on aging. COSA students work with programs, organizations, or community groups that serve older adults. These options include, but are not limited to, long-term facilities, hospitals, hospices, area agencies on aging, community-based family service agencies, senior centers, residential settings, mental health settings, advocacy organizations, and community-based specialized day health centers that have activities relevant to the student's specialization and interests.

COSA Human Services Management Certificate

The **COSA Human Services Management Certificate** prepares students to pursue leadership opportunities in supervisory, management, and executive positions in a range of social work settings. Pitt School of Social Work is one of a number of leading macro social work programs to offer a management certificate in collaboration with the Network for Social Work Management (NSWM), a national organization supporting education and practice for human services management competency. Students pursuing this certificate must complete 12 credits covering NSWM competencies (https://socialworkmanager.org/competencies) in the areas of:

- Social Administration/Human Services Management
- Community Organizing and Community Collaboration
- Human Resources & Financial Management with Supervision
- Grants, Proposals, and Funding Development

Students complete COSA specialization requirements as well as those of the certificate. COSA students pursuing this certificate complete 12 course credits and 12 practicum credits in the areas of executive leadership; resource management; strategic management and community collaboration. Students must complete a COSA specialization practicum placement in a community-based or human services organization to apply course knowledge, values, and skills in the organizational setting.

Certificate Requirements

COSA Skills Courses

- SWCOSA 2084 - HUMAN SERVICE ORGANIZATION MANAGEMENT
- SWCOSA 2088 - COMMUNITY ORGANIZING AND PLANNING

COSA Skills Electives

- SWCOSA 2086 - MANAGING FINANCIAL AND HUMAN RESOURCES
- SWCOSA 2040 - GRANT PROPOSAL WRITING

Practicum

The COSA specialization practicum placement (SWCOSA 2099; 12 credits - 720 clock hours) must be in a community-based or human services organization. This may be a private nonprofit organization or a public/government organization.

DP-Children, Youth, & Families Certificate

The **DP Children, Youth, and Families Certificate** prepares students to provide services and interventions to children, youth, young adults, and families through a wide range of public and private settings.

Students complete Direct Practice specialization requirements as well as those of the certificate. DP students in this certificate complete 12 course credits and 12 practicum credits focused on children, youth and families

Required Courses

- SWWEL 2059 - CHILD AND FAMILY POLICY
- SWBEH 2062 - HUMN BHVR: CHLD FMLY AT RISK

Direct Practice Skill Electives

Students must complete two courses from the following list:

- SWINT 2011 - SOCIAL WORK PRACT WITH FAMILIES
- SWINT 2035 - INTIMATE PARTNER VIOLENCE
- SWINT 2042 - SOCIAL WORK WITH SUBSTANCE USE AND OTHER ADDICTIVE DISORDERS
- SWINT 2049 - DIRECT PRACTICE WITH CHILDREN
- SWINT 2063 - ISSUES IN CHILD MALTREATMENT
- SWINT 2072 - SOCIAL WORK PRACTICE AND TRAUMATIC STRESS

Practicum

The DP specialization practicum placement (SWINT 2099; 12 credits - 720 clock hours) must be in a community-based setting (program, unit, or agency) with a primary focus on providing direct services and interventions to children, youth, young adults, and families. This may be within a public agency or a private provider agency.

DP-Gerontology Certificate

The **DP Gerontology Certificate** prepares students with the knowledge and skills necessary to work and innovate in an aging society. An aging focus area has been a part of the school's curriculum since 1980. The goals of the DP-Gerontology Certificate are to enhance students' understanding of the aging process and to provide them with the specialized skills relevant to practice with and/or on behalf of older adults and their family members. Knowing how to work with older adults and their family members as a social work professional offers many opportunities in an era when that segment of the population continues to increase rapidly.

Students complete Direct Practice specialization requirements as well as those of the certificate. DP students in this certificate complete 12 course credits and 12 practicum credits focused on aging. Students must complete a DP specialization practicum placement in a program, unit, agency, or community with a primary focus on aging.

Certificate Requirements

DP Second-Level HBSE

- SWBEH 2060 - HUMAN BEHAVIOR: HEALTH & AGING

DP Second-Level Policy

- SWWEL 2050 - POLICY ANALYSIS AND PRACTICE: HEALTH AND AGING SYSTEMS

Required DP Skill Elective

Students also must complete the following course:

- SWINT 2030 - DIRECT PRACTICE WITH OLDER ADULTS

DP Skills Electives

Students also must complete one of the following four courses:

- SWINT 2007 - INTRO PSYPHMCLGY SOCL WRK PRACT
- SWINT 2004 - GRIEF AND LOSS: INTERVENTIONS, IMPLICATIONS & UNDERSTANDING

- SWINT 2042 - SOCIAL WORK WITH SUBSTANCE USE AND OTHER ADDICTIVE DISORDERS
- SWINT 2073 - INTEGRATED HEALTHCARE AND PHARMACOLOGY

Practicum

The DP specialization practicum placement (SWINT 2099; 12 credits - 720 clock hours) must be in a program, unit, or agency that has a primary focus on aging. Placement options include, but are not limited to, long-term facilities, hospitals, hospices, area agencies on aging, community-based family service agencies, senior centers, residential settings, mental health settings, advocacy organizations, and community-based specialized day health centers that have activities relevant to the student's specialization.

DP-Home and School Visitor/ School Social Worker Certificate

The **Home and School Visitor/ School Social Work Certificate** enhances professional competency in the development and delivery of high-quality social work services to diverse student populations in both public and private elementary and secondary schools. The HSV/SSW is an interprofessional Educational Specialist certificate, operated jointly with University of Pittsburgh School of Education and by the Pennsylvania Department of Education, intended for students who plan to deliver social work services in elementary or secondary schools.

In the Commonwealth of Pennsylvania, the HSV/SSW state certificates are recognized and required by school districts. In the 1930s, the School of Social Work was the first university to offer a Home and School Visitor certificate, a program started by Pitt faculty member and social work practitioner Marion Hathway.

Students complete Direct Practice specialization requirements as well as those of the certificate. DP students in this certificate complete 15 course credits, including four courses from the School of Education, and 12 practicum credits focused on school social work.

DP Second-Level HBSE

- SWWEL 2059 - CHILD AND FAMILY POLICY

DP Second-Level Policy:

- SWWEL 2059 - CHILD AND FAMILY POLICY

Direct Practice Skill Elective

Students must complete the following course:

- SWINT 2058 - SOCIAL WORK EDUCATIONAL SETTINGS

Required School of Education Courses

- TLL 2101 - PENNSYLVANIA SCHOOL LAW
- TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- TLL 2500 - FOUNDATIONS OF SPECIAL EDUC
- TLL 2501 - STUDENT W/DISAB IN ELEM CLSSRM

- TLL 2502 - STUDNT W/DISAB IN SECNDRY CLSSRM

Practicum

The DP specialization practicum placement (SWINT 2099; 12 credits - 720 clock hours) must be in an educational setting.

DP-Integrated Health Care Certificate

The **DP Integrated Health Care Certificate** prepares students with the knowledge and skills necessary to work with individuals, families, groups, and communities in a variety of institutional and community-based health-related settings. With a focus on preparing students to deliver evidence-informed services to diverse client populations, the goal of the DP-Integrated Healthcare Certificate is to increase the number of advanced social work professionals capable of providing direct client care as well as leadership and advocacy to eliminate health inequities and to improve the health of all people. MSW students completing the DP-Integrated Healthcare Certificate program acquire a deeper understanding of the relationship between behavioral health (i.e., mental health, substance use) and physical health and the impact of larger social systems on that relationship; they also develop the skills to act on that knowledge to create positive health outcomes.

Students complete Direct Practice specialization requirements as well as those of the certificate. DP students in this certificate complete 12 course credits and 12 practicum credits focused on integrated healthcare.

Certificate Requirements

DP Second-Level HBSE

- SWBEH 2060 - HUMAN BEHAVIOR: HEALTH & AGING

DP Second-Level Policy

- SWWEL 2050 - POLICY ANALYSIS AND PRACTICE: HEALTH AND AGING SYSTEMS

DP Skill Electives

Students must complete the following course:

- SWINT 2040 - SOCIAL WORK DIRECT PRACTICE: HEALTH AND AGING

DP Skill Electives

Students must also complete one of the following two courses:

- SWINT 2007 - INTRO PSYPHMCLGY SOCL WRK PRACT
- SWINT 2073 - INTEGRATED HEALTHCARE AND PHARMACOLOGY

DP Skill Electives

Students completing the IHC certificate are encouraged to consider the following electives as they are often beneficial for practice in integrated health settings. These are not required:

- SWINT 2004 - GRIEF AND LOSS: INTERVENTIONS, IMPLICATIONS & UNDERSTANDING
- SWINT 2042 - SOCIAL WORK WITH SUBSTANCE USE AND OTHER ADDICTIVE DISORDERS

Practicum

The DP specialization practicum placement (SWINT 2099; 12 credits - 720 clock hours) must be completed in a program, unit, or agency with a primary focus on direct practice related to healthcare.

DP-Mental Health Certificate

The **DP Mental Health Certificate** prepares students for professional practice with individuals, families, and/or small groups who experience mental health/behavioral health challenges. Social work practice in mental health services, or what used to be referred to as "psychiatric social work," is a long-standing area of practice in the profession. Social workers today are the primary providers of services to clients with mental health needs, particularly in resource poor areas.

Students complete Direct Practice specialization requirements as well as those of the certificate. DP students in this certificate complete 12 course credits and 12 practicum credits focused on mental health.

Certificate Requirements

DP Second-Level HBSE

- SWBEH 2065 - HUMAN BEHAVIOR: MENTAL HEALTH

DP Second-Level Policy

- SWWEL 2057 - MENTAL HEALTH AND PUBLIC POLICY

DP Skill Electives

- SWINT 2007 - INTRO PSYPHMCLGY SOCL WRK PRACT
- SWINT 2018 - CLINICAL SKILLS IN SOCIAL WORK PRACTICE FOR MENTAL HEALTH RECOVERY
- SWINT 2042 - SOCIAL WORK WITH SUBSTANCE USE AND OTHER ADDICTIVE DISORDERS
- SWINT 2049 - DIRECT PRACTICE WITH CHILDREN
- SWINT 2072 - SOCIAL WORK PRACTICE AND TRAUMATIC STRESS
- SWINT 2031 - ADV DRCT PRAC: COGNITV/BEHVRL
- SWINT 2033 - ADV DRCT PRAC: PSYCHODYNAMIC

Practicum

The DP specialization practicum placement (SWINT 2099; 12 credits - 720 clock hours) must be in a mental/behavioral health setting working with individuals, families and/or small groups who face challenges associated with mental health or other behavioral health-related issues. This may be a public agency or a private provider agency, excluding private practice type settings.

Master's

Social Work - Community, Organization, and Social Action, MSW

The MSW Program at the School of Social Work is accredited to offer two advanced specializations: Direct Practice with Individuals, Families, and Small Groups (DP) and Community, Organization, and Social Action (COSA). After completing Generalist curriculum requirements (or receiving the equivalent social work Advanced Standing credit), MSW students are required to complete class and practicum requirements for one of these two areas of specialized practice.

The Community, Organization, and Social Action (COSA) specialization develops advanced knowledge and skills required for leadership careers in community human services, community development, and community change/social policy practice as professional social workers. COSA students acquire the ability to engage, assess, intervene, and evaluate practice with groups, organizations, and communities, incorporating evidence-informed approaches; a deep and abiding respect for diversity and difference; an emphasis on the strengths, assets, and empowerment of client systems; and a commitment to the social work profession's values. Students develop specialized skills in community organizing and mobilization as well as organizational management and administration, bringing an understanding of how social work practice can contribute to securing human rights and social,

economic, and environmental justice for all people. They also hone their critical thinking and self-reflective skills through their practicum and coursework.

The University of Pittsburgh School of Social Work has the first and longest-standing program in Community Organizing (CO) in any social work or professional school in the country. In fall 1958, the School launched its first two-year curriculum in Community Organizing (read more about the history of our community organizing program). Pitt was also one of the first schools of social work to offer a focus in social administration, now more commonly called human services or social work management.

Graduates pursue established and emerging professional opportunities in public, private, profit, nonprofit and community-based organizations in such fields as health, children and youth, family services, disability services, community revitalization and development, philanthropy, policy and advocacy, community and social planning, community/neighborhood centers, human resources and community affairs, and more. In COSA, we see our work as:

- Community Organizing, Planning, Development, and Change
- Organizational Leadership and Human Services Management
- Social Policy & Advocacy Practice in the Social Policy Arena
- Action as Activist social workers leading change in communities, organizations, & policy arenas

The COSA specialization is offered to MSW students in our Face-to-Face program option.

Certificates

COSA students may choose to pursue a certificate to acquire greater depth of knowledge and skills in a particular practice focus area:

- Community Organizing and Practice
- Gerontology
- Human Services Management

Each COSA certificate incorporates courses and field placement experiences that enable students to tailor their education and professional preparation. To earn a COSA certificate, students must fulfill all specialized COSA requirements, as well as those of their certificate.

COSA students are not required to pursue a certificate. In fact, some students may have practice goals that do not neatly fit into any of the certificates and may benefit from planning a unique course of study within the requirements of the COSA specialization with their academic advisor.

Curriculum

The COSA specialization requires two COSA Skills Courses, a COSA human behavior course, a COSA policy analysis course, and an advanced applied research course. Students also complete two COSA skills electives and two open electives. They develop practice skills through twelve (12) credit hours of specialized COSA practicum.

Required Core Generalist Courses

- SWRES 2021 - GENERALIST SOCIAL WORK RESEARCH
- SWGEN 2034 - SOCIAL WORK PRACTICE WITH DIVERSE POPULATIONS
- SWBEH 2063 - HUMAN BEHAVIOR & SOCIAL ENVRNMNT
- SWWEL 2081 - SOCIAL WELFARE
- SWGEN 2098 - GENERALIST SOCIAL WORK PRACTICE
- SWGEN 2099 - GENERALIST FIELDWORK

Required Specialization Courses

COSA Skills

- SWCOSA 2084 - HUMAN SERVICE ORGANIZATION MANAGEMENT
- SWCOSA 2088 - COMMUNITY ORGANIZING AND PLANNING

Second-Level HBSE:

- SWBEH 2008 - HUMN BHVR: URBAN ENVIRONMENT

Second-Level Policy:

- SWWEL 2087 - ORGANIZATIONS AND PUBLIC POLICY

Second-Level Research:

- SWRES 2040 - ADVANCED APPLIED RESEARCH

Practicum Placement:

- SWCOSA 2099 - FIELD WORK

Electives:

MSW Courses

Social Work - Direct Practice with Individuals, Families, and Groups, MSW

The MSW Program at the School of Social Work is accredited to offer two advanced specializations: Direct Practice with Individuals, Families, and Small Groups (DP) and Community, Organization, and Social Action (COSA). After completing Generalist curriculum requirements (or receiving the equivalent social work Advanced Standing credit), MSW students are required to complete class and practicum requirements for one of these two areas of specialized practice.

The **Direct Practice (DP)** specialization develops students' advanced practice skills to prepare them for autonomous practice, grounded in the values and ethics of the social work profession using a strengths-based, person-in-the-environment perspective. Through course work and practicum education, students are equipped with the knowledge and skills needed to engage in direct practice with individuals, families, and small groups with diverse backgrounds and identities. The specialization focuses on evidence-based modalities and provides students with community-based learning opportunities. Consistent with an emphasis on strengths perspective, students become skilled at assisting clients/patients/consumers to address their needs and realize their potential.

The Direct Practice specialization is offered to MSW students in both our Face-to-Face and Online program options.

Certificates

Direct Practice students may choose to pursue a certificate to acquire greater depth of knowledge and skills in a particular practice focus area:

- Children, Youth and Families
- Gerontology
- Home and School Visitor/School Social Work
- Integrated Health Certificate
- Mental Health

Each Direct Practice certificate incorporates courses and field placement experiences that enable students to tailor their education and professional preparation. To earn a DP certificate, students must fulfill all specialized direct practice requirements, as well as those of their certificate.

Direct Practice students are not required to pursue a certificate. In fact, some students may have practice goals that do not neatly fit into any of the certificates and may benefit from planning a unique course of study within the requirements of the DP specialization with their academic advisor.

Curriculum

The Direct Practice specialization requires two Direct Practice Skills Courses, a DP human behavior course, a DP policy analysis course, and an advanced applied research course. Students also complete two DP skills electives and two open electives. They develop practice skills through twelve (12) credit hours of specialized direct practice practicum.

Required Core Generalist Courses

- SWRES 2021 - GENERALIST SOCIAL WORK RESEARCH
- SWGEN 2034 - SOCIAL WORK PRACTICE WITH DIVERSE POPULATIONS
- SWBEH 2063 - HUMAN BEHAVIOR & SOCIAL ENVRNMNT
- SWWEL 2081 - SOCIAL WELFARE
- SWGEN 2098 - GENERALIST SOCIAL WORK PRACTICE
- SWGEN 2099 - GENERALIST FIELDWORK

Required Specialization Courses

Direct Practice Skills

- SWINT 2021 - DIRECT PRACTICE WITH FAMILIES AND GROUPS
- SWINT 2020 - DIRECT PRACTICE WITH INDIVIDUALS

Second-Level HBSE

- SWBEH 2062 - HUMN BHVR: CHLD FMLY AT RISK
- SWBEH 2065 - HUMAN BEHAVIOR: MENTAL HEALTH

Second-Level Policy:

- SWWEL 2057 - MENTAL HEALTH AND PUBLIC POLICY
- SWWEL 2059 - CHILD AND FAMILY POLICY

Second-Level Research

- SWRES 2040 - ADVANCED APPLIED RESEARCH

Practicum Placement

- SWINT 2099 - FIELD WORK

Electives:

MSW Courses

PhD in Social Work Program

We are committed to training the next generation of scholars in social work, whose research will inform policy and practice addressing society's most pressing problems.

Doctoral education in Social Work prepares students for leadership roles in social work research, social work education, social policy, planning, and administration. We provide students with advanced academic training that will allow them to contribute to the knowledge base of our profession.

Our faculty includes nationally recognized leaders in every area of social work practice and research, and we take a hands-on, supportive approach to doctoral education.

The doctoral program is open to applicants who have demonstrated intellectual capacity, critical thinking skills, and potential for research and scholarship.

Why Pitt?

- Nationally recognized leaders in every area of social work practice and research

- Supportive, hands-on approach to doctoral education
- Opportunities to collaborate through three world-class centers that address race and social problems, behavioral health practice in community settings, and child welfare

The University of Pittsburgh's social work doctoral program is among the oldest and most-respected in the United States. Our full time program is highly competitive, and we accept 6-8 students each year. Our wonderful Social Work Library is part of Pitt's world-class University Library System.

The doctoral program is open to applicants who have demonstrated intellectual capacity, critical thinking skills, and potential for research and scholarship.

Please visit our PhD Admissions webpage for admissions-related information.

In addition to the description of the PhD in Social Work given below, doctoral students should consult the Regulations Pertaining to Doctoral Degrees in the General Academic Regulations section of this document.

Admission to Doctoral Program

Persons seeking admission to the PhD Program must demonstrate the potential for doctoral studies. All applicants to the Doctoral Program in Social Work must provide the following:

- Completion of the PhD Application.
- Official copies of all official undergraduate and graduate transcripts.
- Personal Statement:
- Why do you want to pursue a social work PhD?
- Describe your experiences with research and how they prepared you for pursuing a PhD.
- What research questions or social issues do you want to study?
- How might you approach studying them?
- Describe why Pitt SSW would be a good place for you to pursue your research interests. Note potential faculty mentors at Pitt and other campus resources you might engage.
- What career would you like to pursue?
- How will a social work PhD contribute to your career goals?
- Social Justice Statement:
- What aspects of your personal and/or professional history have informed how you have come to understand social justice?
- How does your history and understanding of social justice connect to your career goals?
- Anti-racism and anti-oppression are core values in the Pitt SSW. How do you see your time in the Pitt SSW PhD program, current and/or future work (eg. research, teaching, mentoring, community organizing, advocacy, activism, etc.) as aligning with anti-racist and anti-oppressive praxis?
- Writing sample: Please provide a writing sample that is solely authored by you. You may choose anything that will show us that you can write clearly and coherently about topics relevant to social work, ideally research topics relevant to social work. Your writing sample should be approximately ten to fifteen pages.
- Three letters of reference from professors and persons who have known the applicant in a professional capacity. Do not include personal references.
- We require a course-by-course evaluation completed for any internaitonal college courses taken. An evaluation is also needed for any transcripts not provided in English. We accept evaluations form any members of the National Association of Credential Evaluation Services (NACES) organization. Find a list of NACES members.
- $50 application fee.

Apply to the School of Social Work PhD Program

Application components should be sent to:

University of Pittsburgh
School of Social Work
Office of Admissions
2101 Cathedral of Learning
4200 Fifth Avenue

Pittsburgh, PA 15260
412-624-6302

Email: SSWPhDAdmissions@pitt.edu

The doctoral program is strongly committed to a policy of equal educational opportunity for people of all races, creeds and ethnic origins.

http://www.socialwork.pitt.edu/admissions-aid

Contact Information

Ms. Jessalynn Gismondi
Office of Admissions
School of Social Work
Room 2101 Cathedral of Learning
412-624-6302
E-mail: j.gismo@pitt.edu
www.socialwork.pitt.edu

Admission to the program is for the fall term only and the deadline for the application is December 15. To apply to the program, please access our online application. Log into your online application frequently to monitor your progress.

Certificate in Gender, Sexuality, and Women's Studies

In addition, the University Of Pittsburgh School Of Social Work is one of a few schools to offer doctoral students the option to simultaneously obtain a certificate in Certificate in Gender, Sexuality, and Women's Studies and a PhD in social work.

This certificate is based on a strong interdisciplinary program focusing on new scholarship concerning women and gender. The University of Pittsburgh Gender, Sexuality, and Women's Studies Program provides opportunities for students to explore the historical development, cultural variations, and changing representations of gender and sexuality as they organize identities, interactions, and institutions and intersect in complex ways with sex, race, class, ethnicity, ability, age, religion, and nation.

Program Transfer Credits

Students who have earned doctoral-level credits at the University of Pittsburgh or at another accredited institution within seven years preceding entry to the doctoral program may be eligible for advanced standing. Advanced standing consists of awarding academic credit toward the degree for post-master's work completed when such work is evaluated as entirely comparable. Official transcripts certifying graduate course work completed in a degree-granting graduate program should be submitted at the time of application. The maximum number of credits that can be transferred and accepted for advanced standing is 12.

See Allowable Credits in the General Academic Regulations section of this bulletin for more details on requirements for transfer credits.

Doctoral Curriculum Objectives

The program curriculum strongly emphasizes social problem areas, as well as coordinating themes in theory, research methodology, and social policy courses. The overall goal is to integrate the acquisition of basic advanced knowledge, methods of empirical testing, and

application to real-world situations. Course materials draw heavily on several priority areas of social work concern, including aging, mental health, income maintenance, child welfare, women's issues, child and family policy, and health services, and social justice. diversity issues.

By the time students have completed the program, they should have acquired the following:

- Knowledge of relevant social science theory
- Advanced skills in research methodology and statistics
- Advanced knowledge of social welfare policy (historical and contemporary) and policy analysis
- Knowledge of relevant fields of practice, theoretical and policy perspectives, and research findings
- Exposure to an interdisciplinary frame of reference through mechanisms provided internally by the doctoral program and externally through access to other disciplines and professions in the wider University

Although entering students are not required to have completed course work or other experience relevant to computer literacy, possessing basic computer skills will be an asset to students beginning the program.

PhD

Social Work, PhD

Social Work, PhD

Return to: School of Social Work

PhD in Social Work Program

We are committed to training the next generation of scholars in social work, whose research will inform policy and practice addressing society's most pressing problems.

A doctoral education in Social Work prepares students for leadership roles in social work research, social work education, social policy, planning, and administration. We provide students with advanced academic training that will allow them to contribute to the knowledge base of our profession.

Our faculty includes nationally recognized leaders in every area of social work practice and research, and we take a hands-on, supportive approach to doctoral education.

The doctoral program is open to applicants who have demonstrated intellectual capacity, critical thinking skills, and potential for research and scholarship.

Why Pitt?

- Nationally recognized leaders in every area of social work practice and research
- Supportive, hands-on approach to doctoral education
- Opportunities to collaborate through world-class centers that address race and social problems, behavioral health practice in community settings, and child welfare

The University of Pittsburgh's social work doctoral program is among the oldest and most respected in the United States. Our program is highly competitive. Our wonderful Social Work Library is part of Pitt's world-class University Library System.

PhD Curriculum Objectives

The program curriculum strongly emphasizes social problem areas, as well as coordinating themes in theory, research methodology, and social policy courses. The overall goal is to integrate the acquisition of advanced knowledge, research methods, and application to real-world situations. Course materials focus on several priority areas of social work concern, including aging, mental health, income inequality, child welfare, child and family policy, health services, and social justice.

By the time students have completed the program, they should have acquired the following:

- Knowledge of relevant social science theory
- Advanced skills in research methodology and statistics
- Advanced knowledge of social welfare policy (historical and contemporary) and policy analysis
- Knowledge of relevant fields of practice, theoretical and policy perspectives, and research findings
- Exposure to an interdisciplinary frame of reference through mechanisms provided internally by the doctoral program and externally through access to other disciplines and professions in the wider University

PhD Degree Requirements

The PhD program consists of the completion of 50 credit hours of coursework, a comprehensive exam, a doctoral dissertation, and the successful defense of the dissertation with all revisions completed.

Coursework

During the first two academic years in the program, full-time students complete required courses in the three essential areas of study: social welfare/policy, social science theory, and research methods. Students take courses in the fall and spring terms; summer courses are necessary if a student is enrolled in one of our joint degree programs .

Comprehensive Examination

Students take a comprehensive examination after satisfactory completion of all required and elective coursework in the doctoral program. The Comprehensive examination is taken in the summer of the second year. For students in the MSW/PhD program, the comprehensive examination is taken in the summer of the 3rd year. Students may delay the examination for one year, contingent on approval by the PhD Program Director based on a request in writing submitted by the student that outlines the rationale for the requested delay.

Doctoral Dissertation

Students must successfully complete the comprehensive examination to proceed to the dissertation. The doctoral dissertation involves:

- Dissertation Research: begins after passing the comprehensive examination
- Defense of a Dissertation Overview: occurs after a committee review of the dissertation overview and includes an introduction to the problem, a literature review, and a detailed methodology (admission to PhD candidacy)
- Final Dissertation Defense: occurs at least one year following admission to candidacy

A minimum of two years of full-time study is required for doctoral program completion.

Statute of Limitations

There is an eight-year statute of limitations for the completion of the PhD degree for students who enter with an MSW and who are not pursuing an MPH. There is a 10-year statute of limitations for students in the MSW/PhD program or the MPH/PhD program. Coursework and the comprehensive examination should be completed within five years and the dissertation within three additional years.

Under exceptional circumstances, candidates may apply for an extension of the statute of limitations. The student must submit a formal written request to the doctoral program director, and the request must be reviewed and approved by the doctoral program committee and

then submitted to the dean for final action. Requests for extensions must be accompanied by a departmental assessment of the work required of the student to complete the degree, as well as documented evidence of the extenuating circumstances leading to the request. Students who request an extension of the statute of limitations must demonstrate a feasible plan and timeline for the completion of all current degree requirements.

PhD Curriculum

Required Research Methods Courses

- SWRES 3020 - RESEARCH METHODS
- SWRES 3029 - INFERENTIAL STATISTICS FOR SOCIAL WORKERS
- SWRES 3021 - MULTIVARIATE STATISTICS
- SWRES 3022 - RESEARCH METHODS: CAPSTONE SEMINAR 1
- SWRES 3023 - RESEARCH METHODS: CAPSTONE SEMINAR 2
- SWRES 3097 - QUALITATIVE RESEARCH
- DOCTORAL SEMINAR - 0 credits

Required Theory Courses

- SWGEN 3044 - THEORY 1
- SWGEN 3053 - THEORY 2

Required Policy Courses

- SWWEL 3030 - EVALUATION OF AMERICAN SOCIAL WELFARE HISTORY
- SWWEL 3037 - SOCIAL POLICY ANALYSIS

Required Education Course

- SWGEN 3066 - SEMINAR IN SOCIAL WORK EDUCATION

Elective Courses

In addition to the above core course requirements, the student selects a minimum of 18 elective course credits to pursue more specialized interests. These electives must be graduate-level courses and meet the following requirements:

- 3 credit Research Methods elective (select from offerings outside the School)
- 3 credit Advanced Data Analysis or Statistics elective (select from offerings outside the School)
- 3 credit Advanced Policy elective (select from offerings in or outside of the School)
- 9 credits of open electives

Although some doctoral elective courses may be offered within Social Work, students are encouraged to take relevant course work from graduate programs in other schools and departments at the University. Many social welfare-related fields are open: sociology, economics, women's studies, political science, law, urban affairs, public health, and others. Students may take no more than two MSW courses for elective credit. All electives must be approved by the student's advisor as contributing to the student's area of specialization.

Certificate in Gender, Sexuality, and Women's Studies

The University of Pittsburgh School of Social Work is one of a few schools to offer doctoral students the option to simultaneously obtain a certificate in Certificate in Gender, Sexuality, and Women's Studies and a PhD in social work.

This certificate is based on a strong interdisciplinary program focusing on scholarship concerning women and gender. The University of Pittsburgh Gender, Sexuality, and Women's Studies Program provides opportunities for students to explore the historical development, cultural variations, and changing representations of gender and sexuality as they organize identities, interactions, and institutions and intersect in complex ways with sex, race, class, ethnicity, ability, age, religion, and nation.

Grades in Course Work

A grade point average of 3.00 or better in all course work is required in the PhD program. A student is automatically placed on probation whenever their cumulative GPA falls below 3.00. A student on probation is not eligible to take the comprehensive examination.

A student who receives a grade of B- or lower in a required course must repeat the course. Students with two grades of C+ or lower in elective and/or required courses will be referred to the doctoral program committee.

Programs

Doctoral

- **Social Work, PhD**

Return to: School of Social Work

Cooperative Degrees Program

Dual/Joint/Cooperative Degrees

Some students seek to complement their social work education and training by earning a degree in another discipline or profession. Others wish to further their education within the field of social work. The dual, joint, and cooperative degree programs offered by the University of Pittsburgh School of Social Work afford students a unique way to complete their MSW studies while also pursuing another graduate degree.

No student will be permitted to enroll or engage in more than one dual, joint, or cooperative degree program within the School of Social Work or between the School of Social Work and any other school or program during the course of earning that dual, joint, or cooperative degree.

Master of Social Work/Master of Business Administration

The MBA/Master of Social Work joint degree program is designed to provide students with a unique combination of social work knowledge and skills, with exceptional strength in management decision-making and leadership. The degree is offered jointly through the University of Pittsburgh School of Social Work and the Joseph M. Katz Graduate School of Business.

Adjusting to Market Demands

Faced with an increasingly competitive market, nonprofit organizations are beginning to emulate management methods and paradigms being practiced by for-profit companies, such as financial operations, human resource and data management, market and economic analysis, and evidence-based strategic planning. As philanthropic organizations become more concerned about their accountability and utility of financial supports provided to various human service organizations, they are beginning to evaluate nonprofits beyond program outcomes or average cost per client to more advanced assessments, such as cost-efficiency and effectiveness and cost-benefit ratio. Unfortunately, such analytic methodologies are rarely offered to social work students by the traditional social work curriculum.

The MSW/MBA dual-degree program is only available for students in the SSW's Community Organization and Social Action (COSA) program.

Students who want to earn a dual-degree must gain acceptance into both graduate degree programs by applying separately to each school. The joint-degree program applicants will also be required to submit their Graduate Management Admission Test (GMAT) or Graduate Records Exam (GRE) examination scores to both schools. Specific questions may be addressed to:

Daniel Rosen
Professor
School of Social Work
University of Pittsburgh
2117 Cathedral of Learning
Pittsburgh, PA 15260
Email address: dar15@pitt.edu

Requests for further information concerning the Katz Graduate School of Business, see http://www.business.pitt.edu. Specific questions may be addressed to:

Dr. Rabikar Chatterjee, Ph.D.
Associate Dean
Katz Graduate School of Business
University of Pittsburgh
301 Mervis Hall
Pittsburgh, PA 15260
Email address: rabikar@katz.pitt.edu

MSW/MBA Joint Degree Admissions Criteria

A. SSW Requirement

- A Baccalaureate degree that must be completed prior to the program start date. Applications must include transcripts of coursework completed at the time of submission of the application. Admission will be contingent upon submission of an official, final transcript of the completed Bachelors program before the start of the MSW program.
- Undergraduate students with social work and human service backgrounds are preferred.
- In general, we would expect an undergraduate GPA of 3.0 or better for admission.
- International students must submit originals or certified copies of transcripts/mark sheets and degree/diploma certificate in the original language plus a certified English translation (if the original is not in English).

- Paid work experience is preferred but not required.

- GMAT/GRE scores are not required for regular MSW students applicants but for the joint degree applicants in MSW and MBA must have their official Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) score reports forwarded directly to the University of Pittsburgh, Katz Graduate School of Business (KGSB), by the admission deadline.

- Applicants will submit a 3-5 page double spaced typed personal statement describing their post-graduate career goals, skills in which they excel, and key accomplishments.

- Applicants will submit three recommendations from persons who have known the applicant in academic or professional capacities. At least one from a faculty member is preferred. (Recommendations from friends and family will not be accepted.)

- Applicants will submit their current resume.

- English Proficiency Exams (for international applicants who are citizens of countries where the official language is not English)-- the Test of English as a Foreign Language (TOEFL) with minimum acceptable score: Internet-based test: 100; paper-based test: 600.

- Non-refundable application fee is $40.

- Prospective candidates, domestic or international, may be interviewed before admission, in person or by telephone.

- Submission of online MSW application form by the admissions deadline data of **May 31**.

B. Katz GSB Requirement

- A Baccalaureate degree that must be completed prior to the program start date. Applications must include transcripts of coursework completed at the time of submission of the application. Admission will be contingent upon submission of an official, final transcript of the completed Bachelors program before the start of the MBA program.
- Undergraduate students with strong analytical backgrounds are preferred.
- In general, we would expect an undergraduate GPA of 3.0 or better for admission.
- International students must submit originals or certified copies of transcripts/mark sheets and degree/diploma certificate in the original language plus a certified English translation (if the original is not in English).
- Work experience is not necessary, though highly desirable.

- GMAT/GRE scores: Applicants must have their official Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) score reports forwarded directly to the University of Pittsburgh, Katz Graduate School of Business, by the admission deadline. In general, we would expect a GMAT score of 600 or higher for admission. (Corresponding GRE scores will be equivalent to these levels, after conversion.).

- Applicants will submit a 250 word essay describing their post-graduate career goals, skills in which they excel, and key accomplishments.

- Applicants will submit two recommendations from persons who have known the applicant in academic or professional capacities. At least one from a faculty member is preferred. (Recommendations from friends and family will not be accepted.)

- Applicants will submit their current resume.

- English Proficiency Exams (for international applicants who are citizens of countries where the official language is not English): Either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing Systems (IELTS) is required.
- TOEFL Minimum acceptable score: Internet-based test: 100; paper-based test: 600.
- IELTS Minimum acceptable score: 7.0

- $50 non-refundable application fee.

- Prospective candidates, domestic or international, may be interviewed before admission, in person or by Skype.

Learning Outcome Goals

The MSW/MBA dual-degree program is designed to provide students with a unique combination of social work knowledge and skills, with exceptional strength in management decision-making and leadership. In addition to the MSW learning outcomes that are already in place, supplementary MSW/MBA objectives include:

- Proficiency in the management functions of accounting, finance, computer information systems, marketing, operations management, organizational behavior, human resource management, and social enterprise.

- Special emphasis on development of skills and abilities to lead strategically and to position an organization effectively for continued growth and development in both for-profit and nonprofit sectors.

- Knowledge and understanding of complex organizations, their development and transformation, administrative principles, the decision-making process, and competence in managerial functions.

- To provide applied learning experiences, the required field practicum will include professional supervision through appropriate concentration settings that will focus on community and human service organization management.

Program Requirements

- A graduate-level course grade of B or higher must be maintained throughout the joint-degree program.

- The MBA program requires 51 credits for the part-time or one-year program, of which at least 34 credits must be from KGSB courses, while the balance maximum of 17 credits may be from other graduate programs.

- The following MBA "core" courses (total of 22. 5 credits) are required:
- BACC 2401 Financial Accounting (3 credits)
- BECN 2401 Economic Analysis for Managerial Decisions (3 credits)
- BQOM 2401 Statistical Analysis (3 credits)
- BFIN 2409 Financial Management 1 (1.5 credits)
- BMKT 2409 Marketing Management (1.5 credits)
- BOAH 2409 Organizational Behavior (1.5 credits)
- BQOM 2421 Decision Technologies (1.5 credits)
- BSPP 2409 Strategic Management (1.5 credits)
- BMIS 2409 Information Systems (1.5 credits)
- BSEO 2401 Business Ethics & Social Performance (1.5 credits)
- BIND 2444 Management Simulation Capstone (3 credits)

- All MSW/MBA joint degree students will be required to take at least 34.5 credits of KGSB credits, consisting of the above 22.5 credits of core courses plus an additional 12 credits of KGSB electives. Thus, up to 16.5 credits will be accepted from courses successfully completed in the MSW program to achieve the total of 51 credits required for the completion of the Katz MBA degree.

- All MSW/MBA joint degree students will be required to take a course entitled Social Entrepreneurship (1.5 credits) from the KGSB.

- The following KGSB courses will count as credits towards the MSW degree:
- BACC-2401 Financial Accounting (3 credits) will qualify as equivalent to SWCOSA-2085 Financial Management (3 credits), and will count as 3 credits for both the MSW and MBA programs,
- BOAH-2409 Organizational Behavior (1.5 credits) and Strategic Management (1.5 credits) will qualify as equivalent to SWRES Organizational Research, and will count as 3 credits for both the MSW and MBA programs (SA track only),
- SW General Elective 1-One 3-credit or two 1.5-credit required MBA courses (e.g., BECN-2401 Economic Analysis for Managerial Decisions, 3 credits), which will count as 3 credits for both the MSW and MBA programs, and
- SW General Elective 2- One 3-credit or two 1.5-credit required MBA courses (e.g., BIND-2444 Competitive Management Simulation, 3 credits), which will count as 3 credits for both the MSW and MBA programs.

Thus, the double-counted credits make it possible for students to earn both degrees without having to take the total sum of credits required for completing the two degree programs separately.

- It should be noted that a long-standing educational policy of the SSW is that students who, within the past seven academic calendar years, have received a social work degree from a CSWE-accredited undergraduate program are eligible for advanced standing. Those granted advanced standing during the admission process can receive up to 12 academic credits and six field education credits that will

count towards completion of the MSW program.

- Thus, full-time COSA students with advanced standing must earn grand total of 64.5 credits for CO students, and 61.5 credits for SA students (adding all MSW and MBA courses). This means total of 30 social work credits (including total of 12 field credits) to be taken by CO students and 27 credits (including total of 12 field credits) to be taken by SA students. Additionally, they must take minimum of 34.5 credits of MBA courses, which includes 22.5 and 12 credits of required and electives, respectively.

- Full-time COSA students **without** advanced standing must earn grand total of 85.5 credits for CO students, and 82.5 credits for SA students (adding all MSW and MBA courses). This means total of 51 social work credits to be taken by CO students and 48 credits to be taken by SA students. Additionally, they must take minimum of 34.5 credits of MBA courses, which includes 22.5 and 12 credits of required and electives, respectively.

Master of Social Work/Master of Divinity

Pittsburgh Theological Seminary and the Graduate School of Social Work at the University of Pittsburgh present the unique opportunity to receive a joint degree in Master of Divinity (M.Div.) and Master of Social Work (M.S.W.) for those students passionate about pursuing their call to social work both inside and outside of a church setting.

What Makes Us Special?

As the oldest continuous joint degree program in the country, established in 1967, the MDiv/ MSW joint Masters degree program allows students to complete their coursework and graduate in four years of post-baccalaureate study instead of the usual five. Within the joint program students will still be provided a full course of study in both theology and social work, along with the academic support and one-on-one attention given by our excellent faculty. In order not to skip any required courses and still graduate in the four years, the MDiv/MSW program counts certain courses taught in one school as electives in the other and vice-versa, along with developing specialized practicum placements.

Who Is This Program For?

This joint masters program is built for those seeking to integrate their love of theology with their heart for social work and to make a change, along with those interested in pursuing a career in pastoral counseling or other forms of counseling. Positions that have been held by MDiv/MSW graduates in the past include: chaplain/clinical pastoral education supervisor for a health care facility, associate director of campus ministry, chaplain/chair committee holder at a nursing home, executive director of a pastoral institute, Christian counseling, various work with nonprofits, and so many more.

With the Seminary's campus located in the East Liberty / Highland Park neighborhood of Pittsburgh, PTS is within driving distance of other cities in Pennsylvania like Johnstown, Harrisburg, Philadelphia, State College, Allentown, Scranton, and other rural regions as well. Pitt classes meet at the University of Pittsburgh in Oakland.

How the MDiv/MSW Degree Works

Candidates for the joint degree who enter the program through the Seminary will concentrate on theological studies during the first two years. Application should be made to the University of Pittsburgh Graduate School of Social Work during the first term of the second year at the Seminary. The third and fourth years will be spent predominantly at the School of Social Work. Being that degrees in the joint program will be awarded concurrently, it is important to note that a student who resigns from one program will be subject to all requirements for graduation from the remaining degree program.

The easiest way to apply to the Master's Degree in Social Work Program at the University of Pittsburgh School of Social Work is to use our online application.

Please note that you will also need to complete an application with the Pittsburgh Theological Seminary.

After earning her joint Master of Divinity/Master of Social Work degrees in 2005 from Pittsburgh Theological Seminary and the University of Pittsburgh, alumna Elizabeth Trexler went on to be a missionary in Southeast Asia and then served as associate director of Catholic

campus ministry at Bloomsburg University. She says, "The joint degree program with masters in social work and masters in divinity is something that you can't put a price on. It just works so well together."

MDiv Program Curriculum Sequence

Courses are generally three credit hours. When followed on a full-time basis (12-13 credits), the program is completed in three academic years. Student pastors are encouraged to spread their degree work over four academic years.

Joint Degree Programs with the Graduate School of Public and International Affairs

- Master of Social Work/Master of Public Administration
- Master of Social Work/Master of Public and International Affairs
- MSW/Master of International Development

Three unique joint degree programs are offered by the University of Pittsburgh School of Social Work, through its COSA concentration, and the Graduate School of Public and International Affairs. These joint programs provide students with a broad professional education to prepare them for eventual service in urban non-profit and government organizations, community development policy, and social and urban planning. They provide experienced students with opportunities to expand their knowledge base and enable other students to develop more marketable professional skills than are usually acquired through single-degree programs. Students in these joint programs earn a Master of Social Work from the School of Social Work and a Master of Public Administration, Master of Public and International Affairs or a Master of International Development from the Graduate School of Public and International Affairs.

Students must be admitted to both programs in order to qualify for admission to the joint degree program. Degree candidates must meet the minimum foundation, concentration, and specialized requirements of both schools, except where substitutions are appropriate and approved by the faculty advisors. Depending upon which joint degree program the student elects, the total number of credits required for graduation ranges from 72 to 88 credits. For most students, this means that individual programs can be completed within six to seven terms of full-time residency. Students electing to terminate the joint degree program before its completion must complete all the work required by the respective schools for either degree in order to receive that degree separately.

Graduate School of Public and International Affairs

Complex and emerging issues influence us, our towns, our countries, and our world: Fair housing. Economic and community development. Environmental sustainability. Emergency preparedness. Disaster response. Human rights. International security.

We live in a world both illuminated by great hope and darkened by great conflict. Make a difference and take the lead. Prepare yourself with a comprehensive education from the Graduate School of Public and International Affairs (GSPIA) at the University of Pittsburgh.

Your academic options begin with GSPIA's integrated academic structure of three distinct master's degree programs offering eight different majors. Click on the links below to learn more about GSPIA's academic programs and related learning and research opportunities at GSPIA and the University of Pittsburgh. And-as always-we're ready to answer any questions you may have! Contact the Office of Student Services at 412-648-7640 or by email, gspia@pitt.edu.The easiest way to apply to the Master's Degree in Social Work Program at the University of Pittsburgh School of Social Work is to use our online application.

Students who prefer to apply through the mail may contact:

Mary Ohmer
COSA Chair and Associate Professor
University of Pittsburgh
School of Social Work
2204 Cathedral of Learning
University of Pittsburgh
Pittsburgh, PA 15260
(412) 624-8214
E-mail: mlo51@pitt.edu

University of Pittsburgh
Graduate School of Public and International Affairs

Office of Admissions
3601 Posvar
Pittsburgh, PA 15260
412-648-7640
www.gspia.pitt.edu

Master of Social Work/Doctor of Philosophy in Social Work

An MSW degree from an accredited school of social work is required to be considered for admission to the PhD program. Applicants without an MSW degree who wish to pursue a social work academic career may apply to the joint MSW/PhD program. Such applicants typically are interested in grounding themselves in the practice base of the social work profession, while also seeking to develop their advanced research and teaching skills. Preference is given to MSW/PhD applicants who have prior social work-related professional experience.

Separate applications are required for admission to each program. Those seeking further information regarding this dual degree program are encouraged to contact SSWPhDAdmissions@pitt.edu

Master of Social Work/Public Health

What is the MSW/MPH joint degree program?

The joint degree program is collaboration between the School of Social Work and the School of Public Health, Department of Behavioral and Community Health Sciences. Students graduate with both a Master of Social Work and Master of Public Health degrees and are prepared to pursue a wide range of social work and public health careers to improve the health of a target population and/or community. Students participate in class work, practicum placements, and leadership seminars to acquire the knowledge and skills to address health problems.

White Paper Stemming from the National Public Health Social Work Summit

What principles guide this program?

The program has a strong commitment to social justice, the elimination of health disparities, and a holistic definition of community and population health, including individuals' physical health conditions and the behavioral and social ecological determinants of health. Moreover, both social work and public health share a commitment to involving consumers/community members in the development of policies and in the planning, delivery and evaluation of health promotion interventions, health behavior change, and health education.

What are the advantages of the program?

- Students develop knowledge, values and skills for *both* professional social work practice and (e.g. direct practice or community organization/social administration) and community public health practice (e.g. primary, secondary, and tertiary prevention).
- Advising and mentoring focuses on supporting students to achieve their professional goals (e.g., selection of practicum placements, papers written as part of course-work, leadership training activities, focus of final thesis/essay in the MPH program).
- Students increase their career marketability as a result of being able to work from a cross disciplinary perspective. Students have gone on to jobs, for example, in various social service organizations, health departments, other government agencies, academic institutions, think tanks, and the Centers for Disease Control and Prevention.

What competencies will individuals gain as a result of the program?

- Application of theoretical principles to primary, secondary, and tertiary health interventions targeting the promotion of health behavior change, enhancement of the environment, and the elimination of risk factors in neighborhoods and communities that contribute to disease and poor health status outcomes
- Application of principles of community-based participatory research and practice to community health assessment
- Application of quantitative and qualitative skills to program planning and evaluation research
- Processes involved in community health planning, program implementation, and program evaluation
- Written communication to inform the public, policymakers, and other key-stakeholders

- Develop skills in micro practice with individuals, families, and groups or macro practice

What are the requirements of the program?

Typically a three-year curriculum plan for Direct Practice or COSA (2.5 years for advanced standing students)

- MSW/MPH DP Course Requirements
- MSW/MPH COSA Course Requirements
- 33 Social Work credits (plus 18 practicum placement credits)
- 36 Public Health credits

Some highlights of the program are:

- 18 practicum placement credits representing two separate practicum placement experiences, foundation and concentration, coordinated by the School of Social Work, Office of Practicum Education.
- Several certification programs are offered at each School
- Public Health final essay or thesis

Note: Students register for two years (two fall and spring semesters) through the School of Social Work and one year (one fall and spring semester) through the Graduate School of Public Health. You are eligible for funding through the School of Social Work for a maximum of 2 years (these are the two years you register through that school). You must be registered for **at least 9 credits** in the School of Social Work during the two years you register in that school to be eligible for funding from the School of Social Work. **You must have both school advisors approve your course schedule each term. Your advisor in the School of Social Work will lift your "hold" to register each term.**

Application Process

Students must apply separately to the School of Social Work and the Graduate School of Public Health's Office of Admissions. The easiest way to apply to the Master's Degree in Social Work Program at the University of Pittsburgh School of Social Work is to use our online application, and to apply to the Master's Degree of Public Health in Behavioral and Community Health Sciences, School of Public Health use online application.

Master of Social Work/Doctor of Philosophy in Social Work

An MSW degree from an accredited school of social work is required to be considered for admission to the PhD program. Applicants without an MSW degree who wish to pursue a social work academic career may apply to the joint MSW/PhD program. Such applicants typically are interested in grounding themselves in the practice base of the social work profession, while also seeking to develop their advanced research and teaching skills. Preference is given to MSW/PhD applicants who have prior social work-related professional experience.

Separate applications are required for admission to each program. Those seeking further information regarding this dual degree program are encouraged to contact SSWPhDAdmissions@pitt.edu

Joint Degree

Social Work, JD/MSW

Master of Social Work/Juris Doctorate

The School of Social Work (SSW) and the School of Law offer a cooperative educational program through which students may earn both the Master of Social Work (MSW), the primary professional degree in social work, and the Juris Doctor (JD) degree, the first professional degree in law. The MSW-JD program will enable students with interests in a wide range of areas where law and social work converge - such as child welfare, aging, health, mental health, juvenile and criminal justice, family issues, and housing - to engage in a highly integrative educational experience that will include academic courses, field placements, and research opportunities at the intersection of both professions. The joint degree program allows one to earn both degrees in four years rather than five.

Increasingly, social work professionals and attorneys are working together to promote the well-being of their clients. These areas of convergence exist in practice with individuals, families, and groups as well as with communities and organizations. The intersection of

legal and social work concerns is also evident at the policy level, and research from both professional disciplines has been used to inform these activities. It is not uncommon for practitioners from both fields to work in concert to draft, implement, and/or advocate for legislation at the local, state, and federal levels.

The MSW-JD program is one among several programs that the Schools of Social Work and Law have jointly established throughout their long and rich history of collaboration.

Neither degree may be granted prior to fulfillment of all requirements for the joint degree program.

Faculty Advisors

University of Pittsburgh School of Law
Professor Kevin Deasy, MSW, JD
3900 Forbes Avenue
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University of Pittsburgh School of Social Work
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Social Work, MID/MSW

Joint Degree Programs with the Graduate School of Public and International Affairs

Master of Social Work/Master of Public Administration
Master of Social Work/Master of Public and International Affairs
MSW/Master of International Development

Three unique joint degree programs are offered by the University of Pittsburgh School of Social Work, through its COSA concentration, and the Graduate School of Public and International Affairs. These joint programs provide students with a broad professional education to prepare them for eventual service in urban non-profit and government organizations, community development policy, and social and urban planning. They provide experienced students with opportunities to expand their knowledge base and enable other students to develop more marketable professional skills than are usually acquired through single-degree programs. Students in these joint programs earn a Master of Social Work from the School of Social Work and a Master of Public Administration, Master of Public and International Affairs or a Master of International Development from the Graduate School of Public and International Affairs.

Students must be admitted to both programs in order to qualify for admission to the joint degree program. Degree candidates must meet the minimum foundation, concentration, and specialized requirements of both schools, except where substitutions are appropriate and approved by the faculty advisors. Depending upon which joint degree program the student elects, the total number of credits required for graduation ranges from 72 to 88 credits. For most students, this means that individual programs can be completed within six to seven terms of full-

time residency. Students electing to terminate the joint degree program before its completion must complete all the work required by the respective schools for either degree in order to receive that degree separately.

Graduate School of Public and International Affairs

Complex and emerging issues influence us, our towns, our countries, and our world: Fair housing. Economic and community development. Environmental sustainability. Emergency preparedness. Disaster response. Human rights. International security.

We live in a world both illuminated by great hope and darkened by great conflict. Make a difference and take the lead. Prepare yourself with a comprehensive education from the Graduate School of Public and International Affairs (GSPIA) at the University of Pittsburgh.

Your academic options begin with GSPIA's integrated academic structure of three distinct master's degree programs offering eight different majors. Click on the links below to learn more about GSPIA's academic programs and related learning and research opportunities at GSPIA and the University of Pittsburgh. And-as always-we're ready to answer any questions you may have! Contact the Office of Student Services at 412-648-7640 or by email, gspia@pitt.edu.

The easiest way to apply to the Master's Degree in Social Work Program at the University of Pittsburgh School of Social Work is to use our online application.

Students who prefer to apply through the mail may contact:

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Pittsburgh, PA 15260
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www.gspia.pitt.edu

Social Work, MPA/MSW

Joint Degree Programs with the School of Public and International Affairs

Master of Social Work/Master of Public Administration
Master of Social Work/Master of Public and International

Affairs
MSW/Master of International Development

Three unique joint degree programs are offered by the University of Pittsburgh School of Social Work, through its COSA concentration, and the School of Public and International Affairs. These joint programs provide students with a broad professional education to prepare them for eventual service in urban non-profit and government organizations, community development policy, and social and urban planning. They provide experienced students with opportunities to expand their knowledge base and enable other students to develop more marketable professional skills than are usually acquired through single-degree programs. Students in these joint programs earn a Master of Social Work from the School of Social Work and a Master of Public Administration, Master of Public and International Affairs or a Master of International Development from the School of Public and International Affairs.

Students must be admitted to both programs in order to qualify for admission to the joint degree program. Degree candidates must meet the minimum foundation, concentration, and specialized requirements of both schools, except where substitutions are appropriate and approved by the faculty advisors. Depending upon which joint degree program the student elects, the total number of credits required for graduation ranges from 72 to 88 credits. For most students, this means that individual programs can be completed within six to seven terms of full-time residency. Students electing to terminate the joint degree program before its completion must complete all the work required by the respective schools for either degree in order to receive that degree separately.

School of Public and International Affairs

Complex and emerging issues influence us, our towns, our countries, and our world: Fair housing. Economic and community development. Environmental sustainability. Emergency preparedness. Disaster response. Human rights. International security.

We live in a world both illuminated by great hope and darkened by great conflict. Make a difference and take the lead. Prepare yourself with a comprehensive education from the School of Public and International Affairs (SPIA) at the University of Pittsburgh.

Your academic options begin with SPIA's integrated academic structure of three distinct master's degree programs offering eight different majors. Click on the links below to learn more about SPIA's academic programs and related learning and research opportunities at SPIA and the University of Pittsburgh. And-as always-we're ready to answer any questions you may have! Contact the Office of Student Services at 412-648-7640 or by email, spia@pitt.edu.

The easiest way to apply to the Master's Degree in Social Work Program at the University of Pittsburgh School of Social Work is to use our online application.

Students who prefer to apply through the mail may contact:

Mary Ohmer
COSA Chair and Associate Professor
University of Pittsburgh
School of Social Work
2204 Cathedral of Learning
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Pittsburgh, PA 15260
(412) 624-8214
E-mail: mlo51@pitt.edu

University of Pittsburgh
School of Public and International Affairs
Office of Admissions
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Pittsburgh, PA 15260
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www.spia.pitt.edu

Social Work, MPH/MSW

MSW/MPH

MSW/Master of Public Health Program

What is the MSW/MPH joint degree program?

The joint degree program is collaboration between the School of Social Work and the School of Public Health, Department of Behavioral and Community Health Sciences. Students graduate with both a Master of Social Work and Master of Public Health degrees and are prepared to pursue a wide range of social work and public health careers to improve the health of a target population and/or community. Students participate in class work, field placements, and leadership seminars to acquire the knowledge and skills to address health problems.

White Paper Stemming from the National Public Health Social Work Summit

What principles guide this program?

The program has a strong commitment to social justice, the elimination of health disparities, and a holistic definition of community and population health, including individuals' physical health conditions and the behavioral and social ecological determinants of health. Moreover, both social work and public health share a commitment to involving consumers/community members in the development of policies and in the planning, delivery and evaluation of health promotion interventions, health behavior change, and health education.

What are the advantages of the program?

- Students develop knowledge, values and skills for *both* professional social work practice and (e.g. direct practice or community organization/social administration) and community public health practice (e.g. primary, secondary, and tertiary prevention).

- Advising and mentoring focuses on supporting students to achieve their professional goals (e.g., selection of field placements, papers written as part of course-work, leadership training activities, focus of final thesis/essay in the MPH program).

- Students increase their career marketability as a result of being able to work from a cross disciplinary perspective. Students have gone on to jobs, for example, in various social service organizations, health departments, other government agencies, academic institutions, think tanks, and the Centers for Disease Control and Prevention.

What competencies will individuals gain as a result of the program?

- Application of theoretical principles to primary, secondary, and tertiary health interventions targeting the promotion of health behavior change, enhancement of the environment, and the elimination of risk factors in neighborhoods and communities that contribute to disease and poor health status outcomes

- Application of principles of community-based participatory research and practice to community health assessment

- Application of quantitative and qualitative skills to program planning and evaluation research

- Processes involved in community health planning, program implementation, and program evaluation
- Written communication to inform the public, policymakers, and other key-stakeholders
- Develop skills in micro practice with individuals, families, and groups or macro practice

What are the requirements of the program?

Typically a three-year curriculum plan for Direct Practice or COSA (2.5 years for advanced standing students)

- MSW/ MPH DP Course Requirements
- MSW/MPH COSA Course Requirements
- 33 Social Work credits (plus 18 field placement credits) **NOTE: Beginning 2019-20 academic year, the required BCHS 2525 Applied Research Methods course(3crs.) fulfills the SWRES 2021 Foundation of Social Work Research course (3crs.) In addition, MSW/MPH students who are pursuing the IHC certification are not permitted to take SWBEH 2066HB as a second-level HBSE course. The content of SWBEH 2066HB significantly overlaps with the course content of BCHS2520. Students are required to choose another second-level HBSE course.**
- 36 Public Health credits

Some highlights of the program are:

- 18 field placement credits representing two separate field placement experiences, foundation and concentration, coordinated by the School of Social Work, Office of Field Education.
- Several certification programs are offered at each School
- Public Health final essay or thesis

Note: Students register for two years (two fall and spring semesters) through the School of Social Work and one year (one fall and spring semester) through the School of Public Health. You are eligible for funding through the School of Social Work for a maximum of 2 years (these are the two years you register through that school). You must be registered for **at least 9 credits** in the School of Social Work during the two years you register in that school to be eligible for funding from the School of Social Work. **You must have both school advisors approve your course schedule each term. Your advisor in the School of Social Work will lift your "hold" to register each term.**

What types of careers do graduates of the MSW/MPH joint degree program engage in?

- Patient Services Managers
- Research Scientist
- Policy Advocates
- Program Directors
- Communication Directors
- Adjunct and Part-time faculty in MSW and BSW degree programs
- Bridging the gap between the public's health and social work practice
- Program Planners

Application Process

Students must apply separately to the School of Social Work and the School of Public Health's Office of Admissions (GSPH). The easiest way to apply to the Master's Degree in Social Work Program at the University of Pittsburgh School of Social Work is to use our online application, and to apply to the Master's Degree of Public Health in Behavioral and Community Health Sciences, School of Public Health (GSPH) use online application.

Social Work, MPH/PhD

The joint MPH/PhD program, is designed for social workers seeking administrative, policy, and/or academic positions.

Objectives

The program's overall educational objective is to train social workers for leadership positions in public health systems and prepare them for research and teaching posts.

This involves:

- a primary focus on populations at risk rather than individuals
- use of an interdisciplinary approach
- a focus on primary prevention of social and health problems
- reliance on systematic data collection and analysis for administrative decision making

The learning objectives include:

- Understanding incidence, prevalence, prevention, treatment, and epidemiological trends of the health and social needs of vulnerable populations
- Becoming aware of the health and social work systems available for prevention, treatment, and rehabilitation
- Understanding the interrelationship of the identified population-at-risk with other populations
- Understanding the impact of socioeconomic, racial, cultural, geographical, and financial factors on health service delivery and use
- Understanding the technical and legal issues related to service delivery to the population-at-risk
- Understanding the implications of legislation and policy on program funding, planning and development, and patterns of service delivery

It is expected that graduates also will be prepared through the educational experience to:

- Coordinate population specific health services within primary, secondary, and tertiary sites
- Develop social work consultation and training skills and apply them to interdisciplinary settings
- Use epidemiological data and statistics, and conduct community needs assessments to support program and policy development
- Prepare technical reports, proposals, and publications

Academic Curriculum

The MPH/PhD curriculum comprises core courses in public health and social work, with a heavy emphasis on research methods and statistics. The following list of courses is provided as an example, as the exact course requirements may vary by student.

GSPH Core & BCHS Core Courses (minimum 33 credits):

BIOST 2011 Principles of Statistical Reasoning (3 credits)
EOH 2013 Environmental & Occupational Health (2 credits)
EPID 2110 Principles of Epidemiology (3 credits)
HPM 2001 Health Policy & Management in Public Health (3 credits)
PUBHLT 2033 Foundations in Public Health (1 credit)
PUBHLT 2015 Public Health Biology (2 credits)

PUBHLT 2034 Public Health Communications (2 credits)

PUBHLT 2035 Applications in Public Health (2 credits)
BCHS 2520 Theories of Health Behavior and Health Education (1 credit)

BCHS 2992 Systems Theories and Approaches (1 credit)

BCHS 2990 Social Dynamics (1 credit)
BCHS 2525 Applied Research Methods (3 credits)

BCHS 2554 Intro to Community Health (3 credits)
BCHS 2521 Master's Essay/Thesis (1-3 credits)
BCHS 2503 Practicum (3 credits)

SSW Courses (50 credits):

SWRES 3029 Inferential Statistics (3 credits)
SWRES 3021 Multivariate Methods (4 credits)
SWRES 3020 Research Methods I (3 credits)
SWRES 3022 Capstone I (1 credit)
SWRES 3023 Capstone II (3 credits)
SWGEN 3053 Social Science Theory I (3 credits)
SWGEN 3044 Social Science Theory II (3 credits)
SWWEL 3030 Evaluation of American Social Welfare History and Policy (3 credits)
SWWEL 3037 Social Policy Analysis (3 credits)
SWGEN Seminar in Social Work Education (3 credits)
One additional policy course (2-3 credits)

One additional statistics course

One additional methods course

General electives (12 credits)

Frequently Asked Questions

How long does it take to complete the program?

It takes two to three years for the PhD/MPH course work, and approximately two additional years to complete doctoral research.

What are the research areas of the faculty?

Read about the School of Social Work faculty or visit the School of Public Health web site for information about faculty research interests.

Admissions

Those students seeking the MPH/PhD are admitted to both the School of Public Health **and** the School of Social Work as joint students. Therefore, applicants must also meet the admission requirements of the doctoral program of the School of Social Work, and formal applications must be submitted to **both** programs.

Those seeking further information regarding the requirements and processes for this joint degree program are encouraged to contact:

Valire Carr Copeland
Professor
School of Social Work
University of Pittsburgh
2117 Cathedral of Learning
Pittsburgh, PA 15260
Email address: sswvcc@pitt.edu

or

Steven M. Albert
Professor and Chair
Behavioral and Community Health Sciences
6126 Public Health
Pittsburgh, PA 15261
412-383-8693
smalbert@pitt.edu

Requirements:

This joint degree requires the completion of a minimum of 81 credits, a comprehensive examination and successful defense of a dissertation. Graduate Students in the joint MPH/PhD program generally apply 12 credits from the MPH curriculum toward their elective course work for the PhD.

Social Work, MPIA/MSW

Joint Degree Programs with the School of Public and International Affairs

Master of Social Work/Master of Public Administration
Master of Social Work/Master of Public and International Affairs
MSW/Master of International Development

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School of Public and International Affairs

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University of Pittsburgh
School of Public and International Affairs
Office of Admissions
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412-648-7640
www.spia.pitt.edu

Social Work, MSW/MBA

The MBA/Master of Social Work joint degree program is designed to provide students with a unique combination of social work knowledge and skills, with exceptional strength in management decision-making and leadership. The degree is offered jointly through the University of Pittsburgh School of Social Work and the Joseph M. Katz Graduate School of Business.

Faced with an increasingly competitive market, nonprofit organizations are beginning to emulate management methods and paradigms being practiced by for-profit companies, such as financial operations, human resource and data management, market and economic analysis, and evidence-based strategic planning. As philanthropic organizations become more concerned about their accountability and utility of financial supports provided to various human service organizations, they are beginning to evaluate nonprofits beyond program outcomes or average cost per client to more advanced assessments, such as cost-efficiency and effectiveness and cost-benefit ratio. Unfortunately, such analytic methodologies are rarely offered to social work students by the traditional social work curriculum.

Initially, the proposed MSW/MBA dual-degree program will be open to the SSW's Community Organization and Social Action (COSA) students. Upon successful execution of this initiative, the school plans to open the program to all MSW full-time students (COSA and Direct Practice students).

Students who want to earn a dual-degree must gain acceptance into both graduate degree programs by applying separately to each school. The joint-degree program applicants will also be required to submit their Graduate Management Admission Test (GMAT) or Graduate Records Exam (GRE) examination scores to both schools. Specific questions may be addressed to:

Daniel Rosen
Professor
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University of Pittsburgh
2117 Cathedral of Learning

Pittsburgh, PA 15260
Email address: dar15@pitt.edu

John Wallace
David E. Epperson Chair and Professor, Center on Race and Social Problems Senior Fellow for Research and Community Engagement
School of Social Work
University of Pittsburgh
2117 Cathedral of Learning
Pittsburgh, PA 15260
Email address: johnw@pitt.edu

Requests for further information concerning the Katz Graduate School of Business, see http://www.business.pitt.edu/katz/. Specific questions may be addressed to:

Dr. Rabikar Chatterjee, Ph.D.
Associate Dean
Katz Graduate School of Business
University of Pittsburgh
301 Mervis Hall
Pittsburgh, PA 15260
Email address: rabikar@katz.pitt.edu

MSW/MBA Joint Degree Admissions Criteria

• SSW Requirement

- A Baccalaureate degree that must be completed prior to the program start date. Applications must include transcripts of coursework completed at the time of submission of the application. Admission will be contingent upon submission of an official, final transcript of the completed Bachelors program before the start of the MSW program.
- Undergraduate students with social work and human service backgrounds are preferred.
- In general, we would expect an undergraduate GPA of 3.0 or better for admission.
- International students must submit originals or certified copies of transcripts/mark sheets and degree/diploma certificate in the original language plus a certified English translation (if the original is not in English).
- Paid work experience is preferred but not required.
- GMAT/GRE scores are not required for regular MSW students applicants but for the joint degree applicants in MSW and MBA must have their official Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) score reports forwarded directly to the University of Pittsburgh, School of Business, by the admission deadline.
- Applicants will submit a 3-5 page double spaced typed personal statement describing their post-graduate career goals, skills in which they excel, and key accomplishments.
- Applicants will submit three recommendations from persons who have known the applicant in academic or professional capacities. At least one from a faculty member is preferred. (Recommendations from friends and family will not be accepted.)
- Applicants will submit their current resume.
- English Proficiency Exams (for international applicants who are citizens of countries where the official language is not English)- the Test of English as a Foreign Language (TOEFL) with minimum acceptable score: Internet-based test: 100; paper-based test: 600.
- Non-refundable application fee is $40.
- Prospective candidates, domestic or international, may be interviewed before admission, in person or by telephone.
- Submission of online MSW application form by the admissions deadline data of **May 31**.

• School of Business Requirement

- A Baccalaureate degree that must be completed prior to the program start date. Applications must include transcripts of coursework completed at the time of submission of the application. Admission will be contingent upon submission of an official, final transcript of the completed Bachelors program before the start of the MBA program.

- Undergraduate students with strong analytical backgrounds are preferred.
- In general, we would expect an undergraduate GPA of 3.0 or better for admission.
- International students must submit originals or certified copies of transcripts/mark sheets and degree/diploma certificate in the original language plus a certified English translation (if the original is not in English).
- Work experience is not necessary, though highly desirable.
- GMAT/GRE scores are optional, but reccommended.
- Applicants will submit application essays addressing questions related to experience, professional goals, and reasons for pursue the program.
- Applicants will submit two recommendations from persons who have known the applicant in academic or professional capacities. At least one from a faculty member is preferred. (Recommendations from friends and family will not be accepted.)
- Applicants will submit their current resume.
- English Proficiency Exams (for international applicants who are citizens of countries where the official language is not English): Either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing Systems (IELTS) is required.
- TOEFL Minimum acceptable score: Internet-based test: 100; paper-based test: 600.
- IELTS Minimum acceptable score: 7.0
- $50 non-refundable application fee.
- Prospective candidates, domestic or international, will be interviewed before admission, in person or virtually.

Learning outcome goals

The MSW/MBA dual-degree program is designed to provide students with a unique combination of social work knowledge and skills, with exceptional strength in management decision-making and leadership. In addition to the MSW learning outcomes that are already in place, supplementary MSW/MBA objectives include:

- Proficiency in the management functions of accounting, finance, computer information systems, marketing, operations management, organizational behavior, human resource management, and social enterprise.
- Special emphasis on development of skills and abilities to lead strategically and to position an organization effectively for continued growth and development in both for-profit and nonprofit sectors.
- Knowledge and understanding of complex organizations, their development and transformation, administrative principles, the decision-making process, and competence in managerial functions.
- To provide applied learning experiences, the required field practicum will include professional supervision through appropriate concentration settings that will focus on community and human service organization management.

Program requirements

- A graduate-level course grade of B or higher must be maintained throughout the joint-degree program.

- The MBA program requires a minimum 45 credits,, of which at least 33* credits must be from School of Business courses, while the balance of 12 credits are accepted from School of Social Work courses.

Master of Business Administration Core Courses

The following core courses are required of all MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECH IN MFG & OPS MGT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS

- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2454 - INTEGRATED MBA CAPSTONE

MBA Required Courses

To supplement the MBA Core Curriculum, MBA students also complete additional required coursework. The content of these courses is designed to accelerate a students' academic and personal development as a business professional.

- BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS
- BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH
- BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE
- BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS
- BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

MBA Elective Courses

Students in the joint degree program must complete an additional 7.5 elective credits of School of Business courses.

Program requirements

- All MSW/MBA joint degree students will be required to take at least 33 credits of KGSB credits, consisting of the above 25.5 credits of core courses plus an additional 7.5 credits of School of Business electives. Thus, up to 12 credits will be accepted from courses successfully completed in the MSW program to achieve the total of 45 credits required for the completion of the School of Business MBA degree.
- The following School of Business courses will count as credits towards the MSW degree:
- BACC 2401 - FINANCIAL ACCOUNTING will qualify as equivalent to SWCOSA 2085 - FINANCIAL MANAGEMENT SOCIAL SERVICE INSTITUTIONS (3 credits), and will count as 3 credits for both the MSW and MBA programs,
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS and Strategic Management (1.5 credits) will qualify as equivalent to SWRES Organizational Research, and will count as 3 credits for both the MSW and MBA programs (SA track only),
- SW General Elective 1-One 3-credit or two 1.5-credit required MBA courses (e.g., BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS), which will count as 3 credits for both the MSW and MBA programs, and
- SW General Elective 2- One 3-credit or two 1.5-credit required MBA courses (e.g.,BIND 2444 - MANAGEMENT SIMULATION CAPSTONE), which will count as 3 credits for both the MSW and MBA programs.

Thus, the double-counted credits make it possible for students to earn both degrees without having to take the total sum of credits required for completing the two-degree programs separately.

- It should be noted that a long-standing educational policy of the SSW is that students who, within the past seven academic calendar years, have received a social work degree from a CSWE-accredited undergraduate program are eligible for advanced standing. Those granted advanced standing during the admission process can receive up to 12 academic credits and six field education credits that will count towards completion of the MSW program.

- Thus, full-time COSA students with advanced standing must earn a total of 63 credits for CO students, and 60 credits for SA students (adding all MSW and MBA courses). This means a total of 30 social work credits (including total of 12 field credits) to be taken by CO students and 27 credits (including total of 12 field credits) to be taken by SA students. Additionally, they must take minimum of 33 credits of MBA courses, which includes 25.5 and 7.5 credits of required and electives, respectively.

- Full-time COSA students without advanced standing must earn a total of 84 credits for CO students, and 81 credits for SA students (adding all MSW and MBA courses). This means a total of 51 social work credits to be taken by CO students and 48 credits to be taken by SA students. Additionally, they must take minimum of 33 credits of MBA courses, which includes 25.5 and 7.5 credits of required and electives, respectively.

Social Work, MSW/MDiv

Pittsburgh Theological Seminary and the Graduate School of Social Work at the University of Pittsburgh present the unique opportunity to receive a joint degree in Master of Divinity (M.Div.) and Master of Social Work (M.S.W.) for those students passionate about pursuing their call to social work both inside and outside of a church setting.

What Makes Us Special?

As the oldest continuous joint degree program in the country, established in 1967, the MDiv/ MSW joint Masters degree program allows students to complete their coursework and graduate in four years of post-baccalaureate study instead of the usual five. Within the joint program students will still be provided a full course of study in both theology and social work, along with the academic support and one-on-one attention given by our excellent faculty. In order not to skip any required courses and still graduate in the four years, the MDiv/MSW program counts certain courses taught in one school as electives in the other and vice-versa, along with developing specialized field placements.

Who Is This Program For?

This joint masters program is built for those seeking to integrate their love of theology with their heart for social work and to make a change, along with those interested in pursuing a career in pastoral counseling or other forms of counseling. Positions that have been held by MDiv/MSW graduates in the past include: chaplain/clinical pastoral education supervisor for a health care facility, associate director of campus ministry, chaplain/chair committee holder at a nursing home, executive director of a pastoral institute, Christian counseling, various work with nonprofits, and so many more.

With the Seminary's campus located in the East Liberty / Highland Park neighborhood of Pittsburgh, PTS is within driving distance of other cities in Pennsylvania like Johnstown, Harrisburg, Philadelphia, State College, Allentown, Scranton, and other rural regions as well. Pitt classes meet at the University of Pittsburgh in Oakland.

How the MDiv/MSW Degree Works

Candidates for the joint degree who enter the program through the Seminary will concentrate on theological studies during the first two years. Application should be made to the University of Pittsburgh Graduate School of Social Work during the first term of the second year at the Seminary. The third and fourth years will be spent predominantly at the School of Social Work. Being that degrees in the joint program will be awarded concurrently, it is important to note that a student who resigns from one program will be subject to all requirements for graduation from the remaining degree program.

The easiest way to apply to the Master's Degree in Social Work Program at the University of Pittsburgh School of Social Work is to use our online application.

Contact Information

Students who prefer to apply through the mail may contact:

John Wallace
David E. Epperson Chair and Professor, Center on Race and Social Problems Senior Fellow for Research and Community Engagement
School of Social Work
University of Pittsburgh
2117 Cathedral of Learning
Pittsburgh, PA 15260
Email address: johnw@pitt.edu

Keith Caldwell
Associate Dean For Student Success and Assistant Professor
School of Social Work
University of Pittsburgh
2108 Cathedral of Learning
Pittsburgh, PA 15260
Email address: kjc45@pitt.edu

After earning her joint Master of Divinity/Master of Social Work degrees in 2005 from Pittsburgh Theological Seminary and the University of Pittsburgh, alumna Elizabeth Trexler went on to be a missionary in Southeast Asia and then served as associate director of Catholic campus ministry at Bloomsburg University. She says, "The joint degree program with masters in social work and masters in divinity is something that you can't put a price on. It just works so well together."

MDiv Program Curriculum Sequence

Courses are generally three credit hours. When followed on a full-time basis (12-13 credits), the program is completed in three academic years. Student pastors are encouraged to spread their degree work over four academic years.

Social Work, MSW/PhD

An MSW degree from an accredited school of social work is required to be considered for admission to the PhD program. Applicants without an MSW degree who wish to pursue a social work academic career may apply to the joint MSW/PhD program. Such applicants typically are interested in grounding themselves in the practice base of the social work profession, while also seeking to develop their advanced research and teaching skills. Preference is given to MSW/PhD applicants who have prior social work-related professional experience.

Separate applications are required for admission to each program. Those seeking further information regarding this dual degree program are encouraged to contact SSWPHDAdmissions@pitt.edu.

University Center for International Studies

University Center for International Studies

The University Center for International Studies (UCIS) is the primary resource for initiating and managing international studies and global programs and support services while promoting the University's reputation as a global leader in research and education. A key goal of UCIS is to cultivate globally capable and engaged students toward lives of impact in their community and beyond. This is achieved by certificate programs, study abroad, professional development opportunities, support for research and teaching, and a wide array of co-curricular offerings. UCIS offers 11 graduate certificates at both a masters and Ph.D. level to meet the needs of students from any school or department. Certificates are academic credentials that attest to acquisition of international knowledge about a particular world region or global theme, cross-cultural understanding, and language proficiency relevant for international careers or for advanced degrees.

Certificates are available in:

- African Studies
- Asian Studies
- European Union Studies
- Global Studies
- Latin American Social and Public Policy Studies
- Latin American Studies
- Mediterranean Studies
- Russian, East European and Eurasian Studies
- Transatlantic Studies
- Transnational Asia Studies
- West European Studies

The certificates are administered through the African Studies Program, Asian Studies Center, European Studies Center, Global Studies Center, Center for Latin American Studies, and the Center for Russian, East European and Eurasian Studies. All six centers are designated by the federal government as National Resource Centers and can offer federal Foreign Language and Area Studies (FLAS) Fellowships for both academic year and summer study.

UCIS certificates evidence language proficiency, regional knowledge and cultural competency that students find useful for international careers.

Contact Information

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www.ucis.pitt.edu

Admission to Certificate Programs

For admission, graduate students must first apply to a graduate program at one of the Schools. Applicants are encouraged to contact a UCIS international advisor as early as possible with questions about their interest in a world region or global theme. Formal admission to the UCIS certificate programs is accomplished by completing a simple application form. Generally, no additional tuition is charged for enrollment as a certificate student. Students holding a master's degree from an accredited institution may obtain any of the UCIS graduate certificates without enrolling in a graduate degree program at the University of Pittsburgh. They may apply directly to the UCIS center or program if they wish to enroll only in the certificate program.

Certificate Requirements

UCIS Graduate certificates are awarded after completion of all certificate requirements *as well as* completion of all requirements for the master's degree, or *after* the student has passed the comprehensive examinations for the doctorate. Upon graduation, both the academic degree and the certificate are posted on the student's transcript. Specific certificate requirements for each international studies certificate are listed under the program offerings below.

Advising

All UCIS certificate programs provide personalized advising services to students interested or registered in its programs in addition to those routinely offered by the students' major advisors. Center advisors assist in selecting courses, language training, and arranging internships or study abroad to fit the students' academic and personal interests. See the program offerings below for contact information.

Program Offerings

African Studies Certificate

Advanced African Studies Certificate

Asian Studies Certificate
Advanced Asian Studies Certificate

European Union Studies Certificate
Advanced European Union Studies Certificate

Global Studies Certificate
Advanced Global Studies Certificate

Latin American Social & Public Policy Certificate

Advanced Latin American Social & Public Policy Certificate

Latin American Studies Certificate
Advanced Latin American Studies Certificate
Mediterranean Studies Certificate

Mediterranean Studies Advanced Certificate

Russian, East European & Eurasian Studies Certificate
Advanced Russian, East European, and Eurasian Studies Certificate
Transatlantic Studies Certificate

Transatlantic Studies Advanced Certificate
Transnational Asia Graduate Certificate

Transnational Asia Advanced Certificate

West European Studies Certificate
Advanced West European Studies Certificate

Special Academic Opportunities

UCIS Centers offer a variety of grants, fellowships, research, teaching, and professional development opportunities for graduate students, including the prestigious Foreign Language and Area Studies (FLAS) Fellowships. For an overview of the many opportunities and resources that are available to students through UCIS, please visit www.ucis.pitt.edu/main/students.

Center for African Studies

Contact Information

Dr. Macrina Lelei
Graduate Advisor and Interim Director
African Studies Program
4137 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-2058
Fax: 412-648-7214
E-mail: africast@pitt.edu
www.ucis.pitt.edu/africa

The Graduate Certificate

The Center for African Studies offers the graduate certificate in African Studies designed to provide students the opportunity for the interdisciplinary study of Africa. Students seeking a graduate degree at any school within the University may pursue a graduate certificate in African Studies by enrolling in the program and meeting the stipulated requirements. The Graduate Certificate program is specifically designed for graduate students who desire an opportunity to intensify their study of Africa and develop real insights into issues of critical importance in their fields of research and career interests as relates to Africa. The program provides students with fundamental grounding in African Studies through exposure to the major areas of research and knowledge on Africa in their respective disciplines. In addition, students are provided with opportunities to participate in research projects, symposia, lectures, conferences, and workshops on Africa. They are also encouraged to participate in internship opportunities with a specific focus on Africa.

Admission to the Certificate Program

Although formal admission to the program is allowed at any point in the student's academic career, students are encouraged to apply for admission early enough to allow them ample time to complete all the requirements in a timely manner. Application information can be obtained from the African Studies Web site or students can apply for admission to the program at our office.

Graduate Certificate

Advanced African Studies Certificate

Contact Information
Dr. Anna-Maria Karnes, Academic Advisor
4136 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-624-8143
Awk19@pitt.edu
www.ucis.pitt.edu/africa
Sign Up for an appointment

The Graduate Certificate

The Center for African Studies offers the graduate certificate and the Advanced certificate in African Studies designed for students who wish to intensify their study of Africa as a world region. Students seeking a graduate degree at any school or department within the University may pursue a graduate certificate in African Studies by enrolling in the program and meeting the stipulated requirements. This certificate is specifically designed for graduate students who desire to develop real insights into issues of critical importance in their fields of research and career interests as relates to Africa. The program provides students with fundamental grounding in African Studies through exposure to the major areas of research and knowledge on Africa in their respective disciplines and professions. In addition, students are provided with opportunities to participate in research projects, symposia, lectures, conferences, fellowships, internships and workshops on Africa. Successful completion of a certificate in African Studies can provide an important building block for careers in international development, foreign service, government, business, law, academia and public service.

Certificate Requirements

Course Work

18 Credits of course work are required:

- 15 credits can overlap with your major but
- 3 credits must be outside your major
- In country experience is required and this can be fulfilled with a 3 credit research project or internship in Africa

Language Requirement

2 years language requirement for equivalent for an African language or European language spoken in Africa*

* Language proficiency: Those with intermediate proficiency or Native speakers of an African language, or European language can have the language requirement waived.

Capstone Research Paper & Presentation

Capstone paper: This research paper/project is the culmination of the student's learning experience and clearly demonstrates in-depth knowledge of African studies issues in at least one academic discipline. The capstone must be an assignment submitted as part of coursework, such as a final term paper and must have received a B or above grade.

Graduation Presentation: The student will present on the culmination of their African Studies Certificate through sharing a PowerPoint about their capstone project and African studies experiences in a mini-forum to students, friends and family. Each student will have 5 minutes to present. They are allowed no more than five power point slides of talking points and pictures to guide their presentation. Presentations happen in December or April of the graduation year.

Academic Opportunities

Internships: There are several internship opportunities locally and in Africa for student internships. Meet with the academic advisor to learn about these opportunities and sources of funding.

Events & Volunteering: The center hosts various lectures each semester and always has opportunities for students to get involved and use their talents in various events that happen throughout the year.

UCIS International Career Toolkit Series: The Career Toolkit introduces students to the multitude of careers available by meeting and interacting with professionals in a variety of fields. Many of the guests are Pitt alumni and those that graduated with an International Studies Certificate. By attending one of these panels students will gain insight on career choices, what specific careers entail, how to articulate and prepare for short and long term career goals, and utilize resources at Pitt to make their goals a reality. Each year, students enrolled in the certificate program will have the opportunity to visit Washington, DC to interact with professionals and learn about a variety of opportunities for employment possibilities.

African Studies Certificate

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4136 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-624-8143
Awk19@pitt.edu
www.ucis.pitt.edu/africa
Sign Up for an appointment

The African Studies Program offers the Graduate Certificate in African Studies and the Advanced Certificate in African Studies designed for students who wish to intensify their study of Africa as a world region. Students seeking a graduate degree at any school or department within the University may pursue a graduate certificate in African Studies by enrolling in the program and meeting the stipulated requirements. These certificates are specifically designed for graduate students who desire to develop real insights into issues of critical importance in their fields of research and career interests as relates to Africa. The program provides students with fundamental grounding in African Studies through exposure to the major areas of research and knowledge on Africa in their respective disciplines and professions. In addition, students are provided with opportunities to participate in research projects, symposia, lectures, conferences, fellowships, internships, and workshops on Africa. Successful completion of a certificate in African Studies can provide an important building block for careers in international development, foreign service, government, business, law, academia, and public service.

Language Proficiency

Students must complete either:

- 1 year of the study of either an indigenous African language **or**
- 2 years of a European language that is relevant to African studies **or**
- The language requirement can be waived if the student is at an intermediate level in either a European language spoken in Africa or an Indigenous African language

Content Courses

12 credits of content coursework are required:

- 9 credits can overlap with the major.
- 3 credits must be outside the student's major

Students may contextualize non-credit-bearing internships that are required in various graduate degree programs as credit-bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.

Research Paper

This research paper/project is the culmination of the student's learning experience and clearly demonstrates in-depth knowledge of African studies issues in at least one academic discipline. The capstone must be an assignment submitted as part of coursework, such as a final term paper and must have received a B or above grade. The paper must be at least 7 to 10 pages long and contain a minimum of 10 references.

Graduation Presentation

The graduation presentation is an opportunity for students to reflect on the African Studies Certificate and how their years of study have culminated into enhancing their knowledge and understanding of Africa. The presentation contains 4 slides, where students are asked to reflect on their research paper, experiential learning, and growth in African Studies. They are asked to submit a 1-page reflection on their presentation. The ASP uses the presentation to evaluate the certificate program to examine if the students have enhanced their knowledge and understanding of Africa. Students can choose to do an online portfolio instead of the presentation and paper if they so wish.

12 Credits

Asian Studies Center

Contact Information

University of Pittsburgh
University Center for International Studies
Asian Studies Center
Jessica Sun, Undergraduate & Graduate Advisor and Assistant Director for Academic Affairs
4109 Wesley W. Posvar Hall
Pittsburgh, PA 15260
Phone: 412-648-7370
jhs141@pitt.edu

The Asian Studies Center at the University of Pittsburgh is widely recognized as being among the best and most comprehensive in the country in research, public service, and teaching about East Asia. The center aims to enhance the understanding of East Asia, South Asia, Southeast Asia, and the Pacific Islands through exceptional undergraduate and graduate academic programs, strong interdisciplinary faculty development, and energetic community outreach. ASC has nationally recognized programs in Chinese and Japanese language and culture studies, with growing strengths in Indian and Korean studies. Its affiliated faculty spans disciplines. More than 3,500 graduate and undergraduate students enroll each year in Asia-related courses. Undergraduate students from any field or school interested in Asia can supplement and strengthen their major field of study by enrolling in the Asian Studies certificate program.

The East Asian Library (EAL)

http://www.library.pitt.edu/east-asian-library

Located in Hillman Library, the EAL contains significant collections of books and periodicals in both the Chinese and Japanese languages, in addition to materials in English and other Western languages housed in the general collections. Those pursuing research on current topics concerned with Japan can make use of the Japan Information Center (JIC), which gives users direct access to a wide array of government documents, economic reports, and a wide range of data related to social and economic issues.

Financial Assistance

Asian Studies Certificate students may be eligible for various scholarships. For information, visit https://www.ucis.pitt.edu/asc/students/grad-funding.

Graduate Certificate

Advanced Asian Studies Certificate

U.S. and international doctoral students from any department may earn the Advanced Certificate in Asian Studies. The certificate combines language training and multidisciplinary area studies to foster communicative and cultural competence. Students pursuing the certificate wish to intensify their study of Asia, either because they would like to be able to use their knowledge of that critical part of the world in their careers after graduation, or because they recognize the importance of an understanding of Asian history, language, and culture for all well-informed people.

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Advanced Certificate Requirements

Students seeking the Certificate of Advanced Asian Studies must fulfill the following requirements:

- **A minimum of five upper-level courses or graduate seminars dealing with Asia, in at least two departments.** The five courses must include one seminar outside the student's major department. Courses for the certificate are allowed to count towards other credentials (i.e. majors, minors, certificates).
- In consultation with the academic advisor, students may fulfill these standards through one of the following options:

- Students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.
- Students who can add content courses without affecting their tuition bill will be encouraged to do so.
- Students who are exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for "additional work beyond the graduate degree."
- Language Proficiency Requirements

Demonstrate proficiency in reading and speaking an approved Asian language related to one of the student's countries or regions of interest. Proficiency is interpreted to mean at least three years of study or the equivalent and may be demonstrated by completing courses or by passing a special examination.

Capstone: Research Paper, Presentation, or Project

· Students must submit a significant research paper, project, or presentation to represent their work in Asian area studies. Papers must demonstrate engagement with issues, regional concerns, and/ or languages of Asia. They can be used to complete departmental requirements for a graduate
degree and the certificate, but it must include research using the student's approved Asian language. Students should consult with the advisor for Asian Studies about questions regarding the research paper, presentation, or project.

- **A research paper.** The student can fulfill this requirement by presenting either an interdisciplinary seminar paper or thesis (which draws upon more than one scholarly discipline). The paper can be used to complete departmental requirements for a graduate degree as well as for the certificate, but must include research using the student's approved Asian language.

- **GPA requirement** is 3.0 for all courses to be counted towards the Asian Studies Certificate.

Financial Assistance

Asian Studies Certificate Students are eligible for a variety of scholarships. For information visit http://www.ucis.pitt.edu/asc/students/grad-funding.

Asian Studies Certificate

U.S. and international students from any department may earn the Certificate in Asian Studies. The certificate combines language training and multidisciplinary area studies to foster communicative and cultural competence. Students pursuing the certificate wish to intensify their study of Asia, either because they would like to be able to use their knowledge of that critical part of the world in their careers after graduation, or because they recognize the importance of an understanding of Asian history, language, and culture for all well-informed people.

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Language Proficiency

Students must demonstrate language proficiency in an Asian language equivalent to two years of a college language or higher. This can be demonstrated through language courses at Pitt, the student's undergraduate transcript, transcripts from other reputable language programs, or language proficiency examination.

Content Courses

Students must complete four courses with significant Asian Studies content. At least one of these courses must be taken in a discipline outside the student's major.

Students exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for additional work beyond the graduate degree. Students may contextualize non-credit-bearing internships required in various graduate degree programs as credit-bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue these options.

Students who are exempt from the language requirement because of previous coursework or heritage language skills may use third-year or above (i.e., grammar, conversation, etc.) courses taught in the target language towards the content course requirements. Additionally, introductory courses in a second or third language (with a clear and stated relevance to their research or professional goals) will count.

Research Paper, Presentation, or Project

Students must submit a significant research paper, project, or presentation to represent their work in Asian area studies. Papers must demonstrate engagement with issues, regional concerns, and/ or languages of Asia. Students should consult with the advisor for Asian Studies about questions regarding the research paper, presentation, or project.

Alternatively, students may prepare a digital portfolio detailing courses and co-curricular experiences related to Asian studies and offering reflections on developing specific competencies associated with a detailed rubric.

12 Credits

Transnational Asia Advanced Certificate

U.S. and international doctoral students from any department may earn the Advanced Certificate in Transnational Asia. It will focus on the expansive mobility, connectivity, and communication between Asia and the world, and the impact of these relationships in fields such as economics, history, business, anthropology, political science, and public policy, among others. This graduate certificate program prepares students for international careers with a global or Asian focus. It also allows students with a strong linguistic background or working intensively on more than one Asian language to document their advanced skills in Asian languages and flows. Furthermore, it complements graduate programs in traditional academic disciplines, making certificate coursework more attainable and desirable for graduate students in professional programs.

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Course Requirements

An interdisciplinary understanding of transnational Asia can help build a sense of broad trends and ideas from many different perspectives. When students apply for an Advanced Certificate in Transnational Asia, they will work with the Asian Studies Center advisor to choose an appropriate theme. Students will, for their remaining semesters, take a minimum of five courses (15 credits) approved by the Asian Studies Academic Advisor to fit around the theme. Popular themes include: Asian Diaspora Studies (including Asian American Studies), Asian Public Health, Transnational Asian Popular Culture, Transnational Supply Chains, and many others. Thus, students seeking the Certificate of Advanced Transnational Asia must fulfill the following requirements:

A minimum of five upper-level courses or graduate seminars dealing with the mentioned theme, in at least two departments. The five courses must include one seminar outside the student's major department. Courses for the certificate are allowed to count towards other credentials (i.e. majors, minors, certificates).

Language Proficiency Requirements

Demonstrate proficiency in reading and speaking approved Asian language(s) related to the chosen theme. Students must complete one of the two language tracks to earn the Advanced Transnational Asia Certificate:

Track A: Proficiency in an Asian Language equivalent to three years of college courses, relevant to the certificate theme. This can be fulfilled by 6 semesters of college language courses or proficiency proven via examination.

Track B: Proficiency in an Asian Language equivalent to two years of college courses and proficiency equivalent to one year in a comparative language relevant to the certificate theme. This requirement can be fulfilled by coursework at the college level, university language management,
and/or proficiency proven via examination.

Capstone: Research Paper, Presentation, or Project

· Students must submit a significant research paper, project, or presentation to represent their work in the theme mentioned above in the previous section. Papers must demonstrate engagement with issues, regional concerns, and/ or languages of that theme. They can be used to complete departmental requirements for a graduate degree and the certificate, but it must include research using the student's approved Asian language. Students should consult with the advisor for Asian Studies about questions regarding the research paper, presentation, or project.

· GPA requirement is 3.0 for all courses to be counted towards the Asian Studies Certificate.

Financial Assistance

Asian Studies Certificate Students are eligible for various scholarships. For information, visit https://www.ucis.pitt.edu/asc/students/grad-funding

- EFOP 2106 - INTERNATIONAL AND GLOBAL EDUCATION
- EFOP 2355 - ADVANCED QUALITATIVE RESEARCH
- EFOP 3347 - INTERNATIONAL ORGANIZATION DEVELOPMENT EDUCATION
- ANTH 2541 - REGIONAL SETTLEMENT PATTERNS
- ANTH 2724 - THE ANTHROPOLOGY OF SCIENCE: GLOBAL PERSPECTIVES
- CHIN 2047 - CHINESE AND WESTERN POETRY
- CHIN 2059 - ADAPTED FOR THE SCREEN: CHINESE LITERATURE AND FILM
- CHIN 2084 - MASTERPIECES OF CHINESE LITERATURE: MODERN
- CHIN 2089 - THE WORLD OF CHINA
- EAS 2005 - APPROACHES TO EAST ASIA
- EAS 2702 - READING JAPANESE 2
- HAA 2612 - SPECIAL TOPICS-ASIAN
- HAA 2641 - MODERN AND CONTEMPORARY CHINESE ART
- HIST 2020 - INFORMATION ECOSYSTEMS: INTERDISCIPLINARY USES OF DIGITAL METHODS
- HIST 2043 - SOCIAL MOVEMENTS
- HIST 2400 - APPROACHES TO ASIAN HISTORY
- HIST 2737 - HISTORY FROM BELOW
- JPNSE 2035 - PRAGMATICS OF JAPANESE
- JPNSE 2057 - JAPANESE CULTURE AND SOCIETY THROUGH CINEMA
- JPNSE 2071 - THE WORLD OF JAPAN
- JPNSE 2080 - GHOSTS, MASKS AND ACTORS
- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY
- PIA 2308 - COVERT ACTION IN WORLD POLITICS
- PIA 2370 - TERRORISM AS AN INTELLIGENCE PROBLEM
- PIA 2424 - POLITICS ,DEVELOPMENT AND CONFLICT IN THE MIDDLE EAST
- PIA 2530 - GENDER EQUALITY AND THE UNITED NATIONS

Transnational Asia Graduate Certificate

The Transnational Asia certificate focuses on the expansive mobility, connectivity, and communication between Asia and the world, and the impact of these relationships in fields such as economics, history, business, anthropology, political science, and public policy, among others. This Transnational Asia graduate certificate program will help students prepare for international careers with a global or Asian focus. It complements graduate programs in traditional academic disciplines, making certificate coursework more attainable and desirable for graduate students in professional programs.

The interdisciplinary and transnational nature of the certificate encourages students to take courses in multiple departments and thus increases student exposure to departmental offerings outside of their majors and minors. Similarly, the policy and professional orientation encourage Dietrich School of Arts and Sciences students to explore graduate offerings in professional schools such as business, education, or SPIA, while increasing the visibility of UCIS programs for students in those schools.

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jhs141@pitt.edu

Required Courses

Language Proficiency

Students must demonstrate proficiency in an Asian language through several methods. This can be shown through a combination of language courses at Pitt, the student's undergraduate transcript, transcripts from other reputable language programs, or language proficiency examination. Students may complete one of the three language tracks to earn the Transnational Asia Certificate:

Track A: Proficiency in an Asian Language equivalent to two years of college courses, relevant to the certificate theme. This can be fulfilled by 4 semesters of college language courses or proficiency proven via examination.

Track B: Proficiency in an Asian Language equivalent to one year of college courses and proficiency equivalent to one year in a comparative language relevant to the certificate theme. This requirement can be fulfilled by coursework at the college level, university language management, previous college-level coursework, and/or proficiency proven via examination.

Track C: Proficiency in two different Asian languages, each equivalent to one year of college language courses.

Content Courses

An interdisciplinary understanding of transnational Asia can help build a sense of broad trends and ideas from many different perspectives. When students apply for a Transnational Asia Certificate, they will work with the Asian Studies Center advisor to choose an appropriate theme. Students will, for their remaining semesters, take a minimum of four courses (12 credits) approved by the Asian Studies Academic Advisor to fit around the theme. Popular themes include Asian Diaspora Studies (including Asian American Studies), Asian Public Health, Transnational Asian Popular Culture, Transnational Supply Chains, and many others.

Required courses for the Transnational Asia certificate may overlap with major requirements and study abroad courses. More specifically, students must take courses in at least two different departments, one of which (3 credits) should be outside the student's major.

Students exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for additional work beyond the graduate degree. Students may also contextualize non-credit-bearing internships required in various graduate degree programs as credit-bearing experiences toward the certificate program. Prior approval from the academic advisor must be received to pursue these alternate options.

Capstone: Research Paper, Presentation, or Project

Students must submit a significant research paper, project, or presentation to represent their work in the theme mentioned above in the previous section. Papers must demonstrate engagement with issues, regional concerns, and/ or languages of that theme. Students should consult with the advisor for Asian Studies about questions regarding the research paper, presentation, or project.

Alternatively, students may prepare a digital portfolio detailing courses and co-curricular experiences related to Asian studies and the theme. The portfolio provides an opportunity for reflection on developing specific competencies associated with a detailed rubric.

- EFOP 2106 - INTERNATIONAL AND GLOBAL EDUCATION
- EFOP 2355 - ADVANCED QUALITATIVE RESEARCH
- EFOP 3347 - INTERNATIONAL ORGANIZATION DEVELOPMENT EDUCATION
- ANTH 2541 - REGIONAL SETTLEMENT PATTERNS
- CHIN 2047 - CHINESE AND WESTERN POETRY
- CHIN 2089 - THE WORLD OF CHINA
- CHIN 2090 - GREAT MINDS OF CHINA
- EAS 2005 - APPROACHES TO EAST ASIA
- HAA 2612 - SPECIAL TOPICS-ASIAN
- HAA 2641 - MODERN AND CONTEMPORARY CHINESE ART
- HIST 2020 - INFORMATION ECOSYSTEMS: INTERDISCIPLINARY USES OF DIGITAL METHODS
- HIST 2043 - SOCIAL MOVEMENTS
- HIST 2805 - HISTORY OF SEXUALITY
- JPNSE 2035 - PRAGMATICS OF JAPANESE
- JPNSE 2058 - WESTERNS AND SAMURAI FILMS

- JPNSE 2080 - GHOSTS, MASKS AND ACTORS
- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2216 - ECONOMICS OF SOCIAL POLICY
- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY
- PIA 2370 - TERRORISM AS AN INTELLIGENCE PROBLEM

European Studies Center

Contact Information

Graduate Advisor: Dr. Allyson Delnore
European Studies Center
4215 Wesley W. Posvar Hall
412-624-5404
Fax: 412-648-2199
E-mail: adelnore@pitt.edu
http://www.ucis.pitt.edu/esc/

Since 1984, the European Studies Center formerly (ESC) has offered a strong curriculum on Europe by bringing together the rich assets of a major research university to create a unique learning community. The ESC has developed an international scholarly reputation in European Union studies and was selected by the European Commission to host one of only ten European Union Centers of Excellence in the United States.

Hillman Library at the University of Pittsburgh has been a depository library for EU publications since 1974. Dr. Phil Wilkin, the West European bibliographer, has developed the Archive of European Integration that provides a wide array of EU-related documents through the Web. Please visit http://aei.pitt.edu for details.

Financial Assistance

The ESC offers several possible scholarship opportunities to students in its certificate program. Please visit http://www.ucis.pitt.edu/euce/content/graduate-student-funding-opportunities for further details.

Graduate Certificate

Advanced European Union Studies Certificate

Graduate Advisor: Steve Lund
European Studies Center
4200 Wesley W. Posvar Hall
slund@pitt.edu

The Certificate of Advanced Study-European Union Studies enables students to complement a graduate or professional degree in any discipline (including the sciences) with an interdisciplinary set of courses related to the EU and proficiency in a relevant language. Students may enroll in the Certificate through the European Studies Center (ESC) or the Center for Russian and Eastern European Studies(REES).

Requirements:

Students seeking the Certificate of Advanced Study-European Union Studies must fulfill the following requirements:

- Complete **18 credits of EU studies courses** in at least two schools or disciplines, with at least nine credits from outside the student's home department or school. Six credits must be selected from the list of core courses. Courses must be approved by the ESC. Courses for the certificate are allowed to count towards other credentials (i.e. majors, minors, certificates).
- For the approved course list, click here.
- Write an **interdisciplinary research paper** of 15-25 pages that ideally entails the use of second language materials. The paper may be prepared for a course, but students are urged to conceptualize it with the certificate in mind.
- **Language proficiency**: Students must have three years of progressive college-level instruction in an official EU Member State or official EU candidate country language other than English, or the equivalent proficiency. Students for whom English is a second language may use English to meet the requirement.
- Participate in an EU-related cocurricular activity approved by the ESC's Graduate Advisor.
- Be awarded a graduate or professional degree.

Advanced West European Studies Certificate

Graduate Advisor: Steve Lund
European Studies Center
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http://www.ucis.pitt.edu/esc/

Certificate of Advanced Study

The Certificate of Advanced Study-West European Studies enables students to complement a graduate or professional degree in any discipline (including the sciences) with an interdisciplinary set of courses related to Western Europe and proficiency in a relevant language.

Requirements:

Students seeking the Certificate of Advanced Study-West European Studies must fulfill the following requirements:

- Complete **18 credits of West European Studies courses** in at least two schools or disciplines, with at least nine credits from outside the students home department or school. Distribution of these 18 credits is tailored to each academic program. Courses must be approved by the ESC. Courses for the certificate are allowed to count towards other credentials (i.e. majors, minors, certificates).
- Write an **interdisciplinary research paper** of 15-25 pages that ideally entails the use of second language materials. The paper may be prepared for a course, but students are urged to conceptualize it with the certificate in mind.
- **Language proficiency**: Students must have three years of progressive college-level instruction in a West European language other than English, or the equivalent proficiency. Students for whom English is a second language may use English to meet the requirement.
- Be awarded a graduate or professional degree.

European Union Studies Certificate

The University of Pittsburgh has long been a leader throughout the U.S. and the world in European Union Studies. Students interested in the politics, policies, or institutions of the EU, or in the history of and prospects for European integration can obtain a Pitt credential that signals to others a unique understanding of the EU and broad competence in international studies. The European Union Studies Certificate enables students to complement a graduate or professional degree in any discipline (including the sciences) with an interdisciplinary set of courses related to the EU or European integration, as well as proficiency in a relevant world language. The requirements for this certificate are tailored specifically to allow graduate students in 2- and 3-year Masters programs to complete the program without adding any additional time to degree completion.

Language Proficiency

Students must have two (2) years of progressive college-level instruction in an official EU Member State or official EU candidate country language other than English, or the equivalent proficiency. Students for whom English is a second language may use English to satisfy the requirement.

Content Courses

Students must complete 15 credits of EU studies related courses in at least two departments, with at least 3 credits of the course work in addition to the credits used to complete the student's major.

In consultation with the academic advisor, students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.

Students who are exempt from the language requirement because of previous coursework or heritage language skills may use third year or above (i.e. grammar, conversation, etc.) courses taught in the target language towards the content course requirements. Additionally, introductory courses in a second or third language (with a clear and stated relevance to their research or professional goals) will count.

Research Paper

Write an interdisciplinary research paper of 15-25 pages that ideally entails the use of second language materials. The paper may be prepared for a course, but students are urged to conceptualize it with the certificate in mind. Alternatively, students may choose to prepare a digital portfolio detailing courses and co-curricular experiences related to European Union studies and offering reflections on the development of specific competencies related to a detailed rubric.

15 Credits

Mediterranean Studies Advanced Certificate

The Advanced Certificate in Mediterranean Studies provides students with interests in Mediterranen history, culture, politics, and languages to complement their major with a regional specialization, and to explore the interconnectedness of North Africa, the Levant, Anatolia, Southern Europe, and the Balkans. The certificate is self-designed, and students may choose any theme to organize their studies and class choices. Examples of possible themes immigration, regional politics and security, ancient civilations, and Mediterranean arts and architecture.

Required Courses

- CLASS 2019 - GLOBAL ISSUES THROUGH CLASSICS 1
- FR 2761 - FRENCH STUDIES GENDER STUDIES
- GREEK 2220 - GREEK SEMINAR: PHILOSOPHERS
- HIST 2729 - SEAS, PEOPLES, AND EMPIRES
- PHIL 2070 - ANCIENT PHILOSOPHY
- THEA 2205 - WORLD THEATRE: 500 BCE TO 1640

Mediterranean Studies Certificate

The Certificate in Mediterranean Studies provides students with interests in Mediterranen history, culture, politics, and languages to complement their major with a regional specialization, and to explore the interconnectedness of North Africa, the Levant, Anatolia, Southern Europe, and the Balkans. The certificate is self-designed, and students may choose any theme to organize their studies and class choices. Examples of possible themes immigration, regional politics and security, ancient civilations, and Mediterranean arts and architecture.

Required Courses

- CLASS 2019 - GLOBAL ISSUES THROUGH CLASSICS 1
- FR 2761 - FRENCH STUDIES GENDER STUDIES
- GREEK 2220 - GREEK SEMINAR: PHILOSOPHERS
- HIST 2729 - SEAS, PEOPLES, AND EMPIRES
- PHIL 2070 - ANCIENT PHILOSOPHY
- THEA 2205 - WORLD THEATRE: 500 BCE TO 1640

Transatlantic Studies Advanced Certificate

The Transatlantic Studies Advanced Certificate lets students pursue a comparative study of Europe and the United States, as well as countries that touch the Atlantic. Primary areas of study include governance, policy and security issues in the context of the transatlantic relationship, the history of colonialism, humanities and culture, and the comparative study of various professional fields such as business and medicine.

Required Courses

- EFOP 3006 - SOCIAL CHANGE IN LOCAL AND GLOBAL CONTEXTS
- ANTH 2516 - CHIEFDOMS
- BACC 2466 - RISK MANAGEMENT AND COMPLIANCE ISSUES FACING INTERNATIONAL ORGANIZATIONS
- EDUC 2100 - EDUCATION AND SOCIETY
- FR 2765 - COMPARATIVE FRANCOPHONE CULTURE
- HAA 2025 - HISTORY AND ETHICS OF COLLECTING
- HPS 2522 - SPECIAL TOPICS IN THE HISTORY OF SCIENCE
- LAW 2910 - LAWYERS IN AMERICAN SOCIETY
- LING 2235 - LANGUAGE, GENDER AND SEXUALITY
- MUSIC 2038 - MUSIC, CULTURE & TECHNOLOGY
- PIA 2327 - TERRORISM AND COUNTER TERRORISM
- PS 2312 - COMPARATIVE PARTIES AND ELECTIONS
- SOC 2035 - RACE & ETHNICITY
- SPAN 2410 - DISCOVERY AND CONQUEST
- THEA 2207 - WORLD THEATRE: 1890-PRESENT

Transatlantic Studies Certificate

The Transatlantic Studies Certificate lets students pursue a comparative study of Europe and the United States, as well as countries that touch the Atlantic. Primary areas of study include governance, policy and security issues in the context of the transatlantic relationship, the history of colonialism, humanities and culture, and the comparative study of various professional fields such as business and medicine.

Requirements

- EFOP 3006 - SOCIAL CHANGE IN LOCAL AND GLOBAL CONTEXTS
- ANTH 2516 - CHIEFDOMS
- BACC 2466 - RISK MANAGEMENT AND COMPLIANCE ISSUES FACING INTERNATIONAL ORGANIZATIONS
- EDUC 2100 - EDUCATION AND SOCIETY
- FR 2765 - COMPARATIVE FRANCOPHONE CULTURE
- HAA 2025 - HISTORY AND ETHICS OF COLLECTING
- HPS 2522 - SPECIAL TOPICS IN THE HISTORY OF SCIENCE
- LAW 2910 - LAWYERS IN AMERICAN SOCIETY

- LING 2235 - LANGUAGE, GENDER AND SEXUALITY
- MUSIC 2038 - MUSIC, CULTURE & TECHNOLOGY
- PIA 2327 - TERRORISM AND COUNTER TERRORISM
- PS 2312 - COMPARATIVE PARTIES AND ELECTIONS
- SOC 2035 - RACE & ETHNICITY
- SPAN 2410 - DISCOVERY AND CONQUEST
- THEA 2207 - WORLD THEATRE: 1890-PRESENT

West European Studies Certificate

The Certificate in Western European Studies provides students with strong interests in predominantly Western European history, culture, politics, and languages to complement their major with a regional specialization. The certificate is self-designed, and students may organize their courses around themes and countries relevant to their broader career and research interests. Students in 2- and 3-year graduate degree programs with only basic understanding of a relevant foreign language can complete the certificate with no additional time to degree or expense. Contact the advisor to get started as soon as possible.

Language Proficiency

Two years or equivalent proficiency of a relevant West European language. Students whose first language is English must choose a language other than English. Students for whom English is a second language can use English proficiency or coursework to meet this requirement. (English is unarguably a language of Western Europe, but the purpose of the certificate is to showcase foreign language proficiency, so it is not an appropriate choice for native English speakers.)

Content Courses

15 credit hours; 9 within the major; 6 interdisciplinary credits from two different departments outside of the major.

Students who are exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for unique credits in addition to the degree program.
Students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue theses options.

Research Paper

A 15-25 page research paper showing evidence of interdisciplinary and the use of foreign language sources and overseen by an Affiliated Faculty member of the European Studies Center in consultation with the graduate advisor of the European Studies Center. Alternatively, students may choose to complete an e-portfolio detailing courses and co-curricular experiences related to West European studies and offering reflections on development of specific competencies related to a detailed rubric. Students pursuing this second option are those likely to be considering careers outside of academia after graduation.

15 Credits

Global Studies Program

Contact Information

Graduate Advisor: Elaine Linn
Assistant Director for Global Studies
Global Studies Program

4101 Wesley W. Posvar Hall
412-648-2113
Fax: 412-624-4672
E-mail: global@pitt.edu
www.ucis.pitt.edu/global

The Global Studies Program provides students with a "global competence," the ability to communicate effectively across cultural and linguistic boundaries and to focus on issues that transcend cultures and continents. The global studies graduate certificate is a joint offering of the University Center for International Studies (UCIS) and the Graduate School of Public and International Affairs (GSPIA), and is open to all students enrolled in a graduate program at the University.

The Global Studies Program draws on the strengths of the Area Studies Centers within the University Center for International Studies and the departments and schools at the University of Pittsburgh. The Asian Studies Center, the Center for Latin American Studies, the Center for Russian and East European Studies, and the Center for West European Studies have been designated by the U.S. Department of Education as National Resource Centers. The University Library System possesses extensive holdings of books and journals to support research and study in these world areas.

Admission to Global Studies Program

Applications to the Global Studies Program may be submitted either at the same time as applications to the University or after the student has been admitted. In either case, students cannot be accepted until they have received notification of admission to the University of Pittsburgh.

Students holding a master's degree from an accredited institution may obtain the Graduate Certificate in Global Studies. They may apply directly to the program if they wish to enroll only for the graduate certificate.

Global Studies Faculty Affiliates

http://www.ucis.pitt.edu/global/affiliates

Graduate Certificate

Advanced Global Studies Certificate

University of Pittsburgh
University Center for International Studies
Global Studies Center
Elaine Linn, Assistant Director for Academic Affairs
4100 Wesley W. Posvar Hall
Pittsburgh, PA 15260
Phone: 412-648-2113
eel58@pitt.edu
http://www.ucis.pitt.edu/global/

Global Studies is an exciting - and evolving - interdisciplinary field. It is concerned with transnational structures, processes, and interactions, and how these affect social, economic, cultural, political, and ecological environments. Scholars of Global Studies understand and analyze how these structures, processes, and interactions both connect people and places and disrupt established norms, communities, institutions, and relationships. That is, they think globally about these processes.

Within the Global Studies Certificate, graduate students from the Dietrich School of Arts and Sciences can tailor a unique plan of interdisciplinary study within their field of interest drawn from more than 200 courses across 6 global concentrations. The certificate allows students to adopt a transnational lens that can inform their research projects, and to conduct research in one of 35 languages offered at Pitt.

Global Concentrations: To complete the certificate, student choose one of five global concentration/themes:

- **Cultural Dynamics**
- **Peace, Conflict, and Security**
- **Ecology and Sustainability**
- **Health and Well-Being**
- **Politics and Economy**

In addition to the certificate, the Global Studies Center offer numerous complementary programs and opportunities that support students' intellectual and personal development: research skills, career exploration and career readiness, experiential education and civic engagement, and a critical understanding of current events. The center offers tuition remission for students studying less commonly taught languages and internship positions.

Certificate Requirements

Six Global Thematic Courses (18 credits): After students select a global concentration, they choose from a comprehensive and dynamic list of courses ensuring three disciplines are represented to provide an interdisciplinary perspective on their chosen global concentration. Courses for the certificate are allowed to count towards other credentials (i.e., majors, minors, certificates).

- In consultation with the academic advisor, students may fulfill these standards through one of the following options:
- Students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.
- Students who can add content courses without affecting their tuition bill will be encouraged to do so.
- Students who are exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for additional work beyond the graduate degree.
- **Language Proficiency:** Building on Pitt's vast offering of over 30 languages, a minimum of three years of college-level study (six semesters) in a foreign language is required. Students can fulfill this requirement by passing a proficiency exam at the Intermediate mid proficiency level.

Global Studies Capstone Research Paper: This research paper is the culmination of a student's learning experience related to their global concentration. It demonstrates analytical skills within a transnational context. It must be written as part of a course and graded by a faculty member.

Global Studies Certificate

Global Studies Center
4100 Wesley W. Posvar Hall
Elaine Linn, Assistant Director for Academic Affairs
eel58@pitt.edu
www.ucis.pitt.edu/global

Global Studies is an exciting - and evolving - interdisciplinary field. It is concerned with transnational structures, processes, and interactions, and how these affect social, economic, cultural, political, and ecological environments. Scholars of Global Studies understand and analyze how these structures, processes, and interactions both connect people and places and disrupt established norms, communities, institutions, and relationships. That is, they think globally about these processes.

Within the Global Studies Certificate, graduate students from Pitt's professional schools can tailor a unique plan of interdisciplinary study within their field of interest drawn from more than 200 courses across 6 global concentrations. The certificate allows students to adopt a transnational lens that can inform their research projects, and to conduct research in one of 35 languages offered at Pitt.

Global Concentrations: To complete the certificate, student choose one of five global concentration/themes:

- **Cultural Dynamics**
- **Peace, Conflict, and Security**
- **Ecology and Sustainability**
- **Health and Well-Being**
- **Politics and Economy**

In addition to the certificate, the Global Studies Center offer numerous complementary programs and opportunities that support students' intellectual and personal development: research skills, career exploration and career readiness, experiential education and civic engagement, and a critical understanding of current events. The center offers scholarships for students studying less commonly taught languages.

Language Proficiency

Building on Pitt's vast offering of over 30 languages, a minimum of two years of college-level study (four semesters) in a foreign language is required. Students can fulfill this requirement by passing a proficiency exam at the intermediate-mid proficiancy level.

Content Courses

Four Global Thematic Courses (12 credits): After students select a global concentration, they choose from a comprehensive and dynamic list of courses ensuring three disciplines are represented to provide an interdisciplinary perspective on their chosen global concentration. Courses for the certificate are allowed to count towards other credentials (i.e. majors, minors, certificates).

Research Paper

Submission of a digital portfolio.

12 Credits

Center for Latin American Studies

Contact Information

University of Pittsburgh
University Center for International Studies
Center for Latin American Studies
Luis G. Van Fossen Bravo, Undergraduate Advisor
4202 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-7393
bravo@pitt.edu
www.ucis.pitt.edu/clas

The Center for Latin American Studies (CLAS), established in 1964, is internationally recognized for excellence in undergraduate, graduate, and professional education. In 1979 the U.S. Department of Education designated CLAS as a comprehensive National Resource Center (NRC) on Latin America-a distinction it has retained continuously to the present.

CLAS' programs cover the entire Latin American and Caribbean region. Two academic programs are especially noteworthy: The Latin American Archaeology Program, housed in the Department of Anthropology, involves research, training, and publications and emphasizes collaboration between North American and Latin American archaeologists. Fellowships and a bilingual publication series (funded by the Howard Heinz Endowment and The Andrew W. Mellon Foundation) further enhance this exceptional program. The Latin American Social and Public Policy Program draws on the impressive array of faculty and student expertise on Latin American policy issues available at the University of Pittsburgh. The program brings together researchers from different fields with the goal of contributing information of relevance to policy decisions facing Latin America. Social and Public Policy Fellowships are annually awarded to scholars interested in

studying various dimensions of social policy at the University of Pittsburgh. The Latin American Social and Public Policy Graduate Certificate is available to students in this more specialized program.

Admission to the Center for Latin American Studies

http://www.ucis.pitt.edu/clas/grad_admissions

Applications to the Center for Latin American Studies may be submitted either at the same time as applications to the University or after the student has been admitted. In either case, the center cannot accept students until they have received notification of admission to the University.

Latin American Library Collection

http://www.library.pitt.edu/eduardo-lozano-latin-american-collection

One of the major resources on Latin America available to students at the University of Pittsburgh is the Eduardo Lozano Latin American Library Collection. Its resources include exceptional collections on Bolivia and Cuba as well as extensive holdings on Argentina, Brazil, Ecuador, Guatemala, Mexico, Peru, and Venezuela.

Financial Assistance

Latin American Studies offers a variety of scholarships to students in its certificate programs. Please visit http://www.ucis.pitt.edu/clas/grad_funding for further details.

Graduate Certificate

Advanced Latin American Social & Public Policy Certificate

Ana Paula Carvalho, Undergraduate Advisor
4207 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-7396
apcst11@pitt.edu
Advising: www.ucis.pitt.edu/clas/advising
www.ucis.pitt.edu/clas

University of Pittsburgh
University Center for International Studies
Center for Latin American Studies

The **Advanced Graduate Certificate in Latin American Social and Public Policy** is a multidisciplinary program of study designed to train future leaders, public officials, and analysts capable of designing social and public programs that meet the needs of countries in Latin America and the Caribbean.

Engaging with Latin American Studies Scholars and Communities

Graduate students have numerous opportunities to engage with faculty, peers, and scholars locally, nationally, and internationally through lectures, colloquia, monthly discussions, cultural programs, community-engaged initiatives, and other events designed to foster intellectual exchange and professional development related to Latin American/Latinx, Caribbean, and diasporic studies.

Latin American/Latinx and/or Caribbean (including Caribbean diaspora) courses

a. Students are required to complete a minimum of **18 credits** in Latin American/Latinx and/or Caribbean content courses (including Caribbean diaspora studies) **taken from at least three different departments.**

b. Courses for this certificate are allowed to count towards other credentials (i.e., majors, minors, certificates).

c. There is no specific set of courses you are required to take. Any course with at least 25% of its content related to Latin America and the Caribbean may count toward our credentials.

Please review the list of pre-approved courses* here:

https://www.global.pitt.edu/clas/students/student-resources/course-list

*Note: If a course does not have a clear focus on Latin American/Latinx, and/or Caribbean (including diasporas) and is not included in our approved course list, it may still qualify through supplemental readings and a final paper focused on related regional or diasporic topics. To determine whether a course counts toward our certificate, please contact the CLAS academic advisor for approval *prior* to enrolling in the course using this link: https://www.global.pitt.edu/clas/students/student-resources/academic-advising

d. Students must earn a grade of at least C in courses counted toward the certificate. Courses taken through study abroad or transferred from another institution require a minimum grade of B.

Language Proficiency

a. Students will be required to take **3 years (six terms)** of college-level Spanish, Portuguese, Quechua, or Haitian Creole.

b. Students should contact the language departments listed below for information about language courses and placement tests. Placement tests may be used to demonstrate an equivalent level of language proficiency.

https://www.spanport.pitt.edu/

https://lctl.pitt.edu/languages/quechua

https://lctl.pitt.edu/languages/haitian-creole

Note: Students who are native speakers of one of the languages above may request a waiver from the CLAS Academic Advisor.

Research Paper

An interdisciplinary research paper of 15-25 pages that reflects the use of materials in a language used in the historical or contemporary Latin American, Caribbean and/or Diaspora (including Latinx). The paper could be prepared for a course that is counted toward the coursework requirement, but students are encouraged to conceptualize it with the certificate requirements in mind and to consult with the Center's Advisor while writing it. The paper will be evaluated by CLAS affiliated faculty member.

Students in the certificate are encouraged to meet once a semester with the CLAS academic advisor, Ana Paula Carvalho, to check on their progress.

18 Credits

Advanced Latin American Studies Certificate

Ana Paula Carvalho, Graduate Advisor
4207 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-7393
apcst11@pitt.edu
www.ucis.pitt.edu/clas

Center for Latin American Studies

University Center for International Studies

University of Pittsburgh

Requirements for Certificates

This tier has 3 components:

1. Latin American/Latinx and/or Caribbean (including Caribbean diaspora) courses

2. Language proficiency

3. Research Paper

1. Latin American/Latinx and/or Caribbean (including Caribbean diaspora) courses

a. Students are required to complete a minimum of **18 credits** in Latin American/Latinx and/or Caribbean content courses (including Caribbean diaspora studies) **taken from at least three different departments.**

b. Courses for this certificate are allowed to count towards other credentials (i.e., majors, minors, certificates).

c. There is no specific set of courses you are required to take. Any course with at least 25% of its content related to Latin America and the Caribbean may count toward our credentials.

Please review the list of pre-approved courses* here:

https://www.global.pitt.edu/clas/students/student-resources/course-list

*Note: If a course does not have a clear focus on Latin American/Latinx, and/or Caribbean (including diasporas) and is not included in our approved course list, it may still qualify through supplemental readings and a final paper focused on related regional or diasporic topics. To determine whether a course counts toward our certificate, please contact the CLAS academic advisor for approval *prior* to enrolling in the course using this link: https://www.global.pitt.edu/clas/students/student-resources/academic-advising

d. Students must earn a grade of at least C in courses counted toward the certificate. Courses taken through study abroad or transferred from another institution require a minimum grade of B.

2. Language proficiency

a. Students will be required to take **3 years (six terms)** of college-level Spanish, Portuguese, Quechua, or Haitian Creole.

b. Students should contact the language departments listed below for information about language courses and placement tests. Placement tests may be used to demonstrate an equivalent level of language proficiency.

https://www.spanport.pitt.edu/

https://lctl.pitt.edu/languages/quechua

https://lctl.pitt.edu/languages/haitian-creole

Note: Students who are native speakers of one of the languages above may request a waiver from the CLAS Academic Advisor.

3. Research Paper

An interdisciplinary research paper of 15-25 pages that reflects the use of materials in a language used in the historical or contemporary Latin American, Caribbean and/or Diaspora (including Latinx). The paper could be prepared for a course that is counted toward the coursework requirement, but students are encouraged to conceptualize it with the certificate requirements in mind and to consult with the Center's Advisor while writing it. The paper will be evaluated by CLAS affiliated faculty member.

Students in the certificate are encouraged to meet once a semester with the CLAS academic advisor, Ana Paula Carvalho, to check on their progress.

Latin American Social & Public Policy Certificate

Ana Paula Carvalho, Undergraduate Advisor
4207 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-7396
apcst11@pitt.edu
Advising: www.ucis.pitt.edu/clas/advising
www.ucis.pitt.edu/clas

Center for Latin American Studies
University Center for International Studies

University of Pittsburgh

The **Graduate Certificate in Latin American Social and Public Policy** is a multidisciplinary program of study designed to train future leaders, public officials, and analysts capable of designing social and public programs that meet the needs of countries in Latin America and the Caribbean.

Engaging with Latin American Studies Scholars and Communities

Graduate students have numerous opportunities to engage with faculty, peers, and scholars locally, nationally, and internationally through lectures, colloquia, monthly discussions, cultural programs, community-engaged initiatives, and other events designed to foster intellectual exchange and professional development related to Latin American/Latinx, Caribbean, and diasporic studies.

Content Courses

Latin American/Latinx and/or Caribbean (including Caribbean diaspora) courses

a. Students are required to complete a minimum of **12 credits** in Latin American/Latinx and/or Caribbean content courses (including Caribbean diaspora studies) **taken from at least three different departments.**

b. Courses for this certificate are allowed to count towards other credentials (i.e., majors, minors, certificates).

c. There is no specific set of courses you are required to take. Any course with at least 25% of its content related to Latin America and the Caribbean may count toward our credentials.

Please review the list of pre-approved courses* here:

https://www.global.pitt.edu/clas/students/student-resources/course-list

*Note: If a course does not have a clear focus on Latin American/Latinx, and/or Caribbean (including diasporas) and is not included in our approved course list, it may still qualify through supplemental readings and a final paper focused on related regional or diasporic topics. To determine whether a course counts toward our certificate, please contact the CLAS academic advisor for approval *prior* to enrolling in the course using this link: https://www.global.pitt.edu/clas/students/student-resources/academic-advising

d. Students must earn a grade of at least C in courses counted toward the certificate. Courses taken through study abroad or transferred from another institution require a minimum grade of B.

ENROLL IN THE CERTIFICATE

Language Proficiency

a. Students will be required to take **2 years (four terms)** of college-level Spanish, Portuguese, Quechua, or Haitian Creole.

b. Students should contact the language departments listed below for information about language courses and placement tests. Placement tests may be used to demonstrate an equivalent level of language proficiency.

https://www.spanport.pitt.edu/

https://lctl.pitt.edu/languages/quechua

https://lctl.pitt.edu/languages/haitian-creole

Note: Students who are native speakers of one of the languages above may request a waiver from the CLAS Academic Advisor.

Research Paper

An interdisciplinary research paper of 15-25 pages that reflects the use of materials in a language used in the historical or contemporary Latin American, Caribbean and/or Diaspora (including Latinx). The paper could be prepared for a course that is counted toward the coursework requirement, but students are encouraged to conceptualize it with the certificate requirements in mind and to consult with the Center's Advisor while writing it. The paper will be evaluated by CLAS affiliated faculty member.

Students in the certificate are encouraged to meet once a semester with the CLAS academic advisor, Ana Paula Carvalho, to check on their progress.

Latin American Studies Certificate

The Graduate Certificate in Latin American Studies is a multidisciplinary program of study designed for students who want to graduate with a credential that indicates a specialization on this region of the world in addition to their graduate degree. Students who complete this certificate will demonstrate advanced knowledge and a dimension of expertise on Latin America, Caribbean and Diaspora (such as Latinx Studies).

Engaging with Latin American Studies Scholars and Communities

Graduate students have numerous opportunities to engage with faculty, peers, and scholars locally, nationally, and internationally through lectures, colloquia, monthly discussions, cultural programs, community-engaged initiatives, and other events designed to foster intellectual exchange and professional development related to Latin American/Latinx, Caribbean, and diasporic studies.

Latin American/Latinx and/or Caribbean (including Caribbean diaspora) courses

a. Students are required to complete a minimum of **15 credits** in Latin American/Latinx and/or Caribbean content courses (including Caribbean diaspora studies) **taken from at least three different departments.**

b. Courses for this certificate are allowed to count towards other credentials (i.e., majors, minors, certificates).

c. There is no specific set of courses you are required to take. Any course with at least 25% of its content related to Latin America and the Caribbean may count toward our credentials.

Please review the list of pre-approved courses* here:

https://www.global.pitt.edu/clas/students/student-resources/course-list

*Note: If a course does not have a clear focus on Latin American/Latinx, and/or Caribbean (including diasporas) and is not included in our approved course list, it may still qualify through supplemental readings and a final paper focused on related regional or diasporic topics. To determine whether a course counts toward our certificate, please contact the CLAS academic advisor for approval *prior* to enrolling in the course using this link: https://www.global.pitt.edu/clas/students/student-resources/academic-advising

d. Students must earn a grade of at least C in courses counted toward the certificate. Courses taken through study abroad or transferred from another institution require a minimum grade of B.

Language Proficiency

a. Students will be required to take **2 years (four terms)** of college-level Spanish, Portuguese, Quechua, or Haitian Creole.

b. Students should contact the language departments listed below for information about language courses and placement tests. Placement tests may be used to demonstrate an equivalent level of language proficiency.

https://www.spanport.pitt.edu/

https://lctl.pitt.edu/languages/quechua

https://lctl.pitt.edu/languages/haitian-creole

Note: Students who are native speakers of one of the languages above may request a waiver from the CLAS Academic Advisor.

Research Paper

An interdisciplinary research paper of 15-25 pages that reflects the use of materials in a language used in the historical or contemporary Latin American, Caribbean and/or Diaspora (including Latinx). The paper could be prepared for a course that is counted toward the coursework requirement, but students are encouraged to conceptualize it with the certificate requirements in mind and to consult with the Center's Advisor while writing it. The paper will be evaluated by CLAS affiliated faculty member.

Students in the certificate are encouraged to meet once a semester with the CLAS academic advisor, Ana Paula Carvalho, to check on their progress.

15 Credits

Center for Russian and Eastern European Studies

Contact Information

Graduate Advisor: Andrew Behrendt
Associate Director
Center for Russian and Eastern European Studies
4402 Wesley W. Posvar Hall
Phone: 412-648-7403
aeb72@pitt.edu
www.ucis.pitt.edu/crees

Established in 1965, the Center for Russian and Eastern European Studies (REES) at the University of Pittsburgh is designated by the U.S. Department of Education for Title VI funding as a National Resource Center.

There are three broad focus areas for the research conducted by faculty and graduate student specialists in the REES program. They are (1) contemporary Russian, East European, and Eurasian cultures, (2) politics, economics, and societies of Russia, Eastern Europe, and Eurasia (3) foreign policy issues as they relate to the REES world area.

The Center for Russian and East European Studies offers graduate certificates in East European Studies, Russian Studies, or Soviet Studies to students who successfully combine second language expertise and multidisciplinary area-focused courses.

Admission Information

Application for admission to graduate study is made directly to the academic department or graduate/professional school of the student's choice. The applicant should include a statement requesting admission to the REES certificate program.

To enroll in one of the certificate programs, admitted students should make an appointment with the REES graduate advisor as soon as possible after their arrival at the University.

Financial Assistance

The Center for Russian and East European Studies offers scholarships to students in its certificate program. Please visit http://www.ucis.pitt.edu/main/scholarships for further details.

Graduate Certificate

Advanced Russian, East European, and Eurasian Studies Certificate

Contact Information
Center for Russian, Eastern European, and Eurasian Studies
4415 Wesley W. Posvar Hall
Phone: 412-648-7403
reesadv@pitt.edu
www.ucis.pitt.edu/crees

Overview

REEES is one of a select few National Resource Centers for Russian, East European, and Eurasian Studies funded by the US Department of Education. REEES has 72 affiliated faculty members and has programs with 14 Arts and Sciences departments and five professional schools. Our many areas of focus include subjects such as the transformations of post-communist societies, history, foreign policy and international relations, anthropology, music, film, and contemporary culture and literatures. Recognizing that regional boundaries are constantly contested and redefined, our geographic scope includes Russia, Ukraine, Belarus, the Baltic states, Central Asia and the Caucasus, the Western Balkans, Poland, Hungary, Slovakia, Czech Republic, Romania, Bulgaria, Moldova, Mongolia, and Turkey. REEES currently offers Certificates in Advanced East European Studies, Russian Studies, or Soviet Studies, which may be earned in conjunction with most masters and doctoral programs in the School of Arts and Sciences and a number of professional schools.

Requirements for REEES Certificates

The requirements for each of the REEES graduate certificates are as follows:

- Completion of **six approved Russian, East European, and Eurasian area studies courses**, including four courses from at least two departments other than the student's home department, for a total of 18 credits. Courses for the certificate are allowed to count towards other credentials (i.e. majors, minors, certificates).
- Demonstration of **language proficiency** equivalent to three years of college-level study in a language of the former Soviet Union (plus Mongolia) or Eastern Europe (including Turkish).
- Completion of a **research paper** of at least 15 pages in length, based substantially on primary sources in one or more languages of the REEES world area.
- Students must maintain a minimum GPA of 3.0 in REEES-related coursework.

Russian, East European & Eurasian Studies Certificate

The Graduate Certificate in Russian, East European, and Eurasian Studies (REEES) may be earned in conjunction with most master's and doctoral programs in the School of Arts and Sciences and a number of professional schools. In order to receive the Graduate Certificate in Advanced REEES, students must complete area studies coursework and demonstrate proficiency in a language spoken in Russia, East Europe, and/or Eurasia. REEES is one of a select few National Resource Centers for Russian, East European, and Eurasian Studies funded by the US Department of Education. Our many areas of focus include subjects such as the transformations of post-communist societies, history, foreign policy and international relations, anthropology, music, film, and contemporary culture and literature's. Recognizing that regional boundaries are constantly contested and redefined, our geographic scope includes but is not limited to Russia, Eastern and East Central Europe, the Baltic states, Central Asia, the Caucasus, the Balkans, and Turkey.

Language Proficiency

Demonstration of language proficiency equivalent to two years of college-level study in a language of the former Soviet Union (plus Mongolia) or Eastern Europe (including Turkish and Greek).

Content Courses

Completion of five approved Russian, East European, and Eurasian area studies courses, including four courses from at least two departments other than the student's home department, for a total of 15 credits. Courses for the certificate are allowed to count towards other credentials (i.e. majors, minors, certificates).

Digital Portfolio

Creation of a personal website to highlight the student's research, coursework, co-curricular activity, and other certificate-related accomplishments.

15 Credits

Special Academic Opportunities

Special academic opportunities provide students with ways to augment their education and experience with expanded study programs both on and off campus, in both university and professional settings.

Area of Concentration (subplans) and Minors (plans)

Some graduate programs may include approved areas of concentration or minors. Areas of concentration define and describe the student's training and expertise within the broader discipline. Minors represent significant course work completed in an area related to the student's specialty. A graduate minor offered by the faculty at the Pittsburgh campus is available to any graduate student enrolled in an academic degree program on the campus provided that the school from which the student is graduating recognizes this minor. See the Schools, Departments, and Programs section of this bulletin for available areas of concentration and minors.

Certificate Programs

Students may enrich their educational experience by electing to take an academic interdisciplinary certificate program in the areas listed at the start of the Schools, Departments, and Programs section of this bulletin.

A certificate program at the graduate level is a coherent set of courses and related work in a particular area. Most certificate programs require a minimum of 15 credits, of which 12 credits must be earned at the University of Pittsburgh. The certificate may appear on the transcript as a degree goal and will appear on the final transcript as an awarded certificate.

A student must be formally admitted into a certificate program. The requirements for each certificate vary and students should contact the certificate program director.

Cross-Registration

Carnegie Mellon University, Duquesne University, the Pittsburgh Theological Seminary, Robert Morris University, and the University of Pittsburgh offer graduate students the opportunity for cross-registration in graduate programs in the five institutions in the fall and spring terms. See Cross-Registration in the Registration section of this bulletin for further details.

Two Independent Degree Programs Simultaneously

Students may pursue two independent graduate degrees simultaneously in two different schools within the University (joint degree) or two different departments within the same school (dual degree). Students desiring to enroll in two degree programs must have approval from both program faculties and their respective deans, must be admitted into both programs, and must satisfy the degree requirements of both programs. Students are billed at the tuition rate of the primary academic program. Normally, such students should be enrolled for no more than a total of 15 credits per term.

The same examination, thesis, or dissertation cannot be used to fulfill requirements for two independent degrees, although a maximum of 6 credits of course work may be used in partial fulfillment of the requirements of both degrees. It is the responsibility of the dean or deans, if two schools are involved, to ensure that this regulation is enforced.

Cooperative, Dual-Degree, and Joint-Degree Programs

Dual- and joint-degree programs result in two degrees being awarded. Requirements for these programs include all or most of the requirements of two distinct academic degree programs. These programs may result in a student earning two separate master's degrees, a master's and a first-professional degree, or a master's or first-professional degree and a doctoral degree, but never result in a student earning

two separate doctoral degrees. Dual programs exist within a single school; joint programs exist between two or more schools; cooperative programs are administered by two or more institutions. The same course, examination, or thesis may be used to fulfill requirements only if so specified in the documents formally establishing the joint- or dual-degree program approved by the University.

Students must be admitted to both academic programs offering the dual or joint degrees being sought and must graduate from both degree programs at the same time. Students are advised to see the individual school for other specific requirements that apply.

Course Information

Please note, when searching courses by Catalog Number, an asterisk (*) can be used to return mass results. For instance a Catalog Number search of " 2 " can be entered, returning all 2000-level courses.*

Accounting

BUSACC 0030 - FINANCIAL ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3
Helps students become informed users of firms' external financial accounting reports. The basic structure and contents of such reports and the process by which they are prepared will be studied. Discussion will involve what items are included in financial accounting reports, how such items are measured, and how various economic events affect the reports. An understanding of what can be inferred from the reports about the past performance, present position, and future prospects of the firm will be developed.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: ECON 0100 or 0102 or 0103 or 0105 or 0110 or 0115; PROG: College of Business Administration

BUSACC 0040 - MANAGERIAL ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3
Introduces students to the basic terminology and concepts of cost accounting, including product costing, budgetary control, responsibility accounting, and the use of cost information in resource allocation and other managerial decisions. Textbook material and various applications in actual organizations are used to engage students in applying the concepts and methods that have been developed.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: BUSACC 0030 or BUSERV 1920 or CDACCT 6030 or MGMT 0022 or ACCT 0115 or ACCT 0201; PROG: College of Business Administration

Aero-Space Studies

AFROTC 1000 - AIR FORCE ROTC INDEPENDENT STUDY

Minimum Credits: 3
Maximum Credits: 3
This independent study course offers Air Force ROTC cadets the ability to complete pre-approved AFROTC coursework outside of the standard academic term or regularly scheduled class times. This option is designed for cadre-approved students pursuing early graduation or those participating in study abroad programs, and it ensures continued progress toward program requirements. Eligibility is limited to students currently enrolled in the AFROTC program and with cadre approval. Coursework and evaluation methods are determined at the discretion of cadre.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

Africana Studies

AFRCNA 0540 - SWAHILI 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to Kiswahili (Swahili), a language that unites a vibrant community of more than 200 million speakers across East and Central Africa and elsewhere around the world. In this proficiency-oriented course, students will explore the basic sound patterns of the language, its fundamental sentence patterns, and basic vocabulary, forming a solid foundation for speaking, listening, writing, and reading skills in Kiswahili. Emphasis is placed on communication and the cultural context within which Kiswahili is used. Classes are interactive and engaging, and emphasize the use of language as a tool for real-life communication skills. Students will be provided many opportunities to practice and use Kiswahili in meaningful contexts and to interact with authentic materials like music, movies, and print media. By the end of this course, students should be able to understand and use basic words, memorized phrases, and simple sentences, ask and answer simple yes/no questions and some simple information questions, and engage in simple, slow-paced conversations about topics regularly encountered in daily life.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

AFRCNA 2031 - CRITICAL AFRICANA PEDAGOGY

Minimum Credits: 3
Maximum Credits: 3
This seminar examines the arts of teaching and learning in Africana Studies. Students are introduced to Africana-centered pedagogical tools while also being exposed to resources from the University's Center for Teaching and Learning. In the process of learning the fundamentals of Africana pedagogy and being introduced to the pioneers of Africana pedagogy, students learn how to weave African and African diasporic politics, economics, history, philosophy, psychology, religion, literature, arts, music, and culture to create different Africana-centered syllabi.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

AFRCNA 2083 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Different sub-topics for individual sections will be denoted in notes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

AFRCNA 2230 - TRANSNATIONAL CONNECTIONS AFRICAN AMERICAN AND AFRO-LATINOS

Minimum Credits: 3
Maximum Credits: 3
The study of the African American and Afro-Latinos experience is organically related to studies of the wider African Diaspora and Global Africa, of which the past and present trajectories of African Americans and Afro-Latinos are an integral part. Over the years, some of the department's faculty and postdoctoral fellows have undertaken various projects that examine the navigation of diasporic landscapes of ethno-racial difference, social inequality, and struggles for the dignity of full humanity.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

AFRCNA 2309 - AFRICAN FEMINISMS, MOVEMENTS AND CONTENTIONS

Minimum Credits: 3
Maximum Credits: 3
The African Feminisms course is designed to introduce students to the strands African feminisms, their evolution, the debates and thoughts that shaped them and what they all embody. The course will explore both the intellectual and the movement dynamics that have shaped the

political project of African feminisms as a label that coalesce a multiplicity of ideas rooted in Africa's position shaped by imperialism colonialism, capitalism, religion, culture and patriarchy. In particular, the course will stimulate students to think beyond labels to identify individual and group actions that embody the feminist ethos of equality, equity, human rights sovereignty of the state and women's bodies among others. The course will deepen understanding of African feminisms through a contextualization of the emergence of the intellectual projects that characterized them and the movements that articulate the various strands. Through history and contemporality, the course will create the space for the discussion of contentions and contestations of African feminisms and how they push the boundaries for understanding feminism in general.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

AFRCNA 2340 - LITERARY PAN-AFRICANISM

Minimum Credits: 3
Maximum Credits: 3
At the intersection of history and literature, this course is a study of the phenomenon of Pan-Africanism, or global unity, cooperation, and mutual cultural and political kinship among people of African descent, as it appears in Africana literatures. Students will explore the three primary theoretical orientations to Literary Pan-Africanism, contextualize Pan-Africanism in tandem with related concepts of transnationalism and internationalism, and explore both fiction and nonfiction genres that represent Diasporan and African experiences of return, heritage travel, and multidirectional migration.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

AFRCNA 2345 - INEQUALITIES IN AFRICAN DIASPORA LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This course explores literary portrayals of inequalities in fiction by African American, Caribbean, and African women writers. Using contemporary novels, the course focuses particularly on inequalities associated with people's class position. Class has been at the center of a number of debates due to recent dramatic (and traumatic) fluctuations in global economic transactions. Using a range of critical perspectives, we will examine how women writers within the African Diaspora portray the impacts of class and its interconnections with matters such as employment, housing, and education. Students will conduct analyses of the cultural, historical, and theoretical contexts surrounding the literary works while also evaluating key literary features, such as voice, language, structure, and style, to better comprehend the depictions of characters' quest for self-fulfillment. The course uses a variety of pedagogical approaches.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

AFRCNA 2405 - MENTAL HEALTH IN THE BLACK COMMUNITY

Minimum Credits: 3
Maximum Credits: 3
This course explores the mental health of Black individuals from an Afrocentric perspective and worldview. We will examine how historical, social, and political factors have influenced their mental health, with a particular focus on the transatlantic slave trade, systemic racism, and decolonization. Our analysis will draw on empirical research, literature, historical records, and multimedia. We will also explore the intersection of race, culture, and mental health, further examining the impact of gender role socialization, cultural resilience and resistance, communal support, and systemic racism on mental wellness within the Black community. The course will cover current topics and modern practices.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

AFRCNA 2450 - AFRICANA CULTURAL MEMORY

Minimum Credits: 3
Maximum Credits: 3
In the academy, in both national and international contexts, cultural memory/ transcultural memory studies are orientations to memory from the perspectives of Holocaust, war, migration, trauma, and exile, but there are gaps in the scholarship that do not yet deliberately or coherently address the Africana experience. As a new contribution to intellectual discourse in the discipline of Africana Studies, this course corresponds to innovative, ground-breaking, and emergent ideas and scholarship on Africana Cultural Memory Studies as a sub-field of Africana Studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

AFRCNA 2728 - TRANSNATIONAL ISSUES IN AFRO-LATIN AMERICAN AND AFRO-LATINX STUDIES

Minimum Credits: 3
Maximum Credits: 3
This seminar course will address hemispheric themes in Afro-Latin American and Afro-Latinx Studies. These will include conceptual frameworks that center human agency alongside political and social constraints in the transnational processes of migration; community formation, linked issues including invisibility, representation, civil rights, and social and environmental justice; the intersectionality of race, gender, and ethnicity in identity adaptation, and the use of information, the arts, and technology/digital spaces to foster knowledge, understanding, and diasporic connectivity. Students will be encouraged to make connections with African American and/or other diasporic populations. Students will conduct research and present their findings and analysis in an array of formats, such as via a traditional research paper, an exhibition of select archival materials, a short documentary-style video, or a curriculum development project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

AFRCNA 2750 - AFRICANA STUDIES PROSEMINAR 1

Minimum Credits: 3
Maximum Credits: 3
This seminar is designed to familiarize graduate students with some of the key texts and debates in Africana Studies concerning the relationship between racial slavery, colonialism, and freedom movements in Africa and the African diaspora. Beginning with the Haitian Revolution, much of black freedom movements have advocated for group solidarity and cohesion in the face of often overwhelming conditions of servitude, enslavement and coercion within the political economy of slavery and the moral economy of white supremacy. Ideas and practices of freedom, however, articulated by political actors and intellectuals alike, have been as varied as the routes to freedom itself. As expressed by C.L.R. James, W.E.B. Dubois, Aime Cesaire, Frantz Fanon, and others' ideas and practices of liberty, equality, and citizenship within many African and Afro-descendant communities have revealed multiple, often competing forms of socio-political imagination. Students will engage these and other authors in an effort to understand and craft a genealogy of Africana thoughts and practices.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

AFRCNA 2850 - AFRICANA STUDIES PROSEMINAR II

Minimum Credits: 3
Maximum Credits: 3
As a result of migration processes, Black subjects have challenged and reconfigured local, global, and national identities. This seminar will introduce students to a range of theories about diaspora, transnational migration, and globalization from the perspective of Africana Studies. Students will explore how Africana methodology complicates these theories and paint a much more complex idea of what is understood as migrant communities, displaced communities, exiles, enclaves, ghettos, and refuge communities.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

AFRCNA 2860 - AFRICANA RESEARCH METHODS

Minimum Credits: 3
Maximum Credits: 3
This seminar explores how Africana scholars formulate their research questions and design their methodologies. It explains how they use a variety of methodological approaches for conducting research in Black communities worldwide and creating new ideas that contribute to the advancement of Africana Studies scholarship. Students will explore how humanities and the social sciences research methodologies complement the interdisciplinary characteristic of Africana Research Methods. Students will be exposed to a variety of award-winning manuscripts and research projects that followed an Africana-centered research methodology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

AFRCNA 2880 - COMPREHENSIVE RESEARCH PAPER

Minimum Credits: 3
Maximum Credits: 3
This course grants credit for supervised research on an approved comprehensive paper. Students may earn up to 3 credits in any term before or during final paper submission for the comprehensive requirement. Guidance should be provided by the student's committee chair or co-chair.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

AFRCNA 2881 - CANDIDACY EXAM HOURS PREP

Minimum Credits: 1
Maximum Credits: 9
This course provides credit for supervised research associated with preparation and completion of candidacy exams. Students can earn up to 9 credits, typically during the semester when they take their candidacy exam. Guidance is provided by the Candidacy chair, committee chair, or committee members.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

AFRCNA 2882 - DISSERTATION PROSPECTUS RESEARCH

Minimum Credits: 1
Maximum Credits: 12
This course supports students preparing their dissertation prospectus defense, with guidance provided by the dissertation chair or co-chair.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

AFRCNA 2883 - DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 12
Students work on a dissertation research project guided by their dissertation chair or co-chair.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad LG/SNC Basis

AFRCNA 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
Graduate students desiring to research or carry out a project in an area not normally available in a regular course or to study a subject not dealt with thoroughly in a seminar may take AFRCNA 2902 under the supervision of a faculty member. Students must see the Department of Africana Studies advisor for special permission.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

AFRCNA 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
Graduate students who are preparing for required exams, such as the comprehensive examination, or who want to pursue an independent program of study, research, or reading with a faculty member may register for AFRCNA 2990. Students must see the Department of Africana Studies for special permission
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

American Sign Language

ASL 2909 - SPECIAL TOPICS IN ASL

Minimum Credits: 3
Maximum Credits: 3
This course will be a topics course, meaning that the specific content of the course will change each time the course is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Anthropology

ANTH 1563 - PEOPLES OF THE NORTH: PAST AND PRESENT

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine key social, cultural, and technological developments that occurred in the far north. We will explore a range of case studies from early occupations of the north to later prehistoric and historic developments. We will critically examine the dynamic nature of the environment and ecology of the north and the creative ways that human societies have adapted to these challenging conditions. Case studies will include early hunter-gatherer-fisher lifeways across North America, mobility and colonization processes of the Vikings in Iceland and Greenland, ritual and monument construction of early farming communities in northern Europe, and early hunters and herders across Siberia and Mongolia. The final section of the course will focus on present day populations of the north and examine the ways in which geopolitical stresses, climate change, and territorial loss are impacting the lifeways of these populations and what strategies are being implemented to counter these dramatic changes.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis

ANTH 1737 - SPECIAL TOPICS IN CULTURAL ANTHROPOLOGY

Minimum Credits: 3
Maximum Credits: 3

This course will be on a topic in the area of specialization in cultural anthropology of a visiting scholar.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis

ANTH 2000 - RESEARCH AND THESIS MA DEGREE

Minimum Credits: 1
Maximum Credits: 9
This course involves directed research and writing oriented towards the completion of a master's thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

ANTH 2001 - NAVIGATING THE DISCIPLINE

Minimum Credits: 1
Maximum Credits: 1
This is the first part of a two-course sequence (one credit per term) required of all first-year anthropology graduate students. In the fall term, students will learn how to navigate the first years of the graduate program at Pitt, get to know the faculty and each other, begin discussing research interests and practicing presentation skills, learn some of the ins and outs of grants and publishing, and consider possible professional trajectories after the Ph.D.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2002 - ANTHROPOLOGICAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This is the second part of a two-course sequence (one credit per term) required of all first-year anthropology graduate students. In the fall term, students will learn how to navigate the first years of the graduate program at Pitt, get to know the faculty and each other, begin discussing research interests and practicing presentation skills, learn some of the ins and outs of grants and publishing, and consider possible professional trajectories after the Ph.D.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2490 - LINGUISTICS ANTHROPOLOGY CORE COURSE

Minimum Credits: 4
Maximum Credits: 4
This course approaches language as a practice through which social relations, cultural models, and consciousness are constituted. Specific topics include: approaches to signs and significance; linguistic relativity (relationships between habits of speech, thought, and action); analysis of conversation and interaction; relationships between meaning and intention; models of variation and change; linguistic dimensions of cultural stereotypes; and the means by which languages, styles, and other aspects of cultural patterning, can be mapped onto populations. Throughout the course we pay particular attention to how tools from linguistic and semiotic anthropology can be applied to the study of topics other than language ' as a framework for ethnography, for textual research, and for the study of material culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

ANTH 2491 - LINGUISTICS ANTHROPOLOGY CORE COURSE

Minimum Credits: 3
Maximum Credits: 3
This course approaches language as a practice through which social relations, cultural models, and consciousness are constituted. Specific topics include: approaches to signs and significance; linguistic relativity (relationships between habits of speech, thought, and action); analysis of conversation and interaction; relationships between meaning and intention; models of variation and change; linguistic dimensions of cultural stereotypes; and the means by which languages, styles, and other aspects of cultural patterning, can be mapped onto populations. Throughout the course we pay particular attention to how tools from linguistic and semiotic anthropology can be applied to the study of topics other than language ' as a framework for ethnography, for textual research, and for the study of material culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2501 - ARCHAEOBOTANY LAB METHODS: PLANTS, PEOPLE, & PLACES

Minimum Credits: 3
Maximum Credits: 3
This class introduces you to the objectives, methodologies, and applications of archaeobotany and provides you with hands-on experience working with plant remains found in archaeological sites. Archaeobotanists study plant remains to understand how ancient people interacted with their surroundings, sustained themselves, and used food to express social and political relationships. This course is designed as a practical laboratory experience, where each week, you will participate in seminars and laboratory sessions to develop the necessary skills for independent archaeobotanical research. We will analyze macrobotanical remains such as seeds, nuts, wood, and other tissues, which are often visible under low-powered microscopes. Students will learn basic identification skills, create a comparative collection, and analyze archaeobotanical samples from an archaeological site. In addition to sorting the samples, we will analyze the data, prepare interpretive reports, and discuss the results of our analyses.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad LG/SNC Basis

ANTH 2510 - LITHIC ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
For roughly 3 million years before the use of metals, human populations relied on making and using stone tools to survive-and thrive- in environments all over the world. Stone tools both compose a huge percentage of the archaeological record and serve as a direct reflection of human activities, making their analysis fundamental to studying the past. This course engages students with the practical and statistical methodologies and approaches archaeologists use to identify stone tools and to extract behavioral information from them. We will examine knapping mechanics, raw material economy, mobility, technological strategies, tool use, and discard behavior. Students learn how to identify the stone tools that characterize major prehistoric periods and discuss controversies about stone tools' role in human evolution, behavioral complexity, origins of agriculture, and craft specialization. By combining hands-on replication experiments, lab analysis, methods coursework on quantitative and qualitative statistical analyses, and discussion, students will learn everything necessary to carry out stone tool analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2513 - SELECTED ARCHEOLOGICAL PROBLEM

Minimum Credits: 3
Maximum Credits: 3
Examines current topics and controversies in anthropological archaeology. Special problem areas vary from year to year.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

ANTH 2516 - CHIEFDOMS

Minimum Credits: 3
Maximum Credits: 3
Chiefdoms are defined more by what they are not than by what they are: societies whose hierarchical organization makes them non-egalitarian, but that lack the bureaucratic institutions of the state. Seen as stepping stones in the evolution of states or as part of another evolutionary trajectory entirely, chiefdoms are the subject of debate, including just in what sense, or even whether, the word "chiefdom" has any utility. This seminar discusses how chiefdoms can be investigated and understood archeologically, using materials from all the Americas, Polynesia, Europe, and other areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies, Global Studies, Latin American Studies

ANTH 2517 - ARCHEOLOGICAL METHOD AND THEORY

Minimum Credits: 3
Maximum Credits: 3
This course surveys contemporary method and theory in anthropological archeology. It begins with varieties of high level theoretical approaches to a study of prehistory, including cultural historical, cultural evolutionary, cultural ecological systems-oriented, Marxist and post-Procession Archaeologies. It covers several methodological problems; construction of research designs, uses of analogy, style, classification and site level or regional level spatial analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2518 - INTRODUCTION TO ANTHROPOLOGY OF WATER (IN)SECURITY

Minimum Credits: 3
Maximum Credits: 3
Water is essential to life, yet billions worldwide experience water insecurity. This course is concerned with the cultural, political, and biological dimensions of water scarcity, access, and (in)justice. The goal of this course is to introduce students to the many ways that water insecurity impacts humans around the world. We will explore why there is such a variety in water insecurity worldwide and the influences on access to water. We will discuss what the international recommendations for safely managed water are and the social consequences of water insecurity. Using ethnographic case studies, selected interdisciplinary readings, and documentaries, students will learn how communities around the world understand, manage, and struggle over water through topics including, but not limited to, health, gender and inequality, governance and infrastructure, climate, and Indigenous perspectives of water as a living being. Learning Objectives and Outcomes By the end of the semester, students will be able to: * Define key concepts such as water insecurity, water justice, and political ecology. * Analyze how cultural, political, and environmental factors shape experiences of water insecurity. * Connect water to broader anthropological themes such as identity, inequality, colonialism, climate change, and governance. * Evaluate interventions and policies addressing water insecurity * Communicate anthropological insights about water insecurity to public audiences. * develop critical thinking and writing abilities to reflect on the multi-dimensional causes and consequences of water insecurity and the appropriateness of potential solutions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ANTH 2524 - ARCHELOGICAL DATA RECOVERY AND ANALSIS 2

Minimum Credits: 4
Maximum Credits: 4
Advanced analysis of archeological data, primarily quantitative. This course carries on where ANTH 1534 leaves off. Topics include sampling, design of variable sets, advanced database management, computer graphics (plotting, contouring, fishnet surfaces), multivariate statistics (factor analysis, cluster analysis, multi-dimensional scaling), and analysis of spatial distributions (nearest neighbor, clustering, and graphical approaches).

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2531 - HOUSEHOLD ARCHAEOLOGY

Minimum Credits: 3
Maximum Credits: 3
This seminar will explore the role of the household as an important analytical unit in anthropological archaeology. Topics to be addressed include: archaeological definition of residential units, modeling the evolution of domestic life, analysis of spatial patterns at the household level, and proxemic and symbolic approaches to the prehistoric dwelling. The seminar will also consider the relationship between households and larger societal structures and the cross-cultural compositional and dynamic characteristics of households will be examined.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, Latin American Studies

ANTH 2532 - ADVANCED TOPICS IN GIS: ANALYSIS OF REGIONS AND RESOURCES

Minimum Credits: 3
Maximum Credits: 3
A brief introduction to GIS techniques in the context of archaeological analysis. The focus will be on how to accomplish analytical tasks of proven utility in archaeology, using autocad map when a vector-based program is most useful and Idris when a raster-based is better. The course is designed to complement ant 2541: regional settlement patterns, although the GIS techniques dealt with are applicable to other scales of analysis as well.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2533 - ANCIENT STATES IN THE NEW WORLD

Minimum Credits: 3
Maximum Credits: 3
Drawing on the fact that the ancient new world was a dazzling treasure house of non-Western political thought and organization, this course uses archaeology and ethnohistory to document and make comparative sense of the rich variety of political arrangements which existed among pre-Hispanic states in MesoAmerica and Andean South America. A special aim is to understand how Amer-Indian concepts about state craft and rulership mesh with anthropological and other theories about ancient states.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2534 - ARCHEOLOGICAL DATA ANALYSIS 1

Minimum Credits: 4
Maximum Credits: 4
An introduction to quantitative data analysis in archeology, this course covers basic principles of statistics, including exploratory analysis of batches, sampling, significance, t tests, analysis of variance, regression, chi-square, and estimating universe means and proportions from samples. The approach is practical, concentrating on understanding these principles so as to put them to work effectively in analyzing archeological data. Much of the statistical work is done by computer.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2536 - SPECIAL TOPICS IN COMPARATIVE ARCHEOLOGY PART 1

Minimum Credits: 1
Maximum Credits: 1
A research seminar in comparative archaeology led by a regular faculty member in anthropology and the visiting scholar in the center for comparative archaeology. The topic changes from year to year depending on the expertise of the visiting scholar. Meets about five times during the fall term, and is concluded during the spring term in ANTH 2537: special topics in comparative archaeology ii. In order to receive credit students must complete both parts of the seminar (I and II).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2537 - SPECIAL TOPICS IN COMPARATIVE ARCHEOLOGY PART 2

Minimum Credits: 2
Maximum Credits: 2
A research seminar in comparative archaeology led by a regular faculty member in anthropology and the visiting scholar in the center for comparative archaeology. The topic changes from year to year depending on the expertise of the visiting scholar. Meets about five times during the spring term, and is the conclusion of ANTH 2536: special topics in comparative archaeology i offered during the preceding fall term. In order to receive credit students must complete both parts of the seminar I and II).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2539 - BASIC ARCHAEOLOGICAL LABORATORY METHODS

Minimum Credits: 3
Maximum Credits: 3
In this course we focus on learning basic laboratory techniques in archaeology. Field techniques are the primary means by which archaeologists acquire data. Laboratory techniques consist of methods for the coding and analysis of data. We will not emphasize statistical techniques, but rather practical experience in basic methods for the analysis of lithic, ceramic, and other archaeological materials. We will also place especial emphasis on research design, synthesis of data, and interpretation of results. In much of the course, you will work with actual archaeological material from various prehistoric sources.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2541 - REGIONAL SETTLEMENT PATTERNS

Minimum Credits: 3
Maximum Credits: 3
This seminar will take up both theoretical and methodological aspects of regional settlement pattern studies in archeology. Appropriate objectives for settlement patterns will be discussed. Advantages and disadvantages of different field and analytic methodologies in terms of their effectiveness in achieving clearly defined goals will be explored. This exploration will be pursued primarily through critical examination and reanalysis of data from primary reports of regional settlement patterns studies from different parts of the world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, Latin American Studies

ANTH 2550 - ETHNOARCHAEOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will focus on issues in ethnoarchaeology and archaeological implications. Some of these issues have to do with theory and the role of analogy in understanding the past. Others concern how we can use material remains to make inferences about social groups including kinship, organization, ethnicity, work groups, etc.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

ANTH 2551 - PEOPLES IN CONTACT

Minimum Credits: 3
Maximum Credits: 3
This course examines patterns of cultural, economic, biological, and linguistic exchange and interaction through major historic and pre-historic population migrations. We aim to assess how interactions between diverse communities at a micro-scale shape broader population movements. Multidisciplinary data sets are employed to detect and discuss evidence for the emergence of new group identities and strategies in contact and frontier zones. We discuss the long-term archaeological and anthropological implications for these instances of "ethnogenesis" and challenge traditional unilinear models for tracing and understanding migrations in the human past.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

ANTH 2553 - ARCHAEOLOGICAL CERAMICS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide you with a broad introduction to archaeological ceramics. We will cover a number of topics during the course so that you will be conversant in the archaeological literature on pottery and will have a greater understanding of the types of research problems that are most readily investigated through the analysis of archaeological ceramics. You will also gain experience in handbuilding pottery vessels so you have an understanding of pottery from the perspective of the potter and will know how the limitations and possibilities within this medium affect both the manufacture and processes used in creating pottery. We also discuss a variety of archaeological analyses of pottery. Readings drawn from archaeological, ethnoarchaeological, and material culture literature are an important component of this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2555 - WORKSHOP IN PUBLISHING

Minimum Credits: 2
Maximum Credits: 2
This one-credit graduate course is intended as a workshop for refining papers for publication as journal articles or edited book chapters. The course is intended for relatively advanced graduate students who have a good idea at the outset of what they plan to publish and have the support of their advisor in this plan. We will go through the process of identifying suitable publication venues, revising drafts and figures for publication, and understanding what to expect from the peer-review process. Because the class involves substantial peer feedback, students are asked to commit to supporting their fellow students' revision process as well as devoting time to their own. The aim is for every student to submit a paper for publication by the end of the semester.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2556 - ZOOARCHAEOLOGY

Minimum Credits: 4
Maximum Credits: 4
Animal remains are often some of the most frequently encountered material remains recovered from archaeological sites and therefore provide crucial information relating to subsistence strategies, animal husbandry patterns, paleoenvironments and a wide range of other human behaviors. This course provides an introduction to the main elements of Zooarchaeology research and will focus on the recovery,

identification and contextual analysis of animal remains. The course will provide both laboratory training as well as seminar discussions in order to evaluate the significance of Zooarchaeology within archaeological research. Participants will therefore have the opportunity to gain practical laboratory skills in identification and analysis and to learn how this information can be applied to the study of complex societies in both the Old and New World.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

ANTH 2563 - PEOPLES OF THE NORTH: PAST AND PRESENT

Minimum Credits: 3
Maximum Credits: 3
This seminar and writing intensive course will examine key social, cultural, and technological developments that occurred in the far north. We will explore a range of case studies from early occupations of the north to later prehistoric and historic developments. We will critically examine the dynamic nature of the environment and ecology of the north and the creative ways that human societies have adapted to these challenging conditions. Case studies will include early hunter-gatherer-fisher lifeways across North America, mobility and colonization processes of the Vikings in Iceland and Greenland, ritual and monument construction of early farming communities in northern Europe, and early hunters and herders across Siberia and Mongolia. The final section of the course will focus on present day populations of the north and examine the ways in which geopolitical stresses, climate change, and territorial loss are impacting the lifeways of these populations and what strategies are being implemented to counter these dramatic changes.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2565 - ARCHAEOLOGY OF FOODWAYS

Minimum Credits: 3
Maximum Credits: 3
What counts as food? Food is a universal requirement for humans to survive. Although universal, different cultures across the globe have developed cuisines that are diverse in forms, tastes, and meanings. Beyond production and sustenance, the acts of cooking, eating, and drinking bind people together through symbolism, shared experiences, and status. Through both inclusionary and exclusionary strategies, food and drink serve to define identity, strengthen social bonds, and enact memory. In this course, we will learn about the origins of cooking over 1 million years ago, the 'real' Paleodiet, how early states used beer to cement social alliances, and how Columbus's discovery of the Americas spurred global-scale shifts in food and agriculture. The course begins with an overview of how anthropologists and archaeologists study food and then moves through time, beginning with our early hominid ancestors and ending with colonialism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2575 - UNRAVELING THE ANTHROPOCENE

Minimum Credits: 3
Maximum Credits: 3
Our current moment in planetary history is one in which Earth's environmental systems are dominated by humans. Scientific consensus is that this period - called the Anthropocene - can (and should) be distinguished from what went before and what will come after. Still debated, however, are questions about the timing, nature, and outcomes of the Anthropocene. This course offers a critical introduction the Anthropocene, and explores the ways that archaeology offers insights into interactions between human societies and their environments. We will cover the underlying theoretical issues, survey the methodologies employed, and critically examine cross-cultural narratives about past human-environment interactions that archaeologists produce. Drawing on these conceptual tools, we will examine debates about the origins and antiquity of the Anthropocene, its identification in the archaeological record, and the uses of the concept by in the present. Finally, we will use our discussions about the Anthropocene to answer important question facing humanity today: How sustainable are the current ecologies of this planet? What kinds of changes can we expect in our own lifetimes?
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2587 - ARCHAEOLOGY CORE COURSE

Minimum Credits: 3
Maximum Credits: 3
A broad introduction to current archaeological thinking on cultural evolution, focusing on early hunters and gatherers, the rise of agriculture and settled village life, the growth of complex societies, and the development of cities. Examines the recent intellectual controversies surrounding these topics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2603 - HUMAN SKELETAL ANALYSIS

Minimum Credits: 4
Maximum Credits: 4
Make no bones about it--the human skeleton provides a range of information about the individual, such as their biological sex, activity level and health. The extraction of this information rests on the identification of each skeletal element. This methods course traces the development and growth of the human skeleton until it is fully mature. Participants will learn how to: identify complete and fragmentary adult bones; identify complete nonadult bones; and distinguish between animal and human bones. Additional topics may include normal and abnormal variation; the identification of muscle insertion sites and their implications for physical activity; the effect of disease on bone and the methods used to estimate the individual's profile (age at death, biological sex, stature and ancestry). This course is essential for students considering anthropological careers in forensic anthropology, bioarchaeology and paleontology, as well as students pursuing careers in health sciences, biomechanics and biology. The course features lectures and required lab time with written and practical exams.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

ANTH 2603 - THE HUMAN SKELETON

Minimum Credits: 4
Maximum Credits: 4
The human skeleton provides a range of information about individuals, such as their lived experiences, activity level, and health. The extraction of this information rests on the understanding of the dynamic biology of bone and its many functions, and the identification of skeletal elements and fragments. This course in human osteology includes lecture and lab components to facilitate student understanding of bone biology and morphology. Real and cast bone is used in the lab. In this course, participants learn: bone biology and histomorphology - cellular and macro levels; the function of bone; processes of bone and dental development, growth, and senescence; and the basics of bone biomechanics. Students also learn how to identify complete bones and teeth and their distinguishing features and landmarks. Students apply knowledge of complete adult bones to identify bone fragments and child bones. This course is foundational for students considering anthropological careers in forensic anthropology, bioarchaeology, paleontology and paleopathology, as well as students pursuing careers in health sciences, medicine, biomechanics and biology.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

ANTH 2612 - EVOLUTIONARY THEORY 1: A HISTORY OF ALTERNATIVE IDEAS 18TH CENTURY UNTIL THE SYNTHESIS

Minimum Credits: 3
Maximum Credits: 3
This course will be an in-depth survey of the historical development of evolutionary thought, with emphasis on the alternatives to theories that became incorporated into the grand evolutionary synthesis and those alternatives that have emerged since. Students will read and annotate original works in comparative anatomy, embryology, paleontology, genetics and lead class discussion based on this literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2617 - PALEOPATHOLOGY

Minimum Credits: 3
Maximum Credits: 3
Paleopathology is the study of disease and its process among ancient peoples using primary evidence from Human Skeletal remains. Additional lines of inquiry draw on archaeological, ethnographical, clinical and documentary sources to aid in our interpretation. In this course you will learn how to recognize abnormal bone, differentiate between disease processes, describe abnormal bone changes, evaluate recording methods and investigate the epidemiological history of various disease processes. The impact of disease upon the individual and ancient societies will be considered throughout the course and in student research. The combined lecture, seminar and laboratory format provides a comprehensive foundation of skeletal pathology, experience with recording methods and an understanding of the relationship between disease, environment, the individual and their community.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2619 - ADVANCED SKELETAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course provides the student with an in-depth understanding of the skeletal features used to develop the osteobiographic profile (e.g., Age, sex, stature, ancestry, handedness, etc.) Of an individual. This analysis is essential for forensic identification and forms the foundation for the reconstruction of ancient individuals and their life-ways. Each student will select some aspect of skeletal analysis and present an overview of the bone biology, the history of the analytical methods, the problems and advantages of each method, modifications that others have made to address these issues, and the current state of knowledge. In the past, some students have proposed new methods of analysis. This will be complemented by a lab exercise designed by the student that will provide data for interobserver analysis of various techniques. The results of this lab will be presented as posters which will be posted on CW at the end of the term. Prior osteological experience is required.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2620 - SPECIAL TOPICS IN PHYSICAL ANTHROPOLOGY

Minimum Credits: 3
Maximum Credits: 3
Examines current topics and controversies in physical anthropology. Special problem areas vary from year to year.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2620 - SPECIAL TOPICS IN PHYSICAL ANTHROPOLOGY

Minimum Credits: 3
Maximum Credits: 3
Examines current topics and controversies in physical anthropology. Special problem areas vary from year to year.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2625 - BIOARCHAEOLOGY

Minimum Credits: 3
Maximum Credits: 3
The human skeleton provides the most direct and unchallenged evidence for an individual's past behavior as the skeleton is plastic in its

response to stress, much the same as a society responds to social and environmental stress. While the artifacts, architecture and features recovered from an excavation leave a cultural imprint on the landscape, so too does culture and behavior leave an impression on the deceased. The individual is not just a biological shell to be cleaved from its cultural context, but rather forms a social package contingent upon culture during life and in death. We will examine social change and behavior from the perspective of the deceased within geographically diverse funerary contexts. We will evaluate factors that may influence the funerary context, such as differential burial practices and preservation. We will examine traditional labels to explore the topics of gender, biological vs. chronological age, and life course thresholds. Lectures will be supplemented with a practical component as well as writing exercises.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ANTH 2626 - WOMB TO TOMB

Minimum Credits: 3
Maximum Credits: 3
This course will address basic theories and principles pertaining to the human lifecycle from both a biological and cultural point of view. It will also discuss evolutionary changes in human growth patterns and assess environmental and genetic influences on human populations both past and present.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ANTH 2630 - PHYSICAL ANTHROPOLOGY RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The student conducts independent research developed in consultation with, and carried out under the supervision of, a faculty member in biological anthropology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ANTH 2688 - BIOLOGICAL ANTHROPOLOGY CORE COURSE

Minimum Credits: 3
Maximum Credits: 3
This course presents an integrated view of the diverse topics that biological anthropology encompasses. Emphasis is placed on how evolutionary, genetic and developmental processes shape human biology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2715 - DIMENSIONS OF AGING: CULTURE AND HEALTH

Minimum Credits: 2
Maximum Credits: 2
Provides an overview of the aging experience from a cross cultural and a public health perspective. The ways in which people cope with and adapt to the aging process is the major theme.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies, Global Studies

ANTH 2720 - POETICS AND POLITICS OF ETHNOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
The 1980s was described as "an experimental moment" in the human sciences and as a time of "crisis of representation" when anthropology has taken a literary, experimental, reflexive, modern, late-modern, postmodern, textualist turn. This seminar examines this experimental moment, its history and anthropological precursors, the critiques that have followed, and the suggestions for the future of ethnography and anthropological writing that have ensued. Readings include a number of recent experimental ethnographies as well as a sample of older "classics".
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2724 - THE ANTHROPOLOGY OF SCIENCE: GLOBAL PERSPECTIVES

Minimum Credits: 3
Maximum Credits: 3
Science and technology are integral to contemporary societies. Understanding how science is produced and how it shapes daily life is a crucial challenge for anthropologists, who have studied the production of scientific knowledge in labs, hospitals, field sites, and elsewhere. While early studies of science as a cultural practice focused primarily on the U.S. and Europe, science and technology are produced and consumed globally. Through analyses of case studies of biotechnology, medicine, genetics, conservation, agriculture, energy, climate science, and computing around the world, this class will investigate the global dynamics of science and technology. Juxtaposing readings on different scientific fields from around the globe, we will look for recurring themes that connect these studies. What happens when science and technology travel, and how do new places emerge as centers of knowledge production? How are culture, identity, technology, and science linked?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: MCSI - Sustainability Focused

ANTH 2725 - GLOBAL PHARMACEUTICALS

Minimum Credits: 3
Maximum Credits: 3
This course examines pharmaceuticals as cultural and social phenomena, following their development, production, marketing, and use around the globe. We will investigate a number of issues, including the growing number of drugs prescribed to Americans each year, the lack of access some populations have to essential medicines, the increasingly global nature of clinical trials, and the role of pharmaceutical companies in the opioid crisis. We will use the study of drugs and medicines to analyze the production of medical knowledge, changing perceptions of health and illness, and the role of the state and the market in the development and distribution of therapeutics. Pharmaceuticals bring together science, clinical practice, marketing, and consumerism, and this course will draw on anthropological research to trace the role they play in global flows of knowledge, capital, commodities, and people.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2730 - ENVIRONMENTS, HEALTH AND POWER

Minimum Credits: 3
Maximum Credits: 3
This graduate seminar examines anthropology that illuminates the connections between capitalism, colonialism, environmental crisis, land dispossession, and toxic exposure. Focusing on conservation, exploitation, contamination, and re-imagination, we will consider with how power operates in and through environment at a moment when human/nature relationships have become matters of life and death. Topics include Anthropocene/Plantationocene studies, coloniality & decolonization, infrastructure, affect, resistance, and repair.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ANTH 2731 - MEDICAL ANTHROPOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
This course deals with topics surveyed in medical anthropology 1, looking at them in more ethnographic depth and with greater attention to current research findings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

ANTH 2732 - THEORIZING FROM EX-CENTRIC SITES

Minimum Credits: 3
Maximum Credits: 3
In a recent essay, anthropologist Faye Harrison (2016, 170) calls on anthropologists to theorize from "ex-centric sites"-"Southern" locations, "particularly the peripheral zones where critical intellectual trajectories have been sustained despite trends toward erasure." Taking up Harrison's call, this advanced graduate seminar engages decolonial theories advanced by scholars from Southern locations or peripheralized social groups. We will critically engage the works of scholars like Anibal Quijano, Amie Cesaire, Christina Sharpe, David Scott, Faye Harrison, Franz Fanon, Jean Casimir, Michel-Rolph Trouillot, Nelson Maldonado-Torres, Walter D. Mignolo, Catherine E. Walsh, Yanick Lahens, Valentine Y. Mudimbe, Ramon Grosfoguel, Ng¿g¿ wa Thiong'o, and others. We will also explore how these scholars' ideas and methods may inform how we engage our research praxis.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2741 - ANTHROPOLOGY OF LAW

Minimum Credits: 3
Maximum Credits: 3
This course will examine anthropological analyses of law and law-like phenomena in a number of different societies, concentrating on the development of theory in this field. Since this theory reflects larger theoretical developments in anthropology and in post-war social science, the study of the anthropology of law is a case study in the development of modern theoretical paradigms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

ANTH 2744 - GRANTS AND RESEARCH DESIGN

Minimum Credits: 3
Maximum Credits: 3
This seminar will focus on the formulation of individual research problems and research designs in preparation for thesis research. Course requirements center around the development of a research proposal which will include a research design, area and theoretical background, field techniques and procedures, methodology, data analysis, and significance of the research. Grantsmanship, including how to submit proposals to various agencies, will be explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2750 - CONTEMPORARY ANTHROPOLOGICAL THEORY

Minimum Credits: 3
Maximum Credits: 3

This seminar surveys recent developments in anthropological theory, with emphasis on social and cultural anthropology. Topics covered vary with interests of students and the instructor. The course centers on the close reading of several contemporary texts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: African Studies, Global Studies

ANTH 2755 - THE ART OF PUBLICATION

Minimum Credits: 3
Maximum Credits: 3
This graduate course is intended as a workshop for refining papers for publication as journal articles or edited book chapters. The course is intended for relatively advanced graduate students who have a good idea at the outset of what they plan to publish and have the support of their advisor in this plan. We will go through the process of identifying suitable publication venues, revising drafts and figures for publication, and understanding what to expect from the peer-review process. Because the class involves substantial peer feedback, students are asked to commit to supporting their fellow students' revision process as well as devoting time to their own. The aim is for every student to submit a paper for publication by the end of the semester.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2755 - THE ART OF PUBLICATION

Minimum Credits: 3
Maximum Credits: 3
This graduate course is intended as a workshop for refining papers for publication as journal articles or edited book chapters. The course is intended for relatively advanced graduate students who have a good idea at the outset of what they plan to publish and have the support of their advisor in this plan. We will go through the process of identifying suitable publication venues, revising drafts and figures for publication, and understanding what to expect from the peer-review process. Because the class involves substantial peer feedback, students are asked to commit to supporting their fellow students' revision process as well as devoting time to their own. The aim is for every student to submit a paper for publication by the end of the semester.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2763 - FIELD METHODS

Minimum Credits: 4
Maximum Credits: 4
Designed to acquaint students with basic ethnographic field work techniques. Topics addressed include taking and managing field notes on participant-observation and use of archival materials. There will also be some discussion of the relationship among research design, data collection, and data analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2770 - PRECARITY AND POLITICS

Minimum Credits: 3
Maximum Credits: 3
Crisis seems to have become the normalized condition in which we live our lives and make sense of the world around us. Each new iteration of this condition, caused by wars, natural disasters, and recently the Covid-19 pandemic, further cement our perception that crisis has become permanent. This perception is further fueled by neoliberal globalization that builds on what Naomi Klein conceptualized as disaster capitalism. Governments that adopt neoliberal economic policies, Klein notes, tend to exploit crises to introduce structural adjustment plans during times when populations are too beaten down to mount an efficient opposition. By doing so, neoliberalism

intensifies our sense of crisis as it grinds down our sense of security. Whereas theories of neoliberalism focus on the role of the economy in generating conditions of precarity, in recent years, scholars also started examining the social lives and cultures of this condition. Furthermore, they began exploring how conditions of precarity give us hope and galvanize our desire to reform our lives, reach out to others, and build new communities. This course will introduce students to theories and ethnographies of precarity, as well as works that analyze transformations in the ways we participate in the political domain to fight locally specific conditions of precarity. We will read texts by David Harvey, Isabell Lorey, Wendy Brown, Judith Butler, Michael Hardt and Antonio Negri, Sara Ahmed, Kathleen Stewart, Silvia Federici, Elizabeth Povinelli, Deva Woodly, and Susan Buck-Morss, among others. The course will be divided into three units that will build on each other: Theories of Precarity, Ethnographies of Precarity, and Theories and Ethnographies of Precarity Politics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2771 - GENDER AND THE STATE

Minimum Credits: 3
Maximum Credits: 3
This course will critically engage with scholarship that theorizes the relationship between gender and the state. We will discuss such topics as pronatalism as a form of governance, low birth society, the governmental regulation of sexuality, alternative economic practices, women's role in maintaining various forms of the commons, women's systemic mobilization to various genres of reproductive labor, and the reproductive justice movement. The course inquires whether we could think of declining fertility rates in the advanced capitalist world as both an effect and an expression of an enduring crisis in familial productivism, the social factory, and the prevalent system of wage labor, which no longer serves as fair mechanism of redistribution. We will examine governmental responses to these developments and feminist strategies to intervene in them. We will discuss how invisible labor is increasingly integrated into formal processes of capitalist accumulation through harnessing the unremunerated labor of communication and sociality especially in the service industries or through extracting surplus value from "the labor of love" in the context of reproduction. We will explore what forms of feminist activism and feminist politics emerge in the wake of chronic care deficit and women's growing unwillingness to assume the responsibility for filling in the void created by the neoliberal dismantling of the welfare state and, more recently, failures in the delivery of public services and breakdowns in global supply chains due to the COVID-19 pandemic.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2782 - SPECIAL TOPICS IN CULTURAL ANTHROPOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will be on a topic in the area of specialization in cultural anthropology of a visiting scholar.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

ANTH 2788 - CULTURAL ANTHROPOLOGY CORE COURSE

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the anthropological study of human culture and society. We will examine how different modes of description and explanation in contemporary cultural anthropology are applied to various domains (e.g., How different peoples feed themselves, mate and have children, cooperate and fight with one another, deal with the inevitability of death, etc.). By comparing the ways the human beings cope with the natural environment and each other, we will seek a better understanding of ourselves and what it is to be human.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2807 - COMMUNITY ARCHAEOLOGY AND PUBLIC ENGAGEMENTS

Minimum Credits: 3
Maximum Credits: 3
Why and for whom do we study the past? Is community archaeology the new "New Archaeology"? Archaeology is performed in a variety of political and economic settings and for a range of reasons. In this class, we will examine the multiple stakeholders involved in the archaeological enterprise, and the often-conflicting demands they place on archaeologists as academics and citizens, with the goal of developing strategies that can improve diversity in the subfield and communication to non-academic groups. At a basic level, this class explores two interrelated questions: What "should" be the ultimate goals of archaeology? To what degree do we need to change what archaeology does to accomplish what it "should"? To address these concerns, we'll examine major criticisms of how archaeologists have interacted with communities and publics, but much of our time will focus on correctives that seek to overcome these limitations. In particular, we will consider calls for diverse "archaeologies" which incorporate alternate models and experiences of the past but sometimes challenge our basic notions about the field. We will also discuss the responsibilities that archaeologists have to communities and how we might envision future collaborative community archaeologies, even when the past is a painful topic. This is also a writing-intensive course. Writing assignments, revisions, and presentations are designed to help you practice and polish your writing. I will give you detailed feedback on drafts, and we will also peer-review sections in class. I strongly encourage you to pay attention to the feedback you receive from your professor and colleagues in your revised drafts and beyond this class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2902 - DIRECTED STUDY FOR MA STUDENTS

Minimum Credits: 1
Maximum Credits: 9
This course involves directly supervised research-related activities such as fieldwork or artifact analysis. Reading is not a major component of the work for this course.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ANTH 2980 - READINGS IN SELECTED FIELDS

Minimum Credits: 1
Maximum Credits: 9
This course involves student preparation of a selected bibliography on a specialized topic, reading of the materials according to a prepared schedule, and discussions of the readings with the course instructor.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ANTH 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
This course involves research-related activities that are indirectly supervised by the instructor, such as fieldwork or library research.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

ANTH 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9

This course involves directed research and writing oriented towards the completion of a doctoral dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Arabic

ARABIC 1909 - SPECIAL TOPICS IN ARABIC

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: LING 0133 or 0143 or 0153; PROG: Dietrich Sch Arts and Sciences

ARABIC 2909 - SPECIAL TOPICS IN ARABIC

Minimum Credits: 3
Maximum Credits: 3
This course will be a Topics course, meaning that the specific content of the course will change each time the course is offered. The course is at a graduate level so that graduate students interested in the offered topic can more easily take the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Architectural Studies

ARC 2118 - ARCHITECTURE SINCE 1945

Minimum Credits: 3
Maximum Credits: 3
Treats the key developments in architecture throughout the world since World War II, including theory as well as practice. The course will focus on such figures as frank Lloyd Wright, Miles Van der Rohe, Le Corbusier, James Stirling, Eeko Saarinen, Louis Kahn, Kenzo Tange, Robert Venturi, Richard Rogers, and Norman Foster.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ARC 2137 - AMERICAN ARCHITECTURE SINCE INDUSTRIALIZATION

Minimum Credits: 3
Maximum Credits: 3
By 1880 traditional American architectural values had broken down under a barrage of ornament and imported European styles. But at the same moment a new American architecture was taking shape to express the new wealth of post-Civil War America and its new social order. The next hundred years would see a succession of brilliant architects in Sullivan, Wright, Mies, Johnson and the pluralists of today. These individual successes only partially mask some major problems; both constitute the underlying themes of this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

ARC 2138 - BLACK BUILT AMERICA: ARCHITECTURES OF BLACK RESISTANCE IN THE UNITED STATES

Minimum Credits: 3
Maximum Credits: 3
This course offers a critical history of the Black labor, creativity, craftsmanship, engineering, and activism that built the United States of America. It is undeniable that Black Americans and African Americans have been brutally marginalized by the instruments of systemic racism including segregation, redlining, eviction, and more recently gentrification. In this class, however, that very real and continuing history of oppression is studied as the fuel for the creative agency of Black individuals and communities. Appropriating, intervening, and shaping the built environment became one of the many forms of Black resistance to racism and systemic injustices. In doing so, Black hands and Black minds shaped the very fabric of America's landscape. Our class begins and ends in Washington DC, posing important questions about the hidden and overt symbols of Black heritage in the nation's capital.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ARC 2138 - BLACK BUILT AMERICA: ARCHITECTURES OF BLACK RESISTANCE IN THE UNITED STATES

Minimum Credits: 3
Maximum Credits: 3
This course offers a critical history of the Black labor, creativity, craftsmanship, engineering, and activism that built the United States of America. It is undeniable that Black Americans and African Americans have been brutally marginalized by the instruments of systemic racism including segregation, redlining, eviction, and more recently gentrification. In this class, however, that very real and continuing history of oppression is studied as the fuel for the creative agency of Black individuals and communities. Appropriating, intervening, and shaping the built environment became one of the many forms of Black resistance to racism and systemic injustices. In doing so, Black hands and Black minds shaped the very fabric of America's landscape. Our class begins and ends in Washington DC, posing important questions about the hidden and overt symbols of Black heritage in the nation's capital.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ARC 2152 - ROMAN ARCHITECTURE

Minimum Credits: 3
Maximum Credits: 3
The course will examine the development of roman architecture from its origins in Etruria and central Italy to the middle empire (ca. 150 Ad). Special attention will be given to the relationship of architectural forms, types and functions to changes in roman politics and society and the significance of materials and outside influences on the development of local Italian traditions and forms. The interaction between roman architectural forms and local traditions in the provinces to create a roman imperial "koine" will be treated only in passing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

ARC 2158 - ARCHITECTURE AND ENLIGHTENMENT

Minimum Credits: 3
Maximum Credits: 3
This course will examine architecture, city planning, interior design, and gardening in eighteenth-century Europe as the product of social, industrial, administrative, and intellectual transformations that began to radically challenge traditional spatial configurations and conventional approaches to building. In cosmopolitan centers like London and Paris, an unprecedented explosion of print media, rapid rises in literacy, and the development of a public sphere outside official power structures opened debate in the arts to previously marginal figures. A range of new voices thus emerged that impacted policy decisions in the urban realm and proffered advice and guidance in

thinking about aesthetics and artistic production. The rise of science held out the possibility that cities and institutions could be reshaped to improve human welfare through better hygiene and the expansion of commerce. Influential new classes defined by wealth or specialized knowledge generated the creation of building types for a range of new activities. Elite domestic space in particular reflects a wholesale transformation of social priorities motivated by the novel concept of privacy. Narrowly defined Renaissance discourses on the arts founded exclusively on the model of ancient Rome collapsed under an avalanche of data gathered in remote sites around the Mediterranean and through contact with more far-flung civilizations around the world. New intellectual paradigms reconfigured the relationship between individual and nature, between modern present and historical past. Consequently, the purpose of architecture mutated in the course of the eighteenth century as a bewildering range of new possibilities for shaping building and reshaping social relations were explored. Well before political revolution rocked European governments and toppled traditional hierarchies, the built environment served as a laboratory for experimentation and as a forum for reimagining society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ARC 2162 - CAMPUS-COMMUNITY WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
Architects and designers have a vital role to play as thinkers and advocates who work with organizations and communities to help imagine ways to reshape the environments in which we live and interact. Over the course of the term, students will investigate the Pitt campus and surrounding Oakland neighborhoods, conduct original research using primary and secondary sources, and think critically and creatively about ways the environment can be shaped to make positive change. Each student will develop an original, written proposal for either [1] an intervention that responds to a need, enhances the experience of being at the university, or improves the quality of life on campus or in an adjacent neighborhood; or [2] a research project that could be continued in a subsequent term for independent study credit.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

ARC 2181 - PITTSBURGH ARCHITECTURE/URBANISM

Minimum Credits: 3
Maximum Credits: 3
The course studies the physical environment of Pittsburgh; the topography, early settlement, the expansion of its industrial center, the post-war renewal, and the current shift from production to a service-based economy. A parallel study in the architectural history of Pittsburgh focuses on images of individual buildings from fort Pitt to the new skyscrapers. Student papers either expand research in building categories (industrial, domestic, etc.) or integrate the physical development of the region with its political and social history.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ARC 2182 - PITTSBURGH NEIGHBORHOODS

Minimum Credits: 3
Maximum Credits: 3
Pittsburgh Neighborhoods is a course where students learn about people, culture, history, and current issues that confront under-represented communities and neighborhoods in Pittsburgh. Throughout the semester, with direction from the instructor, students learn about and employ ways to see, document, and interpret a neighborhood by engaging the built environment, historical documents, and community members in storytelling. They approach the built environment as a cultural product, explore place as a fusion of material culture and human perceptions and practices, and frame questions of power around the politics of the built environment. In this class, we will employ methods that help us transcend the realm of the visual and explore the experiential and ephemeral. We will learn to observe with all our senses, listen to community members, and document life when in the field, and excavate and explore visual and textual records when in the archive. In doing so, we will adopt theories and methodologies from multiple fields, including urban/architectural history, cultural geography, anthropology, public history, and material culture studies.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ARC 2182 - PITTSBURGH NEIGHBORHOODS

Minimum Credits: 3
Maximum Credits: 3
Pittsburgh Neighborhoods is a course where students learn about people, culture, history, and current issues that confront under-represented communities and neighborhoods in Pittsburgh. Throughout the semester, with direction from the instructor, students learn about and employ ways to see, document, and interpret a neighborhood by engaging the built environment, historical documents, and community members in storytelling. They approach the built environment as a cultural product, explore place as a fusion of material culture and human perceptions and practices, and frame questions of power around the politics of the built environment. In this class, we will employ methods that help us transcend the realm of the visual and explore the experiential and ephemeral. We will learn to observe with all our senses, listen to community members, and document life when in the field, and excavate and explore visual and textual records when in the archive. In doing so, we will adopt theories and methodologies from multiple fields, including urban/architectural history, cultural geography, anthropology, public history, and material culture studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ARC 2330 - GLOBAL PRESERVATION

Minimum Credits: 3
Maximum Credits: 3
The late-nineteenth and early-twentieth century debates regarding the role of the architectural monument as a signifier of the past, as a container of memory and more importantly authenticity, were the definitive moment in the institutionalization and professionalization of architectural preservation around the world. In a 1903 essay titled 'the modern cult of monuments,' art historian alois reigl claimed that while the creation of monuments (i.e. structures built to memorialize certain events or persons) had a long history that predates modernity, the 'cult of the monument' (i.e. the allocation of the monument as a unique and original object in a pre-ordained historical narrative of social and cultural evolution) came about as recently as the nineteenth-century. It is this coupling of the advent as well as the progress of modernity along with the formalization of systems of historic preservation that this course seeks to explore.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ARC 2340 - HERITAGE SITES

Minimum Credits: 3
Maximum Credits: 3
According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), heritage sites encompass sites of "outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view." This course will develop the fundamental themes, ideas, and case studies required to analyze, understand and critically engage with heritage sites in a comparative and global perspective. We will begin charting the European origins of the western understandings of heritage and exploring the development of national and international heritage legislation, charters and organizations. The course will then explore emerging trends that challenge Eurocentric notions of heritage: from critical heritage studies to approaches that specifically focus on minorities, women, and indigenous groups, and the broader issues of human rights and development. Starting from the second third of the semester, case studies from different geographic areas, time periods and themes will be discussed: heritage sites and national identity; heritage sites and tourism; heritage sites and sustainable development; threats to heritage; negative and difficult heritage; heritage and human rights; heritage futures. Finally, we will discuss the increasing interest in bottom-up initiatives that focus on grassroots, people-centered approaches to foster community engagement and participation in the management, programming and interpretation of heritage.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Arts and Sciences

ARTSC 2200 - PRACTICUM ON UNIVERSITY TEACHING

Minimum Credits: 1
Maximum Credits: 3
This course in university teaching is designed for people who are teaching independently for the first time, or who have the flexibility in a recitation to design course materials and teach subject matter. It features the application of instructional principles to course development and materials.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

ARTSC 2901 - INTRODUCTION TO GRANT WRITING

Minimum Credits: 1
Maximum Credits: 1
This course will provide a hands-on introduction to the process of crafting a successful grant application, with students working to find funding opportunities based upon their individual research interests and ultimately putting together a final proposal document in a project-based environment.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

Astronomy

ASTRON 0413 - HONORS INTRODUCTION TO ASTRONOMY

Minimum Credits: 4
Maximum Credits: 4
This course will be an introduction to astronomy and astrophysics. The 4-credit honors course will consists of all aspects of the 3-credit course, including lectures and homework with additional problems tailored for this course. ASTRON 0413 includes an additional 50-minute class session each week. In these extra sessions, basic topics will be covered in more detail than in ASTRON 0113. These extra sessions will also involve significant problem solving and discussions of the derivations of fundamental results in astronomy and astrophysics. Students considering a major in physics, astronomy, or physics and astronomy are strongly encouraged to take ASTRON 0413 instead of ASTRON 0113.
Academic Career: Undergraduate

Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: (MATH 0230 or 0235 or 0150 or 0231) and (PHYS 0110 or 0174 or 0475 or 0140 or 0150 or 0201)

ASTRON 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

ASTRON 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

ASTRON 2998 - TEACHING OF ASTRONOMY-PRACTICUM

Minimum Credits: 1
Maximum Credits: 2
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

ASTRON 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

ASTRON 3101 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ASTRON 3550 - STELLAR STRUCTURE

Minimum Credits: 3
Maximum Credits: 3
Stars are the most common astrophysical objects. They create most of the atomic elements and most of the observable optical light in the sky. This class provides an overview of the physics of stars and the interstellar medium. Topics will include hydrostatic equilibrium, nuclear processes, radiative transfer, metallicity and opacity, convection, stellar evolution, stellar explosions, properties of the interstellar medium, and energy feedback from stars.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ASTRON 3580 - GALACTIC AND EXTRAGALACTIC ASTRONOMY

Minimum Credits: 3
Maximum Credits: 3
Galaxies are the fundamental building blocks of the present universe. This class will give an overview of galaxies, their properties, and their formation and evolution with an emphasis on current research areas. Topics will include observational properties (morphology, masses, colors, concentrations), scaling relations, evolution with redshift, stellar populations, gas and dust, dynamics and dark matter, evolution and mergers, and active galaxies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ASTRON 3705 - STATISTICS AND DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This class will expose students to the basics of astronomical data analysis, with an emphasis on statistical techniques and the development of practical programming skills. Topics may include the nature of random and systematic errors, fitting and likelihood techniques, hypothesis testing, astronomical instrumentation and data reduction, and the use of large survey data sets.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ASTRON 3785 - COSMOLOGY

Minimum Credits: 3
Maximum Credits: 3
This class will give an overview of the standard cosmological model and the wide range of observational tests. Topics include the expansion history of the universe, thermodynamic history, nucleosynthesis, recombination, inflation, perturbations and the microwave background, structure formation, evidence for dark matter and dark energy, and future probes of dark energy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ASTRON 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ASTRON 3907 - DIRECTED RESEARCH

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Athletic Training

ATHLTR 1800 - PRINCIPLES OF RESEARCH METHODOLOGY

Minimum Credits: 3
Maximum Credits: 3
The study of the nature of research and the applications of the scientific approach in the research procedures. The course focuses on concepts, design techniques and interpretations, as well as limiting factors and ethical considerations.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 1805 - EXERCISE PHYSIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the effects of exercise in preventing and treating disability, in optimizing the rehabilitation process, and in maintaining the health of those with disabilities. The course emphasizes the effects of exercise on the various body systems, including the cardiovascular, neuromuscular, and musculosketetal, in individuals with disabilities.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN REHSCI (BS, BS-H, BPH); SUBPLAN: BSPATH

ATHLTR 1806 - EXERCISE PHYSIOLOGY LAB

Minimum Credits: 1
Maximum Credits: 1
Required lab component for REHSCI 1215 Exercise Physiology: This course focuses on the effects of exercise in preventing and treating disability, in optimizing the rehabilitation process, and in maintaining the health of those with disabilities. The course emphasizes the effects of exercise on the various body systems, including the cardiovascular, neuromuscular, and musculosketetal, in individuals with disabilities.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: Letter Grade
Course Requirements: PLAN REHSCI (BS, BS-H, BPH); SUBPLAN: BSPATH

ATHLTR 1811 - BASIC ATHLETIC TRAINING

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide the student with an introduction to the athletic training profession. Topics to include medical terminology, mechanisms of injury, and recognition and treatment of common athletic injuries to major body parts.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

ATHLTR 1812 - BASIC ATHLETIC TRAINING LAB

Minimum Credits: 1
Maximum Credits: 1
An introduction to basic taping techniques and injury evaluation techniques used in the profession of athletic training. Basic supportive

strappings and paddings for immediate care and competition are presented as well as basic joint evaluation procedures, assessment of vital signs, and crutch fitting.
Academic Career: Undergraduate
Course Component: Clinical
Grade Component: Letter Grade
Course Requirements: CREQ: ATHLTR 1811

ATHLTR 1813 - INTRODUCTION TO CLINICAL ATHLETIC TRAINING 1

Minimum Credits: 1
Maximum Credits: 1
This course is designed to help prepare students for the demands associated with experiential learning and future clinical placements in the Athletic Training Education Program (ATP). The course will have a combined in-person meetings and associated class assignments that will include field observations at approved clinical education sites through the University of Pittsburgh. This course is a prerequisite for the Practicum I-IV Courses in the ATP.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

ATHLTR 1814 - INTRODUCTION TO CLINICAL ATHLETIC TRAINING 2

Minimum Credits: 1
Maximum Credits: 1
INTRODUCTION TO CLINICAL ATHLETIC TRAINING 2
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

ATHLTR 1815 - FOUNDATIONS IN EVALUATION AND TREATMENT

Minimum Credits: 1
Maximum Credits: 1
The objective of this course is to introduce and develop fundamental understanding of the component for evaluation and acute care. Specific objectives are to introduce the student to concepts related to patient interaction in regards to the evaluation process; the components and general principals of the evaluation process (patient observation, history, range of motion, strength, neurovascular, special tests, palpation, and diagnostics); a basic understanding and ability to perform range of motion and strength assessments and apply the appropriate grading tools. This course is a prerequisite for Therapeutic Interventions I-II courses in the Athletic Training Program.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 1816 - MEDICAL ETHICS

Minimum Credits: 2
Maximum Credits: 2
This course addresses legal and ethical issues encountered by athletic trainers and other healthcare professionals who are part of the Sports Medicine team. Strong emphasis is placed on legal and ethical issues that occur within the realm of direct patient care. Additionally, the course will expose students with legal and institutional positions and examine relevant case studies. Students will also practice developing concrete logical arguments in support of a chosen ethical stance.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

ATHLTR 1833 - STRENGTH AND CONDITIONING

Minimum Credits: 2
Maximum Credits: 2
Instruction is provided describing the physiological basis for development of pre-season, in-season and off-season strength and conditioning programs. Laboratory experiences will include the theory and technique of operating contemporary isotonic, isokinetic and isometric strength training equipment.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Athletic Training (BS, BS-H, BPH)

ATHLTR 2020 - ATHLETIC TRAINING HEALTHCARE FOR YOUTH AND SPECIAL POPULATIONS

Minimum Credits: 3
Maximum Credits: 3
This course provides an in-depth exploration of athletic training healthcare for physically active youth and special populations. Anatomical and physiological differences of a variety of special populations will be explored. For this course, the term special populations does not just pertain to intellectual disabilities but also age, pregnancy, para-sport, etc. Athletic training healthcare challenges will be addressed that include evaluation, treatment, and rehabilitation of injuries and illness unique to special populations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: AT-MS

ATHLTR 2801 - CLINICAL PRACTICUM 1

Minimum Credits: 3
Maximum Credits: 3
This 3-credit practicum is designed to supplement the first clinical experience presented in seminar fashion to address the curricular standards as presented in the Core Curricular Competencies as presented in the 2020 Standards for Accreditation of Athletic Training Programs. Presented by faculty of the AT program then evaluated in clinical setting in live situations when possible or under simulated conditions when narrated. Specific emphasis placed on these proficiencies that can be grouped into modules and which do not receive broad coverage in an academic course.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)
Course Attributes: Undergraduate Research

ATHLTR 2802 - CLINICAL PRACTICUM 2

Minimum Credits: 3
Maximum Credits: 3
This 3-credit practicum is designed to supplement the second clinical experience presented in seminar fashion to address the curricular standards as presented in the Core Curricular Competencies as presented in the 2020 Standards for Accreditation of Athletic Training Programs. Presented by faculty of the AT program then evaluated in clinical setting in live situations when possible or under simulated conditions when narrated. Specific emphasis placed on these proficiencies that can be grouped into modules and which do not receive broad coverage in an academic course.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)
Course Attributes: Undergraduate Internship

ATHLTR 2804 - CLINICAL PRACTICUM 4

Minimum Credits: 3
Maximum Credits: 3
CLINICAL PRACTICUM 4
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ATHLTR 2805 - INJURY/EVAL 1 - LOWER EXTREMITY

Minimum Credits: 4
Maximum Credits: 4
This 4-credit course is designed to present the techniques used in lower extremity injury evaluation. An in-depth analysis of lower extremity injury mechanics, the theory and application of orthopedic and neurological evaluation are included. Students learn the mechanical and physiological basis of injury and injury evaluation techniques for conditions of the foot, ankle, lower leg, knee, thigh, hip, pelvis, and lumbar spine. Students will be instructed on the proper methods of documentation, patient interview, history, observation, palpation, strength testing, neurovascular assessment, and special tests. This course includes a lab component.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 2805 - INJURY/EVAL 1 - LOWER EXTREMITY

Minimum Credits: 4
Maximum Credits: 4
INJURY/EVAL 1 - LOWER EXTREMITY
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad Letter Grade

ATHLTR 2806 - INJURY/EVAL 2 - UPPER EXTREMITY

Minimum Credits: 4
Maximum Credits: 4
This 4-credit course is designed to present the techniques used in upper extremity injury evaluation. An in-depth analysis of upper extremity injury mechanics, the theory and application of orthopedic and neurological evaluation are included. Students learn the mechanical and physiological basis of injury and injury evaluation techniques for conditions of the head, cervical and thoracic spine, thorax, and upper extremities. Students will be instructed on the proper methods of documentation, patient interview, history, observation, palpation, strength testing, neurovascular assessment, and special tests. This course includes a lab component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 2806 - INJURY/EVAL 2 - UPPER EXTREMITY

Minimum Credits: 4
Maximum Credits: 4
INJURY/EVAL 2 - UPPER EXTREMITY
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ATHLTR 2807 - THERAPEUTIC INTERVENTIONS 1

Minimum Credits: 4
Maximum Credits: 4
The instruction and participation of this 4-credit course aim are to educate the student on intervention strategies for pre-operative, post-operative, and non-operative healthcare conditions. Students will develop the ability to implement an evidence-based care plan to address physical and social determinants of health needs through the introduction of therapeutic modalities and therapeutic exercise intervention for the lower extremity. The development of these skills will optimize the student's ability to critically think and apply skills to address a patient's or client's individual healthcare needs through prescription, administering, and assessment of therapeutic interventions. Topics in this course include but are not limited to tissue healing, pain control theory, lower extremity rehabilitation exercise, and foundations of therapeutic modalities. A combination of learning strategies from individual and group activities will allow students to establish and refine a clinical practice philosophy for injury/illness rehabilitation and prevention for the lower extremity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 2807 - THERAPEUTIC INTERVENTIONS 1

Minimum Credits: 4
Maximum Credits: 4
THERAPEUTIC INTERVENTIONS 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ATHLTR 2808 - THERAPEUTIC INTERVENTIONS 2

Minimum Credits: 4
Maximum Credits: 4
The instruction and participation of this 4-credit course aim are to supplement the student on traditional and complementary therapeutic intervention strategies for pre-operative, post-operative, and non-operative healthcare conditions for the spine and upper extremity. Students will refine the ability to implement an evidence-based care plan to address physical and social determinants of health needs through the introduction of therapeutic intervention for the spine and upper extremities. The development of these skills will build and further optimize the student's ability to critically think and apply skills to address a patient or client's individual healthcare needs through prescription, administering, and assessment of therapeutic interventions. Topics in this course include but are not limited to manual therapy, spine and upper\ extremity rehabilitation exercise, complementary healthcare intervention, and psychology of sport rehabilitation. A combination of learning strategies from individual and group activities will allow students to evaluate and evolve their clinical practice philosophy to injury/illness rehabilitation and prevention for the spine and upper extremity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 2808 - THERAPEUTIC INTERVENTIONS 2

Minimum Credits: 4
Maximum Credits: 4
THERAPEUTIC INTERVENTIONS 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ATHLTR 2809 - FUNCTIONAL HUMAN ANATOMY

Minimum Credits: 2
Maximum Credits: 2
This 2-credit course utilizes the basic structural knowledge provided in Human Anatomy and concepts learned in Kinesiology and Biomechanics to develop an understanding of the functional significance of the structures of the musculoskeletal system, within a movement setting (covering mechanical properties and functional characteristics). In addition to normal function, mechanisms of and adaptations to, common injuries, disease and rehabilitation is discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 2809 - FUNCTIONAL HUMAN ANATOMY

Minimum Credits: 2
Maximum Credits: 2
FUNCTIONAL HUMAN ANATOMY
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ATHLTR 2810 - EVIDENCE BASED PRACTICE IN ATHLETIC TRAINING

Minimum Credits: 2
Maximum Credits: 2
EVIDENCE BASED PRACTICE IN ATHLETIC TRAINING
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ATHLTR 2811 - GRADUATE RESEARCH 1

Minimum Credits: 3
Maximum Credits: 3
This 3-credit course consists of lectures, group discussion, and assignments aimed to develop understanding of the principles of research and application to clinical practice. It will expand concepts of Research Methods and Evidence Based Practice in Athletic Training by allowing the student to gain a more in-depth knowledge of methodologies utilized in the field of athletic training. In class, students will be exposed to research instrumentation and methodology for the assessment of anthropometrics, strength, flexibility/postural testing, proprioception, balance/neuromuscular control, electromyography, kinetics, and kinematics. Further the student will apply principles from previous courses by conducting a critical appraisal. This project will encompass: 1. Developing and answering a clinically relevant question; 2. Conducting a search to find and appraise the best evidence; 3. Synthesize the evidence and come to a clinical recommendation. This course includes a lab component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

ATHLTR 2812 - GRADUATE RESEARCH 2

Minimum Credits: 3
Maximum Credits: 3
This 3-credit course consists of in field experiences and assignments aimed to apply evidence-based practice through integration of outcomes and patient care. Students will apply and demonstrate proficiency of concepts from Research Methods and Evidence Based Practice in Athletic Training by using outcomes collected through patient care to answer a clinical research question. Students will gain hands on experience in conducting a literature review related to their clinical question, data reduction/processing, data analysis, and dissemination of their findings. These outcomes will be completed in conjunction with ATHTLR 2804 and their immersive clinical

experience.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 2813 - GENERAL MEDICAL AND PHARMACOLOGICAL CONDITIONS

Minimum Credits: 4
Maximum Credits: 4
This 4-credit course will provide didactic knowledge and clinical medical skills to provide the athletic training students with an opportunity to understand and identify epidemiology, etiology, pathogenesis, and signs and symptoms to common illness and disease to the body systems. Examination of basic principles of pharmacology comprising knowledge, skills, and values that the entry-level certified athletic trainer should possess. Examination of the indications, contraindications, precautions, and interactions of medication as well as governing regulations relevant to treating and caring for common illnesses and diseases to the body's systems will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 2813 - GENERAL MEDICAL AND PHARMACOLOGICAL PRINCIPLES

Minimum Credits: 4
Maximum Credits: 4
GENERAL MEDICAL AND PHARMACOLOGICAL PRINCIPLES
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ATHLTR 2814 - ADVANCED CLINICAL PROCEDURES

Minimum Credits: 3
Maximum Credits: 3
This 3-credit course introduces students to advanced clinical practice in athletic training and affords them an opportunity to learn and practice emerging clinical skills in the practice. Specific techniques will be modified as needed based upon the current Athletic Training Practice Analysis, core competencies as outlined by the CAATE, and current literature. Additionally, students will explore strategies for life-long learning as it pertains to awareness, knowledge, and acquisition of emerging evidence-based skills, techniques, and treatments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

ATHLTR 2815 - CURRENT CONCEPTS IN SPORTS MEDICINE

Minimum Credits: 2
Maximum Credits: 2
The purpose of this 2-credit course is to present case-based, cutting-edge medical information on sports medicine and sports related injuries that health care professionals can directly apply to the care of their patients. Topics may include advanced orthopedic biomechanical assessment methods, surgical procedures, post-operative rehabilitative options, advanced understanding of musculoskeletal pathology and treatments as well as updates in position and consensus statements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

ATHLTR 2816 - ADMINISTRATIVE ASPECTS OF ATHLETIC TRAINING

Minimum Credits: 4
Maximum Credits: 4
This 4-credit course provides the athletic training student with knowledge and skills needed to manage an athletic training facility. This course presents current organizational and administrative topics in athletic training, including policy and procedure development, athletic training facility design and management, ethical and legal considerations, insurance and reimbursement, budgetary strategies, emergency planning and preparticipation screenings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

ATHLTR 2817 - LEADERSHIP AND PROFESSIONAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This 3-credit course is designed to introduce the student to the knowledge and skills essential as a healthcare professional in clinical practice rooted in inter-professional care and collaboration. Students will learn critical communication skills, task management strategies and work-life balance techniques. Specific attention will be placed upon lifestyle leadership and learning as a healthcare provider, the importance of professional and personal advocacy and strategies to achieve success. Lastly, students will develop preliminary professional development plans that can be used to map their continuing education and growth as young professionals and life-long learners.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 2818 - BOARD OF CERTIFICATION (BOC) PREPARATION

Minimum Credits: 1
Maximum Credits: 1
This 1-credit course aims to aid each athletic training student in the final stages of preparation for the Board of Certification (BOC) examination.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: Pre-Athletic Training (BSPATH-SP)

ATHLTR 2819 - MENTAL HEALTH CONSIDERATIONS IN SPORTS MEDICINE

Minimum Credits: 3
Maximum Credits: 3
This course examines the psychological factors involved in sport, sport-related injuries, the rehabilitation process, as well as examining the mental health aspects of the athletic trainer working in the sports setting. Course topics include: sport participation, psychological responses to injury, the relationship between injury and stress, recognizing and referring mental health related issues, pain tolerance, rehabilitation adherence, and returning to sport after injury, critical incident stress management, psychological first aid, workplace mental health policy & procedures, and peer support.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Athletic Training (AT-MS)

ATHLTR 2820 - PRIMARY CARE IN ATHLETIC TRAINING

Minimum Credits: 2
Maximum Credits: 2
This 2-credit course introduces athletic training students to common primary care conditions encountered in clinical practice. Emphasis is placed on the recognition, evaluation, and management of conditions across body systems. Students will develop clinical decision-making skills related to referral, interdisciplinary collaboration, and appropriate care within the scope of athletic training practice. The course prepares students to integrate primary care concepts into patient-centered care and optimize health outcomes across diverse patient populations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Athletic Training (AT-MS) or SUBPLAN: (BSPATH-SP)

ATHLTR 2821 - BOARD OF CERTIFICATION (BOC) PREPARATION

Minimum Credits: 2
Maximum Credits: 2
This 2-credit course aims to aid each athletic training student in the final stages of preparation for the Board of Certification (BOC) examination.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

ATHLTR 2823 - CLINICAL PRACTICUM 3- CLINICALLY IMMERSIVE SEMESTER

Minimum Credits: 5
Maximum Credits: 5
This 5-credit practicum is designed to supplement the third clinical experience and includes a clinical immersion experience. The course addresses the curricular standards outlined in the current version of the Standards for Accreditation of Athletic Training Programs and the associated Core Curricular Competencies. Content is delivered by Athletic Training Program faculty and reinforced through clinical application and evaluation in live patient-care situations when available, or through simulated experiences when live opportunities are not feasible.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

ATHLTR 2824 - CLINICAL PRACTICUM 4

Minimum Credits: 3
Maximum Credits: 3
This 3-credit practicum is designed to supplement the fourth clinical experience by addressing the curricular standards outlined in the current version of the Standards for Accreditation of Athletic Training Programs and the associated Core Curricular Competencies. Content is delivered by Athletic Training Program faculty and reinforced through clinical application and evaluation in live patient-care situations when available, or through simulated experiences when live opportunities are not feasible.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

Behavioral & Communty Hlth Sci

BCHS 2503 - PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
Short term field placement relevant to the student's area of interest in an operating organization or agency.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2504 - THEORY AND PRACTICE OF HEALTH COMMUNICATIONS

Minimum Credits: 3
Maximum Credits: 3
This course equips public health professionals with the knowledge and skills to develop and implement effective health communication strategies. Through a mix of theory, case studies, and practical applications, students will learn how communication shapes health behaviors, influences policy, and impacts public health outcomes, culminating in developing a health communication product for an organization. This course is ideal for graduate students in public health and associated fields pursuing careers in health education, health promotion, program evaluation, or communication and for students preparing for the CHES exam.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Behavioral & Community Hlth Sc (MPH, DPH)
Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
The core course provides an overview of the social and behavioral sciences and their importance in the inter-disciplinary field of public health. A primary emphasis is on the social-ecological model, its application to public health issues, and its use in the development of policies, strategies, interventions and programs. The course content will introduce students to several relevant social and behavioral theories as well as a range of community health assessment and planning models used by public health professionals in both domestic and international venues. Through a series of assigned readings, discussion exercises, group projects, quizzes and written assignments, students will enhance their knowledge and awareness of the role of social and behavioral sciences in public health and its relevance to their specific discipline. At the conclusion of the course students will be able to: identify the important social and behavioral determinants of health; describe the inter-relationships between the social, behavioral, bio-medical, physiological, and environmental factors related to individual and community health; identify the major health disparities related to social, behavioral and economic factors; describe the role of culture and socio-economic status in health behavior, access to services, and decision-making; and understand the importance of community partnerships and participatory approaches in the development, implementation, management and evaluation of community policies and programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: All Public Health MPH degrees
Course Attributes: MCSI - Sustainability Focused

BCHS 2511 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Students with major interests in specialty areas participate in courses of individual study, research activities, or advanced readings with a specified faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BCHS 2516 - VIDEO FOR HEALTH PROMOTION

Minimum Credits: 3
Maximum Credits: 3
Video is an increasingly important media for the distribution of health promotion messages. The purpose of this class is to provide students with basic principles of script development and the video production process to be able to produce educational and persuasive short-form videos for health promotion. Students will develop, direct, and produce short-form health promotion videos for distribution on social media platforms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2519 - APPLYING THEORY AND SYSTEMS THINKING IN PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
This course prepares students to apply theoretical perspectives and systems thinking to analyze and address complex public health problems, particularly for populations who are marginalized and oppressed. Students will investigate several theories used in public health research, practice, and policy, including foundational frameworks as well as contemporary, critical perspectives. Systems thinking provides students with a framework for examining how interconnected theory-driven factors across individual, community, and structural/societal levels interact to shape health outcomes and perpetuate health inequities. The integration of theory, systems thinking, and empirical scientific literature will allow learners to identify critical intervention points at multiple social ecological levels to promote health and foster health equity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: BCHS-MPH

BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION

Minimum Credits: 1
Maximum Credits: 1
The course is designed as an introduction to the major theories that are the foundation for most health promotion and health education interventions. It will provide the student with exposure to the current theories that are being used in health behavior and health promotion educational interventions. Also it will provide students with a theoretical foundation for designing, implementing and evaluating health promotion and education programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Behavioral & Community Hlth Sc (MPH, DPH)
Course Attributes: Global Studies

BCHS 2521 - ESSAY

Minimum Credits: 1
Maximum Credits: 3
The essay requirement is designed to provide the student with an opportunity to integrate the major components of the public health learning experience. The student is expected to demonstrate verbal and technical proficiency in expository writing.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING

Minimum Credits: 3
Maximum Credits: 3
This course is designed to expose students to critical health program planning, implementation and evaluation tools and strategies in a

format that models actual program implementation. This class complements other BCHS coursework in that it gives the student the opportunity to apply theories and models learned in other classes. In particular, the socio-ecological theory heavily influences the content of this course. Through discussions, presentations, written assignments, and in-class activities, students will learn resources for, and gain practice in, the stages of program development, including budgets and use of logic models. Students will learn how to present their program proposals in both written and oral formats.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Behavioral & Community Hlth Sc (MPH, PHD)

BCHS 2524 - OVERVIEW OF HEALTH EQUITY

Minimum Credits: 3
Maximum Credits: 3
Achieving health equity and understanding health disparities involve a critical analysis of historical, political, economic, social, cultural, and environmental conditions that have produced an inequitable health status for vulnerable populations in the United States. Eliminating health disparities and achieving health equity are primary goals of are primary goals of Healthy People and the US Office of Disease Prevention and Health Promotion, in order to 'improve the health and well-being of all'. The purpose of this class is to introduce basic issues that underlie health disparities. This course will include an overview of current data and literature, foster discussions that will examine health disparities, explore social, structural and environmental determinants of those disparities, critically review measurement issues, and determine public health's response to addressing these disparities and achieving health equity. Students should seek to critically reflect on their professional roles in eliminating health disparities and achieving health equity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Focused

BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The goal of the course is to give students a basic understanding of social and behavioral sciences research principles, as well as how these methods are implemented in the field of public health. Relationship of applied research to program evaluation, the link of theory to research, and the translation of research information to applied public health programs and policies will be emphasized. Participatory research will be highlighted. Quantitative and qualitative strategies, research designs, data collection methods, participant selection, and data analysis will be covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Behavioral & Community Hlth Sc (MPH, DPH, PHD)

BCHS 2528 - INTEGRATIVE SEMINAR IN HEALTH EQUITY

Minimum Credits: 1
Maximum Credits: 1
This one credit seminar serves as the integrative course for the health equity certificate. Students build upon and apply the knowledge and experiences gained from all of the previous certificate core and elective courses to specific public health problems while considering a health policy framework. The seminar is designed to expose students to the critical analysis of a health policy as it affects health equity, as well as provides an opportunity for students to network with a variety of academic and community leaders that can potentially further their knowledge and practical skills in this area.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BCHS 2532 - DIMENSIONS OF AGING: CULTURE AND HEALTH

Minimum Credits: 2
Maximum Credits: 2
Provides an overview of the aging experience from a cross cultural and a public health perspective. The ways in which people cope with and adapt to the aging process is the major theme.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies, Global Studies

BCHS 2534 - CLINICAL ASPECTS OF DEMENTIA CARE

Minimum Credits: 2
Maximum Credits: 2
This course is designed as an independent study for students in the public health and aging program. Its focus is on the methods and technology for diagnosis and treatment of Alzheimer's Disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2551 - SOCIAL NETWORKS & HEALTH

Minimum Credits: 1
Maximum Credits: 1
This course is an introduction to the theory, methods, and procedures of network analysis with emphasis on applications to health and social behavior. The goal of the course is to provide a working knowledge of concepts and methods used to describe and analyze social networks so that professionals and researchers can understand the results and implications of this body of research. The course also provides the training necessary for scholars to conduct network analysis in their own research and practice careers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH

Minimum Credits: 3
Maximum Credits: 3
This course uses strengths-based and social ecological approaches to prepare students for practicing public health with communities. Through in-class activities, discussions, community-based experiences, and written assignments, students will learn ways to engage communities and assist them in building their own capacity to identify and address health issues. Students will also learn techniques for conducting community health needs assessments using both primary and secondary data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Behavioral & Community Hlth Sc (PHD, DPH, MPH)
Course Attributes: Community Element - Building Understanding

BCHS 2558 - HEALTH PROGRAM EVALUATION

Minimum Credits: 3
Maximum Credits: 3
Surveys the evaluation and policy research methods applied to health. Students learn to critically assess the adequacy of evaluations and how to plan and pilot test an evaluation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2560 - INTRODUCTION TO POPULATION PROBLEMS

Minimum Credits: 3
Maximum Credits: 3
The impact of population growth, distribution, and change on social, economic, environmental, and health relationships is presented with a focus on the sociopolitical responses to population dynamics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Global Studies, MCSI - Sustainability Focused

BCHS 2562 - SEMINAR IN FAMILY PLANNING

Minimum Credits: 3
Maximum Credits: 3
Participants explore the history of contraception and the birth control movement. Issues related to contraceptive care and the broader concerns of women's health are discussed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BCHS 2572 - RISK COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
Course focuses on risk communication within the context of terrorism and natural disasters. The didactic and experiential course will include core principles of risk communication, examine special challenges of risk communication with diverse audiences and media, and prepare students to create risk and crisis communication campaigns.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2575 - SEMINAR MATERNAL AND CHILD HEALTH

Minimum Credits: 3
Maximum Credits: 3
Seminar deals with current issues in society affecting the health of children and their families. For example, problems of adolescent pregnancy, child abuse and neglect, emotional abuse and sexual abuse; prevailing attitudes and responses; etiology and risk factors; and multidisciplinary preventive strategies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BCHS 2599 - PUBLIC HEALTH APPROACHES TO WOMEN'S HEALTH

Minimum Credits: 3
Maximum Credits: 3
Public health problems affecting women, i.e., Alcoholism, smoking, occupational health, reproductive health, aging and cancer, as well as health and social problems relating primarily to women are discussed. Etiology of health problems, prevention and treatment, high-risk groups, and controversies related to care are covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BCHS 2605 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION

Minimum Credits: 1
Maximum Credits: 1
This workshop introduces students to the focus group as a data collection strategy and prepares them to use focus groups as a research tool. The workshop uses lectures, discussions and interactive exercises to familiarize students with all aspects of focus groups. Topics covered include the theoretical basis of focus groups, formulating questions, recruiting participants, designing sampling schemes, facilitating the discussion, taking notes and applying/reporting out on the data. Students will complete a series of assignments designed to sharpen their listening, facilitating and analytical abilities. Critical components of the class will be observation of and hands-on experience with facilitating discussions, taking notes and reporting. Ability to role play highly desirable.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course is organized around themes central to the conceptualization and implementation of community-based participatory research (CBPR). The goal of this course is to familiarize students with CBPR. Students will become conversant in seminal CBPR literature. Discussion, interactive learning exercises, and examples of current research will be used to provide an understanding of CBPR and the associated strengths and limitations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE

Minimum Credits: 1
Maximum Credits: 1
This course provides an introduction to concepts and skills in knowledge translation (a coordinated, collaborative approach to ensure that research findings are utilized by key stakeholders) and to the role of research in changing policy and practice at local, regional, and national levels. This module will build on concepts in community-partnered research introduced in module a of this three-part sequence in community based participatory research. This skills-based module will introduce learners to theoretical concepts in knowledge translation (KT), dissemination and implementation science, and apply these concepts to practical exercises to translate research findings for relevance to other key stakeholders, including community partners, program developers, and policy makers. One session will be devoted specifically to skills building in legislative and media advocacy. The goal of this course is to familiarize learners with the critically important steps involved in translating research findings for relevance to stakeholders beyond academia. Discussion, interactive learning exercises, and examples of research dissemination and implementation science will be used to provide a foundation in kt as an aspect of community-partnered research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD

Minimum Credits: 1
Maximum Credits: 1
This course provides hand-on training in the participatory research method known as concept mapping (cm). Cm gives community members and other stakeholders a unique chance to have their own words communicate ideas and concepts. Research participants contribute directly in the processing of this information as it directly relates to their community and intervention needs. The goal of the course is to familiarize students with example applications of the research method and to provide training related to concept mapping data

collection and analysis. Discussion, interactive learning exercises, and examples of current research will be used to provide an understanding of cm and the associated strengths and limitations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH

Minimum Credits: 2
Maximum Credits: 2
The purpose of the course is to prepare students to effectively manage a range of public health projects. The course is lecture/discussion/laboratory/application based. Project management software is used including Microsoft Project and Visio. Industry standard body of knowledge is the foundation of the course further illustrated with case studies and examples. There are no pre-requisite courses or software skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2660 - HARM REDUCTION APPROACHED IN HEALTH & PUBLIC HEALTH SETTINGS

Minimum Credits: 1
Maximum Credits: 1
The aims of this seven week course are to introduce students to harm reduction (HR) principles as a conceptual approach to care rather than simply as a set of strategies, like syringe exchange, and to challenge them to consider how HR-informed approaches to care may improve participant and provider outcomes. The approach to care builds on lessons learned from community and provider settings that have demonstrated success in engaging and caring for marginalized populations including those who use substances. However, this course extends the conversation about harm reduction to aspects of care that can promote health improvement among all patient and client populations, not just those who use drugs. Concepts that will be discussed include universal harm reduction and herd harm reduction. The course will incorporate a number of speakers who will address the application of HR in specific settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH

Minimum Credits: 1
Maximum Credits: 1
This course is an introduction to historic and current concepts about complex, dynamic systems in public health research and practice. We will discuss the rationale for adopting systems thinking - an approach to analyzing the impact of systems within their social, spatial, and temporal context - in behavioral and community health research and practice and illustrate how this approach is critical for the development of public health policy. The course will include didactic sessions, guest lectures, hands-on engagement with tools that allow us to represent dynamic social systems, as well as seminar-style discussions of studies that examine dynamic social systems in public health. (Note: BCHS 2520 is recommended.)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate Sch of Public Health

BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH

Minimum Credits: 1
Maximum Credits: 1
Multilevel analysis is an essential statistical tool in public health that can simultaneously investigate the effects of factors at multiple social ecological levels on individual-level outcomes. In this course, students will learn to identify scientific problems that necessitate the use of

multilevel statistical modeling techniques and understand the essential theoretical underpinnings of multilevel analysis. Students will conduct multilevel statistical modeling procedures using Stata and interpret the statistical and practical meaning of fixed and random effect coefficients from the output of these models. Special emphasis will be placed on the strengths and limitations of multilevel analysis in investigating social and group-level determinants of health. BIOST 2041, PSYED 2018, or permission to enroll from the instructor required. Knowledge of linear regression, logistics regression or ANOVA strongly preferred.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2992 - SYSTEMS THEORIES AND APPROACHES

Minimum Credits: 1
Maximum Credits: 1
Systems science approaches were developed to understand connections between a system's structure and its behavior over time. The use of such approaches within public health research and practice has grown tremendously over the past decade. Identifying and understanding the dynamic relationships between individuals and their social and physical environments can help us identify potential leverage points for intervention. This course provides an introduction to systems thinking and models in public health, explores the importance of associated theories and underscores the utility of systems science approaches within public health research and practice. We will highlight current systems science public health research and encourage students to think critically about the utility of systems theories and approaches within public health.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2993 - MODELING HEALTH BEHAVIOR CHANGE

Minimum Credits: 3
Maximum Credits: 3
In this class, we focus on the dynamics of health behavior change: (i) the ways social interaction and community factors affect individual health behavior, and (ii) how changes in the behavior of individuals may in turn reorganize larger networks or communities. These dynamics involve temporal processes, but they may also involve spatial processes. In the class we will examine very simple behaviors relevant for health and develop models to predict how behavior changes and what patterns may emerge. Even simple behaviors and artificial social situations can quickly become complex. We use computer representations to "model" these relationships. With this approach we acknowledge complexity and dynamics in health behavior.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 3002 - HEALTH SURVEY METHODS

Minimum Credits: 3
Maximum Credits: 3
Introduces techniques for the collection of health data through survey methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES

Minimum Credits: 3
Maximum Credits: 3
Evaluates theory and methodology with emphasis upon human service organizations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BCHS 3004 - INTEGRATIVE RESEARCH SEMINAR: GRANT WRITING

Minimum Credits: 1
Maximum Credits: 1
Every graduate of a doctoral program needs to know how to write a successful grant application to fund their work. Whether you are a senior manager leading a public health program in the public or non-profit sectors or you are a researcher working in an academic setting, you will need funding to support your work! We begin this doctoral seminar by asking the question, "how do you write a grant proposal that will attract the attention of a funding agency and convince them that your application is significant and should be a priority for funding?" building on the ideas articulated in BCHS doctoral students" preliminary examination, we will focus on writing the specific aims and significance sections for an NIH grant proposal. The students" written work will be shared with and critiqued by other students and faculty participating in the seminar. Finally, we will review and critique examples of successful and unsuccessful grant applications "both program and research grants (especially research grants that the students will most likely be writing at the beginning of their academic careers" namely, ro-3s or r-21s).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Attributes: Global Studies

BCHS 3006 - INTEGRATIVE RESEARCH SEMINAR: WRITING FOR PUBLICATION

Minimum Credits: 1
Maximum Credits: 1
The Integrative Research Seminar: Writing for Publication focuses on the process of developing a manuscript for publication in a peer-reviewed journal. All doctoral students must develop the skills to enable them to write and publish the results of their work. The goal of this seminar is to provide students with the requisite knowledge and skills to develop a manuscript for submission to an appropriate journal for publication. As part of this process students will also learn about the peer review process and how reviewers rate manuscripts submitted for publication. It is expected that students in this seminar will work closely with their academic mentor(s) on the development of manuscripts throughout their doctoral program. And, this seminar will assist students in fulfilling the requirement to submit at least one first-authored manuscript-- ideally based on their dissertation research, before they graduate. The seminar content will be delivered via a series of faculty presentations and discussions. There are no prerequisites for this seminar.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Behavioral & Community Hlth Sc (PhD or DPH)

BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
Students will be introduced to the basic principles of ethnographic research and their application to the evaluation of human service and health care programs. They will become familiar with research design in ethnographic studies; the process of fieldwork in urban settings; the methodology of participant observation and ethnographic interviewing; recording ethnographic data; ethnographic writing; and ethical questions surrounding ethnographic research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BCHS 3010 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the use of spatial data in public health. The two main goals are (1) to familiarize students with the use of geographic data in public health research and practice; and (2) to introduce basic spatial analytic skills applied to geographic and spatial data. Students will be taught how to use geographic information systems (GIS) to inform both community practice and research. They will learn how to create, manage, and analyze geographic data and gain hands-on experience applying these techniques to research questions. No previous knowledge of mapping or GIS is assumed. One lecture and one lab per week.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

BCHS 3021 - SOCIAL NETWORKS AND HEALTH II: COMPUTER METHODS

Minimum Credits: 1
Maximum Credits: 1
This course provides hands-on training in social network analysis using 3 different software packages: UCINet, R, and Gephi. It is intended for those students who are interested in conducting their own social network studies using the latest available software. It is a time-intensive lab and project course. Topics to be covered include: -How to use UCINet to conduct intermediate and advanced SNA -How to use R to use custom SNA packages -How to use Gephi to conduct basic SNA and generate descriptive network graphs This course consists of in-class examples using SNA software, designing a network analysis plan in consideration of software features, and a final project. Assignments are designed to build components of a full network study, using specific analytic features from available software, visualizing network(s), and culminating in the final project. Individual projects will use data that can be provided or is collected by the student themselves.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BCHS 3030 - MEASUREMENT IN THE SOCIAL AND BEHAVIORAL SCIENCES

Minimum Credits: 2
Maximum Credits: 2
The goal of this two-credit course is to provide you with fundamental skills to identify, use and create scales and indices for research and evaluation. The course will be primarily based on classical measurement theory, yet we will discuss item response theory as well. We will also cover good measurement processes, including establishing and evaluating validity and reliability. We will address communication of measurement principles and applications to lay and scientific audiences. Throughout the course, materials will highlight the influence that culture and socio-demographics have on measurement tools and their validity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 3100 - GRANT WRITING

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to write a grant proposal in the format of a National Institutes of Health (NIH) research grant application. The research topic should be a student's dissertation topic and/or build on their BCHS doctoral preliminary examination. The grant application will include specific aims and a research plan that includes significance, innovation, and approach. Students will participate in small-group discussions to provide and receive peer feedback and will be expected to present and defend their research plan to peers. Additionally, students will learn about the other components required for an NIH fellowship (F31) grant proposal. They will also critique an NIH R01 grant using the same approach that is currently used by NIH study sections.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 3200 - SCALE DEVELOPMENT AND SURVEY DESIGN IN SOCIAL AND BEHAVIORAL SCIENCES

Minimum Credits: 3
Maximum Credits: 3
The course provides a comprehensive introduction to survey methods and psychometrics for the social and behavioral sciences. The course covers both theory and practical application. This course will provide a basis for designing and implementing surveys to collect information for administrative purposes or for scientific investigation. Through class time, course assignments, and practical firsthand experience, you will learn the appropriate use of the survey approach, sampling, development of survey instruments, data collection, processing, and analysis. Moreover, the course will explore good measurement processes, such as establishing and evaluating validity and reliability, along with procedural, administrative and ethical contingencies in planning for, and conducting health surveys.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: BCHS-MPH or BCHS-PHD; PREQ: BIOST 2041

BCHS 3503 - PREVENTION SCIENCE: TRANSLATING KNOWLEDGE TO PRACTICE

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide a solid grounding in basic concepts, theories, practical approaches and methods associated with prevention (defined here as both problem prevention and health promotion). The course will focus on behavioral and psyco-social areas including substance abuse, mental health, victimization, and sexually transmitted infections, including HIV.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 3506 - IMPLEMENTATION SCIENCE IN PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to prepare students with the knowledge and skills to conduct implementation science within the field of public health. Although evidence-based interventions are widely available, they are underutilized to address a wide variety of public health challenges. We will examine barriers that exist with respect to the implementation of evidence-based interventions (EBIs) and strategies to overcome these barriers. Specific topics include strategies to identify EBIs, assessing and strengthening organizations' and communities' readiness to utilize EBIs, dissemination and scaling up, cultural adaptation of EBIs, and implementation science theories and conceptual frameworks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 3555 - DOCTORAL SEMINAR IN BEHAVIORAL AND COMMUNITY HEALTH SCIENCES THEORIES AND MODELS

Minimum Credits: 3
Maximum Credits: 3
This course is a requirement for students in the doctoral program in the department of behavioral and community health sciences. The seminar is designed to stimulate critical thinking about specific public health issues from within the framework of various behavioral and community theories and models. The purpose of this doctoral seminar is to critically apply and evaluate specific conceptual models and theoretical frameworks to particular significant public health problems or issues. This requires that seminar participants acquire close

working familiarity with various conceptual tools and substantive issues. One goal underlying the selection of the substantive issues has been to select those which challenge, provoke, confront, excite, and stimulate seminar participants about economic and political controversies in contemporary healthcare and public health. Similarly, the selection of issues and reading materials dealing with those issues, challenge taken-for granted assumptions with respect to health and illness, public health and medical care as well as health policies and health politics. A final objective of the seminar is to challenge participants to reassess their conception of the field of public health and their place in it. Is it a profession? A discipline? An applied social science? What are the implications/consequences of each?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Behavioral & Community Hlth Sc (PHD or DPH)

BCHS 3703 - EXECUTIVE MANAGEMENT PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
The purpose of the executive management practicum is to provide a structure for students in the DRPH program to gain experience in the application of the core set of competencies in high level practice settings. The association of schools of public health has identified seven competencies that students are expected to master during their doctoral study. Four of these are the focus of the practicum: advocacy, communication, leadership, and management. Practicum sites will be chosen based on the mission of the organization and the opportunity for the student to be able to exercise and refine their skills in the areas of management, leadership, communication and advocacy.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

BCHS 3707 - APPLIED MULTIPLE REGRESSION ANALYSIS AND CAUSAL MODELING FOR THE BEHAVIORAL AND COMMUNITY HEALTH SCI

Minimum Credits: 3
Maximum Credits: 3
This course equips advanced graduate students with the skills necessary to conduct statistical regression analyses on real-world data. Students will learn to formulate clear research questions, develop statistically testable hypotheses, and design robust statistical analysis plans incorporating causal modeling frameworks. Through hands-on experience with statistical software, students will gain proficiency in programming, analyzing, and interpreting data in a transparent and reproducible manner. The course emphasizes the creation of high-quality tables and figures for publication, clear and concise reporting of statistical results, and strategic composition of methods sections for scientific manuscripts. Additionally, students will engage in peer critique, refine their ability to respond to reviewers' comments with professionalism, and critically evaluate the strengths and limitations of studies. Students will be required to identify and obtain a dataset ready for analysis by the beginning of the course. By the end of the course, students will be well-prepared to conduct and publish quantitative research in peer-reviewed journals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Behavioral & Community Hlth Sc (DPH or PhD)

BCHS 3888 - PREPARATION FOR COMPREHENSIVE EXAMINATION

Minimum Credits: 1
Maximum Credits: 3
This course is designed to be an independent study for BCHS doctoral students in order for them to be able to read and prepare for their comprehensive exam. The purpose of the BCHS comprehensive examination is to "to assess the student's mastery of the general field of doctoral study, the student's acquisition of both depth and breadth in the area of specialization within the general field, and the ability to use the research methods of the discipline".
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

Bioengineering

BIOENG 1070 - INTRODUCTORY CELL BIOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
Principles of cell biology in higher organisms: structure, function, biosynthesis, and macromolecular organization with a focus on macromolecular organization and function from a quantitative systems perspective. Upon completing the two course sequence, BIOENG 1070 and BIOENG 1071, students should be able to (1) demonstrate understanding of the principles of cell structure and function, (2) describe the experimental tools used to understand cellular function such as molecular genetic techniques, biochemical analysis, and microscopy, and (3) use systems approaches to understand how cellular processes are integrated.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: (ENGR 0012 or ENGR 0016) and (CHEM 0120 or 0420 or 0720 or 0780) and PHYS 0174; CREQ: PHYS 0175; PROG: SWANSON SCHOOL OF ENGINEERING

BIOENG 1071 - INTRODUCTION TO CELL BIOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
Continuation of BIOENG 1071. Principles of cell biology in higher organisms: structure, function, biosynthesis, and macromolecular organization with a focus on macromolecular organization and function from a quantitative systems perspective. Upon completing the two course sequence, BIOENG 1070 and BIOENG 1071, students should be able to (1) demonstrate understanding of the principles of cell structure and function, (2) describe the experimental tools used to understand cellular function such as molecular genetic techniques, biochemical analysis, and microscopy, and (3) use systems approaches to understand how cellular processes are integrated.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: BIOENG 1070;Min Grade `C¿ for this course; PROG: Swanson School of Engineering

BIOENG 2005 - RADIOFREQUENCY MEDICAL DEVICES AND APPLICATIONS OF ELECTROMAGNETICS IN MEDICINE

Minimum Credits: 3
Maximum Credits: 3
The course will cover topics related to applied electromagnetics in medicine. Topics such as Maxwell equations, wave equations, transmission lines, electromagnetic theorems, introduction to antennas, and introduction to computational electromagnetics will be presented. The class will include analyses of several RF devices used in medical applications such as MRI, biological sensors, RF ablation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

BIOENG 2016 - FUNDAMENTAL PRINCIPLES OF BIODEGRADABLE

Minimum Credits: 3
Maximum Credits: 3
Biodegradable metals have emerged as a new class of materials with significant potential for myriad biological applications, in particular, the craniofacial, orthopedics and cardiovascular areas. The latter has already witnessed clinical trials with few patients already being implanted with a biodegradable metallic stent. This course is designed to introduce the principles and various fundamental concepts of this novel class of metallic alloys. These include fundamental principles of metal alloy physics and theory, important concepts of phase diagrams, physical metallurgy concepts, metallic glass theory, processing fundamentals, biocompatibility, and toxicity issues. The effect of microstructure on biocompatibility and corrosion will also be discussed. The course objective is to introduce the student to this new family

of bio-functional metals and their biodegradable properties. In doing so, the student will be familiar with these materials and their useful applications. The students are expected to have had courses in thermodynamics and physiology. Introduction to materials science and engineering would be preferred but is not a prerequisite.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

BIOENG 2023 - BIOENGINEERING SEMINAR SERIES

Minimum Credits: 1
Maximum Credits: 1
Selected, bioengineering-related topics are presented in a one hour lecture format by members of the bioengineering community of both the university of Pittsburgh and other institutions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2024 - BIOENGINEERING SEM FOR PROF MS

Minimum Credits: 0
Maximum Credits: 0
One hour lecture format by members of the bioengineering community of both the university of Pittsburgh and other institutions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

BIOENG 2027 - GRAND ROUNDS SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students in the bioengineering community can attend weekly grand rounds in participating clinical departments.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

BIOENG 2028 - BIOENGINEERING IN PSYCHIATRY SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This is a multidisciplinary seminar series, "Bioengineering in Psychiatry," that aims at educating and introducing students with backgrounds in engineering and other quantitative sciences to mental health and psychiatric research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

BIOENG 2040 - TRANSPORT PHENOMENA FOR BIOMEDICAL AND CHEMICAL ENGINEERS

Minimum Credits: 4
Maximum Credits: 4
Biomedical and chemical engineering graduate students require a similar comprehensive understanding of the underlying principles of heat transfer, chemical species transfer, and momentum transfer or fluid mechanics. This graduate course provides a unified treatment to heat, mass, and momentum transfer at the graduate level. The first part of the course covers the constitutive relations that describe the diffusive

flux of material properties, including thermal energy, chemical species concentration, and momentum. Conservation principles and boundary conditions are covered for these material properties and numerous example paradigm problems of steady-state unidirectional (1-D) transport in biomedical and chemical engineering applications are reviewed. The second part of the course covers more advanced concepts including non-Newtonian rheology, unsteady state and 2-D transport, convective transport processes, turbulence, and creeping flow. The focus throughout is on extensive problem-solving and computer simulation using Comsol multi-physics using both biomedical and chemical engineering examples.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2045 - COMPUTATIONAL CASE STUDIES IN BIOMEDICAL ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Bioengineering 2045 computational case studies in Biomedical Engineering this is an interdisciplinary course that will combine: basic sciences such as electromagnetics and thermodynamics applied sciences such as numerical methods and simulations biomedical research and applications such as magnetic resonance imaging, hypothermia, heat transfer in biological bodies, and cardiac action potential, and mathematical concepts such as optimizations, linear and nonlinear equations. This course will be based on solving computational biomedical engineering problems using simulations. Some of the numerical topics will include: numerical solutions of matrices, finite element and finite-difference methods. These topics will be described with emphasis on their use in solving these problems. The course will cover setting up the mathematical description of the models and solving these problems using advanced computer codes and the supercomputer center at Pittsburgh. There will be 1d, 2d, and 3d modeling projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2067 - MUSCULOSKELETAL BIOMECHANICS

Minimum Credits: 3
Maximum Credits: 3
Course work will include the structure, function, and mechanics of the musculoskeletal system. Specific topics will include the kinematics and control of human movement and the mechanics of the musculoskeletal connective tissues, such as ligament, tendon, bone, cartilage, and muscle. Special emphasis will be placed on the relationship between function and material properties of these tissues. A research paper will be required as a term project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Bioengineering(PHD, MBE)

BIOENG 2095 - GRADUATE PROJECTS

Minimum Credits: 1
Maximum Credits: 6
Individual study program under guidance of faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOENG 2150 - MEDICAL PRODUCT IDEATION

Minimum Credits: 3
Maximum Credits: 3
A didactic class that explores the principles and use of "ethnography" as a tool to observe and document clinical activity in order to draft a clear statement of a clinical problem in need of solution and methods for concept generation to identify potential solutions. Students will be

able to describe and use ethnographical techniques in identifying workplace problems and be able to describe and use concept generation methods to develop potential solutions. Topics covered: ethnography in the workplace; group brainstorming; brain-writing; affinitization; morphological analysis; basic human factors design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2151 - MEDICAL PRODUCT DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
A didactic course that uses principles of system engineering, the stage-gate process for medical product development and engineering and business analysis principles to evaluate the commercial potential proposed medical devices to further develop feasible solutions to a clinical problem identified in BIOENG 2150. Students will demonstrate use of systems engineering techniques to prioritize a set of feasible device and/or system solutions and ability to use intellectual property (IP) tools to determine suitability for further development. Students will demonstrate use of course principles in development of a commercialization plan for a proposed medical product. Design controls required by fad and international bodies; systems engineering methodologies; intellectual property (IP) and IP search tools; brief market analysis; size by region, growth, competition, barriers to entry, sustainable advantage; reimbursement issues for proposed medical device/system; basic financial analysis ' students will construct spreadsheets typically presented to senior business management. This will include estimates of costs, margins, break-even analysis, NPV, hurdle rates, ROI, IRR; codes, standards, and regulatory processes (FDA, IEC & ISO, UL, ministry of health (Japan), NRC, BRH, notified bodies, obtaining broad indications for use); safety, reliability, product liability considerations, manufacturability considerations (DFM ' design for manufacture, workflows)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOENG 2150; PLAN: Medical Product Innovation or Medical Product Engineering

BIOENG 2152 - MEDICAL PRODUCT PROTOTYPING I

Minimum Credits: 3
Maximum Credits: 3
This graduate level course focuses on frequently utilized tools and techniques used in medical product design, conceptualization, and early prototyping. This is a foundational course, where no prior (or assumed) knowledge of design or prototyping is required. Students will be introduced to a series of commonly utilized prototyping techniques including sketching, foam core modeling, 3d modeling, digital fabrication, and electronics building blocks. This immersive course introduces students to the fundamental principles of device prototyping through engaging team projects and guided technical workshops, empowering them with crucial foundational skills to bring their ideas to life. In parallel with learning the tools and techniques, students will also be placed in teams and challenged to implement these tools into an innovative and creative wearable technology that can augment human performance. The focus on the design project will be to harness students' creative potential, exercise flexible thinking skills, and to learn to implement the design process and project management software and strategies. Although this course was designed specifically for the bioengineering MS-MPE program, it is open to other graduate level students that have had minimal exposure to hands-on and/or foundational skills for medical device prototyping.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2154 - WORKSHOP IN DESIGN FOR MANUFACTURABILITY

Minimum Credits: 1
Maximum Credits: 1
Design for Manufacturability (DFM) provides a systematic methodology that can be used to analyze product design for improvements in assembly and manufacturing. Students will use DFM to redesign current products for changes in manufacture that lead to reduction in production cost and improved operability/ customer satisfaction. Students will employ modem software tools that accurately model parts for specific manufacturing operations, model part costs, simplify products, find specific avenues to reduce manufacturing and assembly costs, benchmark products, and quantify improvements. Course Objectives : Students will gain hands-on experience incorporating the

DFM concepts in a project. Upon completing the course, the students should be able to describe the utility of DFM in product development and early manufacturing design, be able to quantitatively evaluate the impact of design choices on manufacturing cost, and be able to use modem quality control concepts and approaches.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

BIOENG 2165 - MEDICAL PRODUCT ENTREPRENEURSHIP

Minimum Credits: 3
Maximum Credits: 3
Medical product ideation, prototyping, and development are cornerstones for identifying unmet clinical needs and navigating the complexities of the development process. But how does one translate new medical products into the marketplace? Entrepreneurship is a discipline with established tools and methods that must be properly harnessed in order to translate medical products into a startup or an incumbent company (big or small.) After the completion of this course students will be able to understand and differentiate between 'right sized' entrepreneurial methodologies for both startups and existing companies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Medical Product Engineering or Medical Product Innovation

BIOENG 2166 - MANAGING MEDICAL PRODUCT RESEARCH AND DEVELOPMENT

Minimum Credits: 4
Maximum Credits: 4
This course will provide the student a theoretical and practical knowledge of professional project management for medical product development in industry. Through lectures, workshops, and industry seminars, students will acquire skills in the following areas: 'project engineering, project management, and innovation management. 'Managing product portfolios. Strategic planning and product planning. 'Creating and managing effective project teams. 'Stage gate process and lean methodology. 'Concurrent engineering. 'Project management tools, including: 'systems engineering 'work breakdown structures' budgeting' resource allocation and scheduling 'monitoring and control of product development students will be introduced to project management tools developed by PDMA (product development and management association) and the PMI (project management institute). The course will be taught by industry professionals with long experience in the medical products industry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2167 - MANAGING MEDICAL PRODUCT INNOVATION

Minimum Credits: 3
Maximum Credits: 3
This course will provide the student theoretical and practical knowledge of product management and product development. The introduced principles and tools are used today in the creation of products, software, and services in healthcare businesses and other industries. The course covers the entire innovation process from Business Strategy, through Product Development, and into Product Launch. Knowledge is communicated using dynamic lectures, case studies, team exercises, and guest speakers from industry. Focus of exercises and homework will be the application of learned tools and methods to a clinician sponsored project. Students will acquire knowledge and skills in the following areas: Business Strategy Market Research Portfolio Management Process New Product Innovation Process Culture, Teams, Leadership Life Cycle Management Design and Development Tools Even though some class content may overlap with other courses that the student may take, this course will provide different and unique perspectives. The course will convey large parts of the PDMA (Product Development and Management Association) Body of Knowledge and students will receive a PDMA issued certificate.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Medical Product Innovation or Medical Product Engineering

BIOENG 2170 - CLINICAL BIOENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This graduate level course focuses on the early stages of the innovation process; strategic analysis of complex clinical problem solving through the needs finding, concept generation and refinement. Students, under the mentorship of participating CMI faculty (SSOE, SHS, business, law), interview and observe clinical personnel at the University of Pittsburgh school of medicine performing clinical work in order to rigorously define and document clinical needs in the environment of use. Using principles articulated in BIOENG 2150 (medical product ideation), the students produce a document that clearly defines and communicates one or more clinical problems and prioritized feasible solution paths.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOENG 2150; PLAN: Medical Product Engineering or Medical Product Innovation

BIOENG 2171 - MEDICAL PRODUCT PROTOTYPING 2

Minimum Credits: 3
Maximum Credits: 3
This graduate level course focuses on the later stages of the innovation process; prototyping, market analysis, strategic planning, intellectual property protection, and business planning. Students, under the mentorship of participating CMI faculty (SSOE, SHS, business, law), will apply the principles and techniques from BIOENG 2151 (medical product development) and prioritize clinical needs identified in BIOENG 2170 (clinical bioengineering) and, using the resources of the swanson innovation center, create a prototype for pre-clinical and clinical evaluation. Students will use basic principles of intellectual property (IP) for engineers and publicly available search tools to determine patentability, freedom to operate, and patent strength. Students will then produce a medical device/product prototype and complete documentation set suitable for technology transfer.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOENG 2170; PLAN: Medical Product Engineering or Medical Product Innovation

BIOENG 2173 - MEDICAL DESIGN FOR LOW RESOURCE ENVIRONMENTS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on designing medical products, systems, and solutions for resource-poor settings using creative problem-solving tools in the face of extreme limits. Tools include Human-Centered Design, Frugal Innovation and Design for Extreme Affordability. The course is primarily project-based, where students' projects will focus on a unique and specific challenge identified by a low resource hospital, partner, or the Engineering World Health (EWH) Design Competition. Student teams will work with their partner to implement the design thinking process to define the problem and iteratively ideate, prototype, and test their proposed solution. Student teams will also be partnered with a local domain expert to ensure they have access to the expertise needed to successfully complete the design within the constraints of the course. Throughout the semester, students will also receive hands-on experience and exposure to ongoing efforts to address the problems of medical device accessibility, usability, and feasibility in low resource environments and actively participate in regular classroom projects and discussions about low resource conditions, regulatory concerns, and engineering ethics amongst other topics. During this course, students will rigorously define and document a clinical need in a low resource environment, clearly define and communicate the clinical problem, prioritize feasible solution paths, and create a prototype for pre-clinical and clinical evaluation. After completing this course, students will have a deeper understanding of why empathy is so important to designing solutions that (actually) work for people and the benefits of applying the concepts of Frugal Innovation and Reverse Innovation to all their design and entrepreneurial efforts regardless of the problem or environment (globally or in their own backyard).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Medical Product Engineering or Medical Product Innovation

BIOENG 2175 - HUMAN FACTORS ENGINEERING IN MEDICAL DEVICES

Minimum Credits: 3
Maximum Credits: 3
Human Factors Engineering (HFE) is the application of knowledge about human behavior, abilities and limitations to the design and evaluation of products and systems. HFE draws upon a number of disciplines, such as biomechanics, anthropometry, design, physiology and psychology to improve performance, reduce human error and enhance safety. The application of HFE to medical devices is critical to their effective and safe use. This is recognized by industry and regulatory agencies. In fact, all medical devices that are used by patients or clinicians are required to have a human factors evaluation in order to be approved by the Food and Drug Administration (FDA). This course focuses on the application of HFE in design, development and evaluation of medical devices. The educational goals are: a) to learn the fundamentals of HFE relevant to medical devices, and b) to understand the HFE process in medical device design and evaluation according to the Food and Drug Administration (FDA). The course will include didactics and hands-on experience.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2195 - SPECIAL TOPICS IN BIOENGINEERING

Minimum Credits: 3
Maximum Credits: 3
A graduate level course in special topics of current interest in bioengineering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2230 - CARDIO ORGAN REPLACEMENT

Minimum Credits: 3
Maximum Credits: 3
A one semester course in which three organ replacement systems will be discussed - vascular prostheses, artificial hearts/ventricular assist devices, and extracorporeal/ intravenous oxygenators.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2241 - SOCTL, POL & ETHCL ISS BIOTEC

Minimum Credits: 3
Maximum Credits: 3
As professionals who will ultimately contribute to research on and design of biomedical processes and devices, students should understand that ethical dilemmas are part of the design process-not separate from it. Students in the course will be presented with a combination of case-based discussion, guest and instructor lectures, small group exercises and a final presentation and paper analyzing a bioengineering focused ethical dilemma. At the end of this course, our goal is that students will be able to identify, analyze, and resolve the ethical dilemmas that arise in a professional bioengineering career. An overarching goal is to enable students to become "comfortable talking about the uncomfortable". Course topics include, but are not limited to research ethics, regulatory considerations of bioengineering projects, stakeholder analysis, ethical approaches, professional standards, and codes of ethics relevant to the profession.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2250 - CARDIO CLINICAL INTERNSHIPS

Minimum Credits: 1
Maximum Credits: 6
Professional application training in cardiovascular medicine and surgery. Students will spend three months each in bioengineering practice

training programs within cardiology, cardiothoracic surgery, and vascular surgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2265 - BIOMEDICAL FLUID MECHANICS

Minimum Credits: 3
Maximum Credits: 3
Biomedical Fluid Mechanics is an upper-level undergraduate and graduate course designed for students that have already had some undergraduate exposure to fluid mechanics through a biotransport, transport or similar course. The course studies how momentum (i.e. fluid flow) principles arise and are applied to biomedical flow systems. The course is not exhaustive but focuses instead on systems in which 1) the application of fluid mechanics enhances understanding of the underlying biomedical process; and/or 2) the biomedical process itself teaches an important and sometimes novel fluid mechanical principal. The principal means of analyzing biomedical fluid mechanics in this course will be through the application of differential mass and momentum balances. These principles will be applied to take the student from a qualitative understanding to a quantitative understanding of a biomedical flow process. The course will primarily study principles of fluid mechanics in the cardiovascular system, including arterial flow and pressure and microcirculatory flow. Non-Newtonian blood rheology and flow will also be covered. Students also will have the opportunity to propose biomedical flow processes that may be relevant to their research projects (e.g. respiratory, ocular, micro-devices). Prerequisite: undergraduate fluid mechanics or transport.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2270 - BIOMEDICAL MICROFLUIDICS

Minimum Credits: 3
Maximum Credits: 3
By accurately controlling the movement of fluids at the microscale, microfluidics presents a unique opportunity to accurately establish mechanical and biochemical conditions that mimic the dynamic microenvironment in healthy and diseased tissue states. This course covers principles of biofluid mechanics and mass transport that are applied for the design and analysis of biomedical microfluidic systems. Microfluidic models of both healthy and diseased tissue microenvironments will be presented. Topics include tissue morphogenesis (e.g., epithelial layer and vascular pattern), tissue homeostasis (e.g., regeneration and wound healing) and cancer (angiogenesis and interactions with inflammatory cells). Lectures, in-class journal paper, research proposal discussion, and projects will focus on microfluidics approaches to mechanistically understand basic cellular functions or advance drug screening and personalized medicine.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2330 - BIOMEDICAL IMAGING

Minimum Credits: 3
Maximum Credits: 3
Biomedical imaging introduces the major imaging modalities (x-ray, cat-scan, MRI, ultrasound) used in clinical medicine and biomedical research, as well as the fundamentals of images, from a signals and systems standpoint.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2335 - BIOIMAGING, ANALYSIS AND SPATIAL BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to micron, nanometer, and sub-nanometer scale imaging-based approaches in experimental,

computational and systems biology. Emphasis will be placed on understanding the fundamentals of image formation, processing, and analysis of brightfield, phase-contrast, highly multiplexed, super-resolution, live-cell, cryo-EM, and computational imaging, along with imaging-based spatial transcriptomic methods. Applications of these methods in studying biological phenomena in space and time will also be discussed. Python will be the programming language in which image processing, machine learning, and system biology methods introduced in the course will be implemented. Students are expected to know Python basics. It is also expected that students have a basic understanding of linear algebra and calculus.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2340 - INTRODUCTION TO MEDICAL IMAGING AND IMAGE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Introduction to Medical Imaging and Image Analysis presents the physics of image formation as well as methods for tomographic image reconstruction for major medical imaging modalities, including X-ray Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). Also introduced are fundamentals of digital image processing, with particular emphasis on medical applications, including basic techniques to enhance image quality, image de-noising, methods for extracting, classifying, and tracking features of and objects in images, etc. Students will learn how to implement these techniques in MATLAB (The MathWorks Inc., Natick, MA) to solve practical image processing problems. MATLAB exercises will demonstrate to students how filtering operations applied in the image domain or the Fourier domain affect medical images. In addition to these fundamentals, more advanced algorithmic approaches for image segmentation and image as well as point-cloud registration techniques will also be reviewed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2351 - BIOSIGNAL ACQUISITION AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to develop data acquisition interfaces that include software and hardware to interact with and sample real world phenomena with bioengineering applications. Students will be expected to have basic MATLAB programming experience before joining this course; basic circuits knowledge is also advantageous. Students will build circuits, and will learn to work with several toolboxes and advanced features in Matlab to build graphical user interfaces (GUIs), communicate with data acquisition systems (DAQs) for measuring signals with sensors and/or controlling actuators to interact with the physical world, and perform signal processing and analysis functions to extract meaningful information from electrical and/or biological measurements. Practical applications may include measuring and analyzing bioelectric phenomena related to heart rate or tissue impedance, processing and analyzing neural signals collected from implanted electrodes in the brain, etc. Students will be able to create solutions for real world engineering problems after completing this course successfully.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Bioengineering (MBE, PHD)

BIOENG 2370 - COMPUTATIONAL SIMULATION IN MEDICAL DEVICE DESIGN

Minimum Credits: 3
Maximum Credits: 3
Computational simulation is increasingly utilized as a method to assess the performance of medical devices. The course provides students with a hands on learning experience on how to use computational simulation in the modeling and design of medical devices. The course details the important steps in computational simulations from preprocessing to solution to post-processing and data presentation. Commercially available software programs are introduced and used to simulate a variety of physical phenomena (solid, fluid, transport) pertinent to medical device design. Upon completing the course, the student should be able to simulate the solid, fluid, and transport phenomena that are useful in medical device design. Particular attention will be placed on avoiding common mistakes in the preprocessing and interpretation of computational results. Topics covered: geometry creation; discretization; appropriate assignment of material

properties; solver management; error mitigation and debugging; post-processing and data presentation; data interpretation; introduction to design optimization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2383 - BIOMEDICAL OPTICS

Minimum Credits: 3
Maximum Credits: 3
The advancement of modern optical technologies has provided unprecedented opportunities for the detection and understanding of various human pathologies. Applications of photonics hardware span a wide range of temporal and spatial domains and support multiscale imaging from the microscopic to macroscopic level. This course is a comprehensive introduction to biomedical optical imaging methods for identifying and evaluating various human diseases and pathological conditions in cells, tissue samples and in vivo settings. Basic concepts in optics are covered in the context of hardware design and light interaction with tissues. The goal is to understand the advantages and limitations of the various types of optical approaches and to apply the appropriate technique to solve specific biomedical problems. Upon this course completion the student should have a working knowledge of the common optical techniques in biomedical research such as bright field, fluorescence, confocal and two photon imaging, optical coherence tomography and near infrared imaging. The student should also be able to design basic optical research approaches and perform simple quantitative image analysis. Introductory optical physics, trigonometry, matrix algebra, and a solid foundation in signals are central for the success in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2385 - ENGINEERING MEDICAL DEVICES FOR QUANTITATIVE IMAGE ANALYSIS AND VISUALIZATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2390 - ARTIFICIAL INTELLIGENCE APPLICATIONS IN BIOENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Artificial Intelligence Applications in Bioengineering is a hands-on exploration of linear to non-linear modeling paradigms for biomedical data. In this course students will learn about aspects of information processing including data pre-processing, visualization, regression, dimensionality reduction (PCA, ICA), feature selection, classification (logistic regression, SVM, neural networks, etc.) and their usage for decision support in the context of healthcare. The course will provide an overview of the basics of scientific computing on local and cloud-based resources (i.e. relevant DevOps and MLOps) and scientific programming fundamentals, in addition to covering machine learning techniques for classification as well as regression modeling from biomedical datasets in tabular forms, including time series data. Students will additionally learn how to address classification and regression modeling tasks starting with 2D/3D medical imaging data. The course is designed to be practical with computer based tutorials and assignments on machine learning in general including popular kernelized models and deep neural networks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2411 - MATHEMATICAL METHODS IN CHEMICAL ENGINEERING 1

Minimum Credits: 3
Maximum Credits: 3
Application of mathematical techniques to chemical engineering problems requiring the solution of ordinary differential equations and partial differential equations. Series solutions, transform solutions, vector calculus, and quadrature are covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2505 - MULTI MODAL BIOMEDICAL IMAGING TECHNOLOGIES: FUNCTIONAL, MOLECULAR AND HYBRID IMAGING TECHNIQUES

Minimum Credits: 3
Maximum Credits: 3
In this course some newly evolving multi-modal imaging techniques and analysis methods in biomedical applications will be introduced. The course will briefly cover the fundamental physics, core signal processing, image reconstruction of a variety of current standalone imaging modalities such as X-Ray, computer tomography (CT), magnetic resonance imaging (MRI), nuclear imaging (PET, SPECT), optical imaging (fluorescence, optical diffuse tomography, bioluminescence), and ultrasound. Subsequently, the concept, fundamental physics, and image analysis of some exemplary multi-modal imaging techniques and systems will be introduced. Their applications in Biomedicine in different scales from organ to cellular and molecular level, and from structural to functional imaging will be discussed. The course will also briefly address the issues related to image-based diagnosis, intervention and therapy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2515 - CARDIO SYSTM DYNAMICS & MODELING

Minimum Credits: 3
Maximum Credits: 3
The mechanical behavior of the cardiovascular system will be explored in a quantitative manner. The goal is to understand the behavior of each component in isolation and the interactions among various components. Mathematical modeling will be used with an emphasis on model development, validation, and application. The function of the intact organ will be correlated with underlying structural and cellular processes, both for normal and pathological states. Student projects will contribute to the existing library of cardio vascular models.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2520 - MOLECULAR CELL BIOLOGY

Minimum Credits: 6
Maximum Credits: 6
Topics covered in this course are bio-macromolecules, protein purification and microscopic techniques, genetics (chromatin organization, DNA replication, recombination, transcription, translation and control of gene expression), molecular perturbation, membrane biophysics and bioenergetics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Bioengineering (MBE or PhD)

BIOENG 2525 - APPLIED BIOSTATISTICS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide an understanding of basic statistics through application. Descriptive and inferential statistics, encompassing both parametric and non-parametric methods will be taught.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2540 - NEURAL BIOMATERIALS AND TISSUE ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce students to an advanced understanding of biomaterials and tissue engineering specialized in neural applications. It will review biomaterials used for neural prosthesis, drug delivery devices, and tissue engineering scaffold. The student will gain a fundamental understanding of the biocompatibility issues relevant to a variety of neural implantable devices and the current strategies to solve these issues. Topics will include basic material science, neural tissue biocompatibility with implant, BBB and CNS drug delivery, tissue engineering and regenerative medicine for PNS, tissue engineering and regenerative medicine for CNS, neural electrode/tissue interface (including both simulating and recording electrodes, both peripheral and cortical neural interface). The student should have some exposure to biomaterials and tissue engineering before taking this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2585 - QUANTITATIVE CELLULAR NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course is designed to be a comprehensive introduction to cellular neuroscience for engineers. Modern cellular neuroscience is an interdisciplinary field that seeks to understand the function of single cells and populations in the context of the thinking brain. This course provides a survey of cellular brain science ranging from molecules to simple neural circuits. In addition to principles and theory this class will also cover basic quantitative concepts and provide opportunity to analyze real-life data from molecular and cellular neural engineering. In the context of each cellular brain function we will also address cellular dysfunction with translational engineering applications to neurological brain disease. Required software is MATLAB. Enrolled students should have a working knowledge of matrix algebra, first order dynamic systems and programing in MATLAB environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2586 - QUANTITATIVE SYSTEMS NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3
Systems neuroscience is the field that attempts to explain perception, cognition, and behavior in terms of the activity of populations of neurons. This course examines major scientific results in systems neuroscience, and the computational principles of brain function they illustrate. Neuroscience topics include sensory processing, motor control, and memory. Computational and engineering principles include signals and systems, statistics, machine learning, and control theory. Brain-Computer Interfaces are highlighted as an example of the convergence of basic neuroscience and engineering applications. Course format consists of interactive lectures, student-led discussions of important publications, guided analysis of neuroscience data, and designing an original set of experiments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2601 - PRINCIPLES AND PROPERTIES OF COMPLEX ENGINEERED MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Complex engineered materials are a new class of systems comprising a variety of inorganic materials. This course is designed to introduce the principles and various functional properties exhibited by inorganic materials at the Nano, Micro and Meso scales. Since inorganic materials comprising metallic and non-metallic systems are a very complicated class of materials that display myriad properties, this course is outlined to discuss the most important properties. Thus, the course will mainly cover optical, electrical, thermal and electrochemical properties of both crystalline and amorphous inorganic complex engineered materials. In each category, the principles underlining each property will be discussed followed by the material class, behavior and applications. The effect of microstructure on each of the properties will also be discussed. The course objective is to introduce the student to these complex engineered materials family and their properties. In doing so, the student should be able to identify a material for a particular application
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2615 - INTRODUCTION TO NEURAL ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2620 - INTRODUCTION TO TISSUE ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to introduce students to tissue engineering. Tissue engineering is defined as the development and manipulation of laboratory-grown molecules, cells, tissues, or organs to replace and/or support the function of injured body parts. Tissue engineering is highly interdisciplinary and therefore crosses numerous engineering and medical specialties. Upon completing this course, the graduate and undergraduate students should: understand the basic principles behind human cell and tissue biology and cell. Be familiar with the general types of biomaterials used in tissue engineering. Understand techniques utilized to design, fabricate, and functionally assess tissue engineering systems. Apply the combined knowledge of tissue organization and tissue engineering strategies to design a unique, reasonable tissue engineering solution. This five part course covers cell and tissue biology, biomaterials, drug delivery, engineering methods and design, and clinical implementation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2632 - BIOMECHANICS 3: BIODYNAMICS OF MOVEMENT

Minimum Credits: 3
Maximum Credits: 3
Biodynamics, the area of focus in biomechanics 3, is the study of large-scale movements in biologic systems. As such, the course focuses on the analysis of human movement, which is used in clinical and research settings to understand how various pathologies impact movement and how interventions can be implemented to aid those affected by movement disorders. We cover the fundamentals of biomechanics of human movement using mechanical modeling techniques. The major focus is kinematic analyses in three dimensions using matrix techniques. Some fundamentals of kinetics are covered as well, 2D and 3D inverse dynamics. Upon completing the course, the student should be able to describe basic methods of kinematic/kinetic analysis used in multi-link systems and be able to implement the methods in the analysis of human movement. Students should also be able to apply the methods to study common human movements, e.g. gait analyses, eye movement analyses, etc. Finally, students should be able to use the computer programming language, matlab, to perform computations on kinematic data.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2633 - BIOMECHANICS 4: BIOMECHANICS OF ORGANS, TISSUES, AND CELLS

Minimum Credits: 3
Maximum Credits: 3
This is the second part of a two semester advanced graduate course that uses the application of bio solid mechanics to describe the mechanical behavior living structures. The course will be separated into the following: 1) fundamental concepts: a. Kinematics, stress, strain b. Balance principles, objectivity c. Hyperelastic materials 2) biological applications a. Mechanical properties of specific tissues, (e.g. Tendon, muscle, heart, vascular) b. Growth and remodeling using mixture theories c. Approaches used to model cells (e.g. Blood cells, myofibroblasts)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2635 - TRIBOLOGY: THE STUDY OF ADHESION, FRICTION, LUBRICATION AND WEAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2650 - LEARNING & CONTROL OF MOVEMENT

Minimum Credits: 3
Maximum Credits: 3
The course will blend robotics, probability, and neuroscience to better understand the human motor system, particularly motor learning and control of movement. While motor control will be discussed as a feedback control problem, these theories will be compared during the entire course to what we know about the motor system. We will begin by studying muscle activation and forces, muscle sensory organs, spinal control structures, and inertial dynamics of a multi-joint limb. This will give us a sense of the machinery that the nervous system must control in order to generate coordinated movements. Probability foundations will be used as a framework to model how the nervous system updates estimates of limb position and sensory feedback during movements. Finally we will consider how disease can inform us about principles of movement control and motor learning. The course material and associated homework will require the students to use matlab to simulate control of biomechanical systems. This will allow students to appreciate the value of models to generate hypothesis and possible explain biological behaviors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Bioengineering (MBE or PhD)

BIOENG 2671 - IMAGING IN REGENERATIVE MEDICINE

Minimum Credits: 3
Maximum Credits: 3
Imaging is an essential analytical technique widely used in regenerative medicine. Imaging tools range from microscopy to validate by histology that regenerative therapies repaired damaged tissues, but non-invasive modalities, such as magnetic resonance imaging, are also used to define implantation coordinates and monitor tissue restoration in patients. This course will provide an overview of the applications of imaging in regenerative medicine. It will detail the rationale for using specific imaging techniques by contrast their advantages and disadvantages in particular applications. The student will learn to choose appropriate imaging methods for different questions that arise in regenerative medicine.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2675 - FINITE ELASTICITY OF SOFT TISSUES

Minimum Credits: 3
Maximum Credits: 3
This team-taught course is designed as the second course in graduate biomechanics that applies and builds on the concepts of finite elasticity to study the constitutive response of various soft tissues. Course topics will include kinematics of large deformation, concepts of stress, thermodynamic principles, and development of constitutive relationships for hyperelastic materials. Isotropy, transverse isotropy, incompressibility, viscoelasticity as well as isotropic damage will be discussed. Specific application areas will include the mechanics of three general types of primary load-bearing soft tissues: vascular, orthopedic, and reproductive.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOENG 1633/2633; PROG: Swanson School of Engineering (PENGR)

BIOENG 2704 - FUNDMS REHAB ENGR AND TECHN 1

Minimum Credits: 3
Maximum Credits: 3
Introduction to fundamental principles and practices related to multiple areas of assertive technology. The technology area include: seating and wheelchair mobility, augmentative communication, environmental control, computer access, transportation safety, prosthetics, worksite ergonomic and man/machine modeling. In addition, common terminology, disability, ethics and models of service delivery related to assistive technology are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2724 - ASSISTIVE TECHN FUNDING & POLICY

Minimum Credits: 3
Maximum Credits: 3
Students to develop knowledge and skill in the process and strategies necessary to acquire assistive technology devices and services for people with disabilities. Course content will focus on the process of gathering information, assessment procedures, documentation, and funding sources. Advocacy and procedures for due process will also be reviewed for situations when funding sources are limited.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2731 - MOLECULAR MECHANISMS OF TISSUE GROWTH AND DIFFERENTIATION

Minimum Credits: 3
Maximum Credits: 3
The course covers the anatomy, embryology, histology, function, and growth regulation (growth factors, receptors, and signaling pathways) of various differentiated tissues (central nervous system, lung, liver, pancreas, urinary and reproductive systems, breast, endocrine system, skin, bone, skeletal muscle, bone marrow). Multidisciplinary lectures are given by the members of the departments of pathology, cell biology and physiology, medicine, and surgery who have ongoing research in these areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2800 - NEUROTECHNOLOGY: CONCEPTS, PATIENTS, AND DEVICES

Minimum Credits: 3
Maximum Credits: 3
This survey course will introduce students to biomedical devices that interface with the nervous system. Course instructors and guest lecturers will discuss fundamental neurostimulation and recording concepts, patients who may benefit from these devices, and both existing and in-development technologies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2805 - TRANSLATIONAL NEURAL ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the intersection of neurosurgery and neural engineering, with a focus on developing translational solutions to real-world clinical problems. Through clinician-led lectures, student-driven discussions, and project-based learning, students will explore the current landscape of neural engineering and identify paths for innovation in neurosurgery. Guided reading of state-of-the-art neuroscience and neural engineering literature will train students to critically evaluate emerging technologies and translate research findings into clinically meaningful applications. Class will meet twice a week, with one session dedicated to a lecture and the other typically in student-led exercises such as a literature discussion or project planning. Outside-class exercises will include a final project, homework assignments, and literature summaries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2810 - BIOMATERIALS & BIOCOMPATIBILITY

Minimum Credits: 3
Maximum Credits: 3
Chemical and physical properties of Orthopaedic and Cardio Vascular Biomaterials, wear and corrosion of implant materials; fracture healing, inflammatory response; fixation and loosening of permanent implants; protein absorption; coagulation cascade, bacterial adhesion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2811 - MICROFABRICATION AND CHARACTERIZATION OF NEURAL INTERFACE DEVICES

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide graduate students an advanced understanding of a) photolithography process for microfabrication of neural devices (with clean room training and hands-on experience), b) the biocompatibility considerations for the materials used for the fabrications and the device configuration, and c) the standard electrochemical and biocompatibility characterization of the microelectrodes for neural applications (including both simulating and recording electrodes, both peripheral and cortical neural interface). The students will learn in detail the fundamentals of lithography processes and MEMS in neurotechnology applications (in parallel with hands on clean room lab experience at the Nano Fabrication and Characterization Facility (NFCF)). Materials science for neural prosthesis (on both insulating and conducting materials) and contemporary and future directions of the nano/micro neural devices will also be reviewed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2820 - SYNTHETIC BIOLOGY-ENGINEERING LIVING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
An introduction to the engineering of biological systems with synthetic biology tools. Emphasis on synthetic biological networks and biological control. Design and analysis of computational and experimental tools in synthetic biology including microfluidic systems. Applications of synthetic biology in biomedical, chemical, and environmental engineering problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2821 - MICROPHYSIOLOGICAL SYSTEMS AND TISSUE MIMICRIES

Minimum Credits: 3
Maximum Credits: 3
Microphysiological systems (MPS) are a growing area of focus for bioengineers as well as basic scientists, biopharmaceutical industry and regulatory agencies. They offer enormous potential in accelerating and lowering cost of preclinical drug development, allowing pathophysiological modeling of biological and disease processes in a human-relevant manner, and enabling translational discoveries to benefit the human health and the society. MPS are commonly referred to Organs-on-Chips, but also cover three-dimensional (3D)-Bioprinted Tissue and Organ Mimicries. Organs-on-Chips are biomimetic, microfluidic, cell culture devices created with microchip manufacturing methods that contain continuously perfused hollow microchannels inhabited by living tissue cells arranged to simulate organ-level physiology. By recapitulating the multicellular architectures, tissue-tissue interfaces, chemical gradients, mechanical cues, and vascular perfusion of the natural organ, these devices produce levels of tissue and organ functionality not possible with conventional 2D or 3D culture systems. They also enable high- resolution, real-time imaging and in vitro analysis of biochemical, genetic and metabolic activities of living human cells in a functional human tissue and organ context. 3D-Bioprinting is an additive manufacturing technique that is applied to biological materials and allows creation of cell-free and cell-laden scaffold for a diverse array of applications including regenerative medicine and preclinical pathophysiological modeling. In this course, we will cover advances made over the past two decades on these emerging technologies (Human Organs-on-Chips and 3D-Bioprinting). In addition, we will other methods of cellular, tissue and organ engineering that traditionally do not fall into MPS categories. These include decellularization and recellularization of natural scaffolds (e.g., heart, lung), stem cell-based tissue engineering approaches (e.g., iPSCs-derived tissues, spheroids, and organoids) and precision-cut organ slices (e.g., lung, liver). Moreover, this course includes workshops where trainees would have a chance to fabricate simple microfluidic organ-on-chip devices (to be carried out at Dr. Benam's labs) and 3D-bioprint sample matrices (need to identify available resources in BIOE Department; if none is available, Dr. Benam will use inexpensive 3D bioprinters for training purpose at his labs).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2901 - TECHNICAL WRITING WORKSHOP II: OUTLINE ORGANIZATION, PUBLISHING PAPERS, AND PREPARING FOR PRELIMS

Minimum Credits: 1
Maximum Credits: 1
Communication is the most crucial skill in Science and Engineering and written communication has the potential to be the most far reaching medium of communication. This course will explore the ways that engineering students can develop their own technical writing from an engineering perspective. Lectures will cover the structure modules and technical elements that go into publishing journal articles as well as identifying and writing to your specific audience, including non-experts. Assignments are designed to develop your ability to understand, analyze, summarize, and reformulate hypotheses (scientific methods) or design criteria (engineering method) for journal articles, reports, and manuals. Students will also learn how to apply the philosophy and principles behind technical writing into effective project planning including the prelim exam. Lastly, we will debunk some common myths and misconceptions of technical writing including for the prelim exam.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

BIOENG 2901 - TECHNICAL WRITING WORKSHOP II: OUTLINE ORGANIZATION, PUBLISHING PAPERS, AND PREPARING FOR PRELIMS

Minimum Credits: 1
Maximum Credits: 1
Communication is the most crucial skill in Science and Engineering and written communication has the potential to be the most far reaching medium of communication. This course will explore the ways that engineering students can develop their own technical writing from an engineering perspective. Lectures will cover the structure modules and technical elements that go into publishing journal articles as well as identifying and writing to your specific audience, including non-experts. Assignments are designed to develop your ability to understand, analyze, summarize, and reformulate hypotheses (scientific methods) or design criteria (engineering method) for journal articles, reports, and manuals. Students will also learn how to apply the philosophy and principles behind technical writing into effective project planning including the prelim exam. Lastly, we will debunk some common myths and misconceptions of technical writing including for the prelim exam.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

BIOENG 2999 - M.S. THESIS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

BIOENG 3095 - GRADUATE PROJECTS

Minimum Credits: 1
Maximum Credits: 6
Individual study program under guidance of faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOENG 3195 - ADVANCED TOPICS IN BIOENGINEERING

Minimum Credits: 3
Maximum Credits: 3
A Ph.D level course in advanced topics of current interest in bioengineering.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOENG 3760 - REGENERATIVE MEDICINE RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Research seminar in regenerative medicine is geared towards providing updates information on topics in the field of regenerative medicine, tissue engineering and stem cell applications. Through biweekly seminars, the students will be acquainted to the recent advances in the ever-growing field of regenerative medicine. Experienced faculty will deliver lectures in this seminar series.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

BIOENG 3780 - HUMAN FACTORS OF AGING

Minimum Credits: 3
Maximum Credits: 3
Research often leads to ideas and findings that can be developed into new medical devices or interventions. One limiting step in the development of these new ideas into action is the incorporation of the human factors components in the design. This is particularly true for devices/interventions meant to be used by older adults. This course provides an introductory understanding of how human factors is used in medical device design with a focus on older adults. The target audience for this course is broad, encompassing anyone that wants to learn how to design, test and evaluate medical devices or interventions used by older adults. This includes investigators (faculty, scientists, post-docs), engineers, and clinicians. The course will be at the graduate level, but general in scope. No pre-requisites are required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 3944 - COMPOSITION, STRUCTURE, AND FUNCTION OF MINERALIZED TISSUES

Minimum Credits: 3
Maximum Credits: 3
Mineralized tissues such as bones, dentin, and enamel are exceptional materials with their properties uniquely optimized to the function. These functional properties are determined by the tissue structure and composition. The aim of this course is to examine how the composition and structural organization of the mineralized tissues affects their functional properties in norm and disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 3997 - RESEARCH, PHD

Minimum Credits: 1
Maximum Credits: 15
RESEARCH, PHD

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

BIOENG 3999 - PH.D. DISSERTATION

Minimum Credits: 1
Maximum Credits: 15
Ph.D. Dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Bioethics

BIOETH 2001 - ETHICS AND AGING

Minimum Credits: 3
Maximum Credits: 3
This course offers an overview of ethical issues in aging. Early sessions will explore the ethical implications of stereotypes and myths regarding aging. Turning to the context of health care, students will identify and analyze moral dilemmas that arise in the long-term and end-of-life care of older adults. Concepts and topics to be critically examined include: autonomy, dependency, elder abuse, and just resource allocation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOETH 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course provides an introduction to topics in research ethics and the responsible conduct of research particularly pertinent to basic and non-clinical, population-based research employing a variety of methods. Students will learn key concepts and methods of ethical reasoning and requirements of human subjects' protection and nonhuman animal research, and will analyze historical and contemporary examples of research misconduct, as well as ethical concerns arising in their own work. Using lecture and small group discussion of assigned readings and participants' research, the course will develop students' skills requisite to design and conduct ethical research, avoid research misconduct, and ethically negotiate the tasks and milestones of academic education and careers (e.g. issues of mentorship and publication). Students will be evaluated (by letter grade) on the basis of the quality of their discussion contributions and quiz/exam responses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOETH 2604 - CLINICAL PRACTICUM 1

Minimum Credits: 3
Maximum Credits: 3
Placements in different clinical settings to observe clinical ethics and medical sociology discussions.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

BIOETH 2606 - CLINICAL PRACTICUM 2

Minimum Credits: 3
Maximum Credits: 3
Intensive observation experience in one clinical setting.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

BIOETH 2658 - PHILOSOPHY OF MEDICINE

Minimum Credits: 3
Maximum Credits: 3
Issues in philosophy of medicine, with reference to American health care, including concepts of health and disease, normativity, causation, error, clinical diagnosis, prevention, and epidemiological risk.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BIOETH 2661 - THEORETICAL FOUNDATIONS OF APPLIED ETHICS

Minimum Credits: 3
Maximum Credits: 3
Survey of contemporary ethical thought with reference to its historical bases, intended to prepare students to read and think critically and creatively about the literature in applied ethics, especially bioethics and health policy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BIOETH 2664 - BIOETHICS

Minimum Credits: 3
Maximum Credits: 3
Survey of major topics and methods in bioethics, including informed consent, treatment refusal, transplantation, resource allocation, genetics, and public health.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BIOETH 2667 - BIOPOWER: BIOPOLITICAL READINGS OF THE BODY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BIOETH 2668 - SUSTAINABILITY IN LATIN AMERICA

Minimum Credits: 3
Maximum Credits: 3
Latin America hosts some of the most biologically diverse and productive ecosystems on Earth, yet economic and social development are frequently at odds with efforts to conserve and use these ecosystems sustainably. This upper-level seminar focuses on the issues surrounding environmental sustainability in Latin America from a holistic, interdisciplinary perspective. The course will start with a general introduction to the three legs of sustainability and sustainable development theory, as well as the ecology and evolution of Neotropical biodiversity. We will use published primary literature to explore the particular complexities of Latin American sustainable

development, and analyze case studies of moments through history in which environmental issues were either championed or de-emphasized. The course will feature several guest lectures, optional seminars for extra credit, and discussions of current sustainability news. Students will be responsible for a final research project and presentation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Attributes: MCSI - Sustainability Focused

BIOETH 2698 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Seminar on particular topics in bioethics; topics vary from term to term.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOETH 2902 - DIRECTED READING IN BIOETHICS

Minimum Credits: 1
Maximum Credits: 3
Students discuss with instructor set readings in bioethics. Topics and readings may vary.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

BIOETH 2904 - MA THESIS IN BIOETHICS

Minimum Credits: 1
Maximum Credits: 6
Research under the supervision of the advisor which culminates in the master's thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

BIOETH 2905 - MA THESIS PROSPECTUS IN BIOETHICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis

BIOETH 2906 - MA THESIS RESEARCH IN BIOETHICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis

BIOETH 2907 - MA THESIS DEFENSE IN BIOETHICS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis

BIOETH 2990 - INDEPENDENT STUDY IN BIOETHICS

Minimum Credits: 1
Maximum Credits: 3
Students pursue a course of independent study under the supervision of a faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

Biomedical Informatics

BIOINF 2000 - BIOMEDICAL INFORMATICS LABORATORY ROTATION

Minimum Credits: 1
Maximum Credits: 1
Each doctoral student should choose a research mentor and start working on the research that will eventually become the focus of their dissertation. Research rotations provide students and mentors with the opportunity to experience and assess potential mentor-trainee relationships by working on time-limited projects. BIOINF doctoral students must complete at least two, and possibly three ten-week rotations during their first year. Following a set schedule: October 1 - December 15 January - mid March (first day of semester) Mid-March - late May
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad SN Basis

BIOINF 2010 - BIOMEDICAL INFORMATICS COLLOQUIUM

Minimum Credits: 1
Maximum Credits: 1
The Biomedical Informatics Colloquium is a weekly series of seminars focused on current research in biomedical informatics. Guest speakers come primarily from universities, but also government labs and the private sector. Registration is not required for seminar attendance but is required to take the course for credit. Grading is based on the extent of active participation throughout the semester.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad HSU Basis

BIOINF 2011 - FOUNDATIONS OF CLINICAL AND PUBLIC HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
A survey of fundamental concepts and activities on information technology applied to health care. Topics include computer-based medical records, knowledge-based systems, tele health, decision theory, and decision support, human-computer interfaces, system integration, the digital library, and educational applications. Department-specific applications such as pathology, radiology, psychiatry and intensive care are also discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2014 - BIOMEDICAL INFORMATICS PROJECT COURSE

Minimum Credits: 3
Maximum Credits: 3
The course consists of three main parts. In the first part of the course the projects are conceived. In the middle part, the projects are defined and designed. In the final part, the projects are carried out, analyzed, and reported. In all three phases, students will first have classroom discussions among themselves and the instructor about their ideas for that phase of the project. Next, they will work outside of the classroom on that project phase and write a report. Finally, they will orally present the main ideas of their report to the class. The instructor will provide written and oral feedback on each stage of the project, as it occurs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2016 - FOUNDATIONS OF TRANSLATIONAL INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
The field of translational bioinformatics emerged because of the recent advances in biotechnology with which several new types of patient and disease specific data are being created for large subpopulations. Computer science methods are being rapidly adapted to process and analyze this data, with the goal of drawing biologically and medically-relevant inferences. By analyzing these different types of data individually or integratively, it is now feasible to attempt deciphering biological root cause of a disease (at least the 'why' of the disease if not 'how'), to identify biomarkers, and to design personalized medicine.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2018 - INTRODUCTION TO R PROGRAMMING FOR SCIENTIFIC RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Science is increasingly inter-disciplinary, and programming has become a valuable skill in many investigations. This course is designed to empower you with the ability to solve scientific problems through writing computer programs. Emphasis is placed on using the R language to solve biology problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2019 - BIOMEDICAL DATA STREAMING

Minimum Credits: 1
Maximum Credits: 3
In this project students and a faculty mentor will explore data streaming technologies to implement scalable and distributed biomedical data ecosystems. In particular, students and a faculty mentor will conduct a project to learn how biomedical data processing can be enhanced with processing power of modern data-streaming infrastructures to enable continuous biomedical data acquisition and analysis. Upon completion of this project students will be able to understand major principles and trade-offs in design and development of a comprehensive biomedical data processing pipeline for data-intensive applications. Students will gain practical skills in selecting, applying, and developing data streaming solutions appropriate for specific data processing and data analysis tasks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2032 - BIOMEDICAL INFORMATICS JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
This course meets once each week for one hour. The research being presented will be taken from recent journal papers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

BIOINF 2051 - FOUNDATIONS OF BIOINFORMATICS

Minimum Credits: 3
Maximum Credits: 3
Provides an introduction to selected topics of bioinformatics also known as computational biology. In this course, the difficult computational problems involving different types of biological information are identified using case studies from current literature. Emphasis is on genomic aspects of computational biology with some overview of proteomics and structural aspects. The course is structured as a seminar course intending to draw students into participating in discussions related to both problems and existing solutions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2061 - SINGLE-CELL AND SPATIAL GENOMICS DATA ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Students could work on a wide range of projects centered on the themes of preprocessing, analysis, integration, interpretation, visualization, manipulation and design of single-cell and spatial genomics data and experiments in life sciences and biomedicine. Ideas for potential projects will be suggested, and students are also free to choose their own topics. We will meet twice a week (class and recitation). Class time will be used to introduce necessary concepts from biology and computational methodology. Recitation time will be used to discuss students' progress in their projects. For most projects, knowing R or Python will be necessary, and students should be ready to pick it up in the first few weeks of the seminar. Students may pair to work on more ambitious projects, or on complementary aspects of a project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2062 - FOUNDATIONS OF ALGORITHMS

Minimum Credits: 3
Maximum Credits: 3
This course serves as an introduction to core methods and topics in algorithms. Course content will include the traditional key components of an algorithm course, together with a flavor of newer technologies such as advanced data structures. Time complexity analysis is an important matter and will be discussed where it fits throughout the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2070 - FOUNDATIONS OF BIOMEDICAL INFORMATICS 1

Minimum Credits: 3
Maximum Credits: 3
This course serves as an introduction to core methods and topics in biomedical informatics using the context of the Learning Health System (LHS). A LHS combines data and information managements, discovery, and application of discoveries to clinical and population health. Discussion of the challenges associated with the construction of a LHS will be used to contextualize and motivate content to be covered in the course (people, data and knowledge, and evaluation).
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 1501 and CS 2710

BIOINF 2071 - FOUNDATIONS OF BIOMEDICAL INFORMATICS 2

Minimum Credits: 3
Maximum Credits: 3
This course serves as an introduction to core methods and topics in biomedical informatics using the context of the Learning Health System (LHS). A LHS combines data and information managements, discovery, and application of discoveries to clinical and population health. Discussion of the challenges associated with the construction of a LHS will be used to contextualize and motivate content to be covered in the course (challenges and analysis and interpretation to create knowledge).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2071 - FOUNDATIONS OF BIOMEDICAL INFORMATICS 2

Minimum Credits: 3
Maximum Credits: 3
This course serves as an introduction to core methods and topics in biomedical informatics using the context of the Learning Health System (LHS). A LHS combines data and information managements, discovery, and application of discoveries to clinical and population health. Discussion of the challenges associated with the construction of a LHS will be used to contextualize and motivate content to be covered in the course (challenges and analysis and interpretation to create knowledge).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2103 - DESIGN AND ANALYSIS OF BIOMARKER STUDIES

Minimum Credits: 2
Maximum Credits: 2
The objective of this course is to identify, describe, and apply the statistical and epidemiological knowledge, tools, and perspectives necessary for effectively designing, analyzing, and interpreting biomarker studies (which may include diagnostic and medical tests, prognostic markers for prediction of future disease outcomes, and/or predictive markers for treatment response). The course will also focus on writing a funding proposal; students will develop a 3-4 page concept proposal as the class project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOINF 2118

BIOINF 2105 - ARTIFICIAL INTELLIGENCE FOR BIOMEDICAL INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course provides the required introduction to artificial intelligence (AI) for all Biomedical Informatics students in the Department of Biomedical Informatics. It is designed to complement the two Foundations of Biomedical Informatics courses by providing a rigorous and practical education on fundamental AI topics. While the lessons are on AI subjects that not specific to the biomedical domain, the course will point the students to problems and applications from biomedicine relevant to each AI subject. The course is practical in the sense that the homework assignments will give students hands-on experience applying the AI methods covered throughout the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2110 - CONCP SOFTWR PROJ ENGR HLTH CARE

Minimum Credits: 3
Maximum Credits: 3
This course examines how health care organizations implement both clinical and financial information systems. The course will study the implementation process and how to integrate systems to create the computerized patient record (CPR). Students will have the opportunity to learn about the industry-wide implementation data standards and how to manage them.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2117 - APPLIED CLINICAL INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide an overview of the field of applied medical informatics. Students will learn about the myriad issues that arise when deploying information technology into clinical environments. Practical, real world solutions to the challenges of hit will be addressed by experts involved in the day-to-day operations of these types of systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2118 - STATISTICAL FOUNDATIONS OF BIOMEDICAL INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This is an introductory probability and statistics course intended primarily for biomedical informatics students. The first part of the course covers probability, including basic probability, random variables, univariate and multivariate distributions, transformations, expectation, numerical integration, and approximations. The second part of the course covers statistics, including study design, classical parametric inference, hypothesis testing, Bayesian inference, non-parametric methods, classification, ANNOVA, and regression. We will use r for statistical computing and applications. Examples and applications will focus on biomedical informatics and related discipline.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2119 - PROBABILISTIC METHODS IN ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students who do not necessarily have a background in computer science and want to learn and apply methods in artificial intelligence to problems in biomedicine. The course will introduce and provide the foundations artificial intelligence methods in search, probabilistic knowledge representation and reasoning, and machine learning with applications to biomedical informatics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2120 - SYMBOLIC METHODS IN ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students who do not necessarily have a background in computer science and want to learn and apply methods in artificial intelligence to problems in biomedicine. The course will introduce and provide the foundations of artificial intelligence methods in logical knowledge representation and reasoning, biomedical ontologies and terminologies and information retrieval. Prerequisites for this course include introductory mathematics and programming.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BIOINF 2012 and 2015

BIOINF 2121 - HUMAN-COMPUTER INTERACTION AND EVALUATION METHODS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide informatics students with the knowledge necessary to take an applied role in the design, implementation and evaluation of healthcare information systems. In this course, students will apply principles of usability and evaluation theory to informatics projects. Topics include: critical success factors, test plan development and user interface design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2122 - CRITL REFLCTN BIOMD INFORMTCS

Minimum Credits: 3
Maximum Credits: 3
This course will showcase presentations from DBMI researchers and invited speakers from across campus and beyond. Session will be videotaped and presented as weekly one-hour recording. The on-site Q/A session afterwards will be substituted by a facilitated asynchronous online discussion in blackboard. Special emphasis will be put on peer- and self-assessment of the contributions to the online discussion which will promote higher-level thinking among the students.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2124 - PRINCIPLES OF GLOBAL HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course explores challenges and opportunities in developing and supporting health information systems in developing-world settings by examining differences, and ways to both integrate and sustain systems in an appropriate way in low-resource settings. The course will review the current "state-of-the-art" in this field by looking at examples of systems currently deployed in the developing world, and explore opportunities for advancing this work through a series of case studies and hands-on exercises based on real-world scenarios.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Focused

BIOINF 2125 - INFORMATICS AND INDUSTRY

Minimum Credits: 1
Maximum Credits: 1
The focus of the class is to provide an opportunity for students to interact with leading industry representatives and to learn techniques/tools that would enable them to market their skills in non-academic environments. We will invite speakers from various local, regional, national, and international industry relationships that we have established.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

BIOINF 2129 - INTERNSHIP IN GLOBAL HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3

The internship in global health informatics will be expanded to accommodate 5 students from the US. Students will travel to Malawi to study global health informatics in low-resource settings alongside Malawian health and technology professionals. Students will have an opportunity to propose, design and develop a product or intervention relevant to solving a particular problem the group has identified.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIOINF 2131 - PRACTICUM IN ADV BIOMEDICAL IT

Minimum Credits: 1
Maximum Credits: 6
This course is designed for people who want a practical experience in working with advanced information technology in the center for biomedical informatics.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIOINF 2132 - SPECIAL TOPIC SEMINAR IN MEDICAL INFORMATICS

Minimum Credits: 1
Maximum Credits: 3
This course is designed for faculty to offer small groups of students a study course on a topic of mutual interest and concern in the faculty member's area of expertise.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIOINF 2133 - PRACTICUM IN ADVANCED INFECTIOUS DISEASE AND PUBLIC HEALTH SURVEILLANCE (BIOSURVEILLANCE) TECHNOLOGY

Minimum Credits: 1
Maximum Credits: 6
This course is designed for people who want a practical experience in working with advanced bio surveillance technology in the real time outbreak and disease surveillance (rods) laboratory.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIOINF 2134 - PUBLICATION AND PRESENTATION IN BIOMEDICAL INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course provides a practical overview of how to write a research manuscript and how to give a scientific talk. It is usually taken after completing the project course (BIOINF 2014). Students taking this course must have a completed research project that can be used to complete the course exercises. Each week, we will target a specific section of the manuscript or scientific talk. Didactic sessions describing common problems and approaches will alternate with student presentation and peer critique. The course also covers the details of the publication process. At the end of the course, a special presentation workshop gives students the opportunity to improve their talks using videotaping and debriefing methods. By the end of the course, students will have completed a research paper and a finalized colloquium presentation.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIOINF 2204 - INT HLTH INFORMTCS TEC DENTY

Minimum Credits: 3
Maximum Credits: 3
An introduction to health information technology (HIT) for dentists, dental team members and others involved in dentistry with three objectives: (1) understand how hit can support the activities and processes of clinical dental care; (2) select and evaluate hit applications; and (3) plan, administer and manage hit implementations. Course covers topics such as dental care workflow and analysis; electronic dental records; dental data and their representation; controlled vocabularies and terminologies; human computer interaction; information design; computer-based decision support; strategic planning; requirements analysis; evaluating technology; managing human resources for it; planning and implementing hit; basics of hardware and software; and privacy, confidentiality and security of patient information.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2480 - MASTERS THESIS RESEARCH/PROJECT

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

BIOINF 2990 - MASTERS INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 14
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

BIOINF 2993 - MASTERS DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOINF 2994 - MASTERS DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOINF 3800 - CENTER FOR CAUSAL DISCOVERY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: GRAD
Course Component: Internship
Grade Component: Grad SN Basis

BIOINF 3990 - DOCTORAL INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 14
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

BIOINF 3995 - DOCTORAL DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOINF 3996 - DOCTORAL DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOINF 3997 - DOCTORAL DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOINF 3998 - DOCTORAL TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIOINF 3999 - DOCTORAL DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Biological Sciences

BIOSC 0353 - GENETICS LABORATORY

Minimum Credits: 2
Maximum Credits: 2
This authentic research-based laboratory course will use a model genetic system, such as Drosophila, to advance our understanding of gene

function and regulation. Students will learn how to perform genetic analyses in the system being used, for example, setting up crosses, generating mutants, analyzing mutant phenotypes, using molecular genetic techniques, and making transgenics. Students will also learn how to devise hypotheses, design experiments, record experimental results, and then interpret these so that they can be communicated in the form of a poster, presentation, and/or written report.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis

BIOSC 0359 - GENOMICS LABORATORY

Minimum Credits: 2
Maximum Credits: 2
This course guides students through the design and evaluation of a data-driven research project in the area of genomics and metagenomics. In the first half of the course students apply methods of molecular biology to collect data about the studied system that are used as the starting point for scientific questions and hypotheses. In the second half they analyze the data and test their hypotheses using comparative and functional genomics approaches.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis

BIOSC 0825 - SPECIAL TOPICS IN BIOLOGY FOR NON-MAJORS

Minimum Credits: 1
Maximum Credits: 3
A major topic in biology will be developed and explored by students.
Academic Career: Undergraduate
Course Component: Practicum
Grade Component: LG/SNC Elective Basis

BIOSC 0860 - HUMAN SEX AND GENDER: AN INTERDISCIPLINARY APPROACH

Minimum Credits: 3
Maximum Credits: 3
This course examines human anatomy and physiology through the principles of gender-inclusive biology. Utilizing a systems-based methodology to study function and maintenance, we explore how human physiology transcends traditional binary sex classifications. By analyzing the intersection of biology with contemporary socio-political landscapes, students synthesize biological data and gender studies to recognize diverse physical patterns. Ultimately, the course interrogates how "normal" bodies are socially and scientifically constructed, equipping students with the vocabulary required to engage with these complex and timely discourses.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

BIOSC 1003 - BIOCHEMISTRY LABORATORY

Minimum Credits: 2
Maximum Credits: 2
This course immerses students in biochemistry through a hypothesis-driven, authentic research project. Students develop technical competence and scientific reasoning by applying fundamental biochemical techniques such as protein expression, purification, and functional characterization, while emphasizing experimental design, troubleshooting, quantitative data analysis, and record keeping. The course highlights critical thinking, collaboration, professional scientific communication, and the iterative nature of scientific discovery. This course may not be taken by Biochemistry majors; see BIOSC 1823 instead.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis

BIOSC 1523 - DEVELOPMENTAL BIOLOGY LABORATORY

Minimum Credits: 2
Maximum Credits: 2
This authentic research-based laboratory course will introduce students to a classic system in developmental biology. Students will become familiar with the chosen species and participate in a project devised to advance our understanding of development. Students will master techniques such as microscopy, antibody staining, in situ hybridization, and experimental manipulation of embryos. Students will also learn how to devise hypotheses, design experiments, record experimental results, and then interpret these so that they can be communicated in the form of a poster, presentation, and/or written report.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis

BIOSC 1823 - BIOCHEMISTRY LABORATORY FOR BIOCHEMISTRY MAJORS

Minimum Credits: 3
Maximum Credits: 3
This authentic research-based laboratory course is specifically designed for Biochemistry majors in the Department of Biological Sciences. The hypothesis-driven project is part of scientific investigations of a research lab in the department. Students learn classical and fundamental biochemical laboratory techniques, the theory behind the techniques, troubleshooting, analysis and interpretation of experimental results, and record keeping. Students will learn to plan experiments to test scientific ideas, to communicate scientific theories and results, and become more independent in scientific thinking.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

BIOSC 1857 - MICROBIAL GENETICS LABORATORY

Minimum Credits: 2
Maximum Credits: 2
This authentic research-based laboratory course focuses on the genetic analysis of prokaryotic and eukaryotic microbes. Projects typically employ both classical and molecular genetic approaches, for example, generating mutants and determining the resulting phenotype.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis

BIOSC 1859 - VIROLOGY LABORATORY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to give students practical experience with the methods and techniques used in the study of viruses while conducting original research involving genetically engineering bacteriophages.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis

BIOSC 1905 - HONORS RESEARCH WRITING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Undergraduate
Course Component: Practicum
Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212 or 0213 or 0214) or FP (0003 or 0006) *Applies to all WRIT Courses*

BIOSC 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1
Maximum Credits: 15
Students working on their early research requirement may (but are not required to) register for BIOSC 2000. A grade of Incomplete is automatically given for this course until the Comprehensive exam is passed.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2025 - RESEARCH ROTATION 1

Minimum Credits: 1
Maximum Credits: 6
Students in the graduate programs in the department of biological sciences perform research rotations in the first year. These rotations supplement classroom-based educational opportunities and provide settings for students to interact with faculty, who may serve on their dissertation committees or be their advisor, and to meet the members of different labs. Students present their results at the end of each research rotation as a brief talk. Students in the MCDB Program do three rotations, those in the EE Program do 2 or 3. Each rotation is worth a single credit.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

BIOSC 2026 - RESEARCH ROTATION 2

Minimum Credits: 1
Maximum Credits: 6
Students in the graduate programs in the department of biological sciences perform research rotations in the first year. These rotations supplement classroom-based educational opportunities and provide settings for students to interact with faculty, who may serve on their dissertation committees or be their advisor, and to meet the members of different labs. Students present their results at the end of each research rotation as a brief talk.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

BIOSC 2027 - RESEARCH ROTATION 3

Minimum Credits: 1
Maximum Credits: 6
Students in the graduate programs in the department of biological sciences perform research rotations in the first year. These rotations supplement classroom-based educational opportunities and provide settings for students to interact with faculty, who may serve on their dissertation committees or be their advisor, and to meet the members of different labs. Students present their results at the end of each research rotation as a brief talk.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

BIOSC 2050 - STUDENT RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
In this course, students present their research to faculty, students and postdocs.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2055 - SCIENCE COMMUNICATION: PREDOCTORAL FELLOWSHIPS & GRANTS

Minimum Credits: 1
Maximum Credits: 1
The goals of this course are to inform students about the tools and background needed to prepare for seminar and poster presentations and submit pre-doctoral fellowships and grants.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2056 - SCIENCE COMMUNICATION: SEMINAR & POSTER PRESENTATIONS

Minimum Credits: 1
Maximum Credits: 1
The goals of this course are to prepare students for oral and written presentation of their work. Topics will include seminar preparation, maintaining linear train of thought, balancing data with context, data presentation as a reinforcement tool, preparing for 15-, 30- and 45-minute talks, preparing for broad and narrow scientific audiences, speaking with the general public, preparation of useful abstracts, assembly of effective posters, effective presentation of posters, tips and tricks for fielding questions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2057 - SCIENCE COMMUNICATION: PAPERS

Minimum Credits: 1
Maximum Credits: 1
This course covers the process of writing scientific papers, including primary data papers, review articles, and general opinion pieces. Topics include strategies for data organization, figure preparation, targeting the introduction for the audience, logic flow in the results, and focusing the discussion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2058 - ETHICAL PRACTICES IN SCIENTIFIC RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course familiarizes students with areas of ethical concern in scientific research, including data integrity, intellectual property, plagiarism, collaboration and cooperation, data sharing, treatment of animal and human subjects, and responsibilities to the general public.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2075 - MOLECULAR EVOLUTION

Minimum Credits: 3
Maximum Credits: 3
Sequencing technology is continually progressing, and genome sequences from different species and populations continue to become available in increasing numbers. Such data allows questions about molecular evolution to be addressed in new and exciting ways. This course introduces students to the evolutionary analysis of DNA and amino acid sequences. Lectures on theory will be accompanied by practical instruction in the use of contemporary computational methods and software. Topics include: population genetics of selection and mutation, models of sequence evolution, phylogenetic models, analysis of multiple sequence alignments for rates and patterns of divergence, inference of natural selection, and co-evolution between proteins. Emphasis is placed on quantitative modeling and the biological principles underlying observed patterns of molecular evolution. Interested students should have a basic grasp of molecular biology and calculus.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2090 - ADVANCED DEVELOPMENTAL BIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will examine selected topics in developmental biology at an advanced level. Topics may include pattern formation in insects, cell lineage analysis, cell-cell interactions and the specification of cell fates, cell adhesion molecules, genetic approaches to mammalian embryo genesis and the extracellular matrix in development. Emphasis will be placed on the critical reading of papers and classroom discussion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2100 - CELLULAR STRUCTURE AND MORPHOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will explore biological processes within eukaryotic cells. Topics include: mechanotransduction/biomechanics; cellular interactions; polarity; cytoskeletal dynamics; cell-matrix interactions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2110 - MICROBIAL DIVERSITY

Minimum Credits: 2
Maximum Credits: 2
This course will survey important genetic, genomic, physiological, cell biological and developmental processes that distinguish viral, prokaryotic and unicellular eukaryotic organisms. Topics include: bacteriophages, plants and animal viruses; bacterial intracellular pathogens, parasites and symbionts of plants and animals; eukaryotic pathogens.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BIOSC 2115 - MRNA-BASED PRODUCT DESIGN

Minimum Credits: 1
Maximum Credits: 1
This course provides a comprehensive introduction to the principles of mRNA vaccines and therapeutics and practices of designing, characterizing, and preclinically testing mRNA-based therapeutic and vaccine products within a practical, industry-relevant framework. Students will learn the molecular, cellular, biochemical, pharmacological, and immunological foundations necessary to design a product

using a web-based portal. The course culminates in the design, ordering, and in-lab testing of a student-designed mRNA product.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2121 - BIOSTATISTICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2130 - GENETICS OF MODEL ORGANISMS

Minimum Credits: 2
Maximum Credits: 2
This course will compare genetic approaches in a variety of model systems. Topics include: genetics screens and selections; linkage mapping; genetic manipulation in haploid and diploid model systems; epigenetics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2140 - GENOMICS

Minimum Credits: 2
Maximum Credits: 2
Advances in molecular biology have enabled the collection of a great deal of sequence data. Genomic studies seek to understand the organization of, and information embedded within, entire genomes. Students will learn a variety of techniques in structural genomics (finding information within genomes), functional genomics (describing gene function and interaction), comparative genomics (assessing how that information changes) and metagenomics (assessing the gene content of multiorganism communities) directed at using genome sequence data to address questions of interest.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2145 - PROTEIN LIFE HISTORY

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the fate of proteins within cells. Topics include: protein synthesis; building blocks of protein structure; domains and protein folding; mechanisms of protein sorting; protein trafficking; directional transport and secretion; exo- and endocytosis; autophagy, ER targeting.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2150 - NUCLEIC ACIDS

Minimum Credits: 2
Maximum Credits: 2
BIOSC 2150 focuses on the molecular biology of DNA and RNA, and how biological information is stored, replicated, recombined, and processed. Topics to be discussed include: DNA replication and its regulation; DNA segregation; homologous, illegitimate and site-specific recombination; DNA repair; structural and functional roles of RNA in the activity and regulation of telomerase; small nuclear rnas and the

spliceosome; processing of ribosomal and transfer RNAs; regulation by micro RNAs and long non-coding RNAs. There will be an emphasis on the primary literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2155 - GENE EXPRESSION

Minimum Credits: 2
Maximum Credits: 2
This course will examine the regulation of gene expression from a variety of standpoints. Topics to be discussed include: transcriptional mechanisms and regulation in prokaryotes and eukaryotes; MRNA splicing; RNA processing; RNAI; chromatin.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2220 - ADVANCED BIOSTATISTICS

Minimum Credits: 2
Maximum Credits: 2
This course provides an advanced, model-driven survey of statistical methods in the biological sciences. The first part of the course, led by the instructor, will cover general and generalized linear models, maximum likelihood, model selection, model validation, and mixed models. The second part of the course, co-led by students and the instructor, will cover other advanced topics of interest to be selected by the students. We will use R extensively throughout the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2351 - ADVANCED EVOLUTION

Minimum Credits: 2
Maximum Credits: 2
This course explores factors that influence inheritance. Topics include: gene-by-environment interactions; polymorphism and polyphenism; sexual dimorphism; causes and consequences of individual variation; extended phenotypes; nutrition and the phenotype; fitness landscapes; mutation and novelty; trait mapping onto phylogenies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2355 - SPECIES INTERACTIONS

Minimum Credits: 2
Maximum Credits: 2
This course examines the interactions between species in a variety of contexts. Topics include: coevolution, mutualism & parasitism; plant-herbivore coevolution; cospeciation; hybridization and signaling of species identity; predation, predator-avoidance and aposematism; predator-prey interactions; foraging ecology; competition; tri-tropic level interactions; herbivory; context-, condition- and trait-dependent species interactions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2361 - ADVANCED ECOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course examines the relationship between organisms and their environment. Topics include: colonization strategies; succession; biogeography; climate change; trait-mediated assemblages; spatial models; trophic cascades.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: MCSI - Sustainability Focused

BIOSC 2370 - EVOLUTIONARY GENETICS

Minimum Credits: 2
Maximum Credits: 2
This course will cover a wide variety of traits and model organisms in which genetic and developmental studies of evolution have been performed. Topics and concepts will include phylogenetics, population genetics, the evolution of novelty, host-pathogen interactions, and multicellularity. The course will consist of lectures, journal article discussions, and essays relevant to the lecture topic.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2405 - ADVANCED GLOBAL CHANGE BIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This advanced course focuses on the ecological and evolutionary impacts humans have on the environment, explores the interconnectedness between humans and the natural world, and evaluates options for mitigating environmental problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2435 - ENVIRONMENTAL PHYSIOLOGY OF ANIMALS

Minimum Credits: 3
Maximum Credits: 3
This course in ecophysiology is a physiology course taught from an ecological and evolutionary perspective. The organismal, ecological, and evolutionary significance of physiological function will be emphasized along with molecular and cellular mechanisms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2450 - BIOLOGICAL SCIENCES SEMINAR

Minimum Credits: 2
Maximum Credits: 2
Papers to be selected from current periodicals in the biological sciences for presentation. Emphasis will be placed on a critical evaluation of experimental procedures, data, and the interpretation of data.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2500 - CURRENT TOPICS IN ECOLOGY

Minimum Credits: 1
Maximum Credits: 3
This course will cover population ecology, community ecology, and ecosystem ecology. A strong undergraduate background in ecology will be assumed. Some lectures will be included, but most emphasis will be placed on reading and discussing papers from the primary literature, including papers of both historical and current interests.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Attributes: MCSI - Sustainability Focused

BIOSC 2540 - SEMINAR IN ECOLOGY AND EVOLUTION

Minimum Credits: 2
Maximum Credits: 2
Students will participate in the critical review of the current literature relating to a topic in ecology. Specific topic is to be selected later.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, MCSI - Sustainability Focused

BIOSC 2545 - THE MATHEMATICS OF BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course uses examples from across biology to illustrate how simple mathematical models can increase our understanding of biological systems. We will focus on several foundational modeling approaches, including systems of difference equations, matrix models, probability, and statistical data analysis. Students will discover how these approaches are used, their strengths and limitations, and how they could be extended to more complex problems. Students should be prepared to use both spreadsheet programs and scripts, written in a language such as Python or R, to explore these models.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2570 - ENVIRONMENTAL SCIENCE TEACHER'S WORKSHOP

Minimum Credits: 1
Maximum Credits: 3
Teachers spend five days at Pymatuning Laboratory of Ecology exploring the relationship between land use, water quality and aquatic community structure. Lectures, field work, data analysis, interpretation of results. Includes development of modules for classroom use.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

BIOSC 2810 - MACROMOLECULAR STRUCTURE AND FUNCTION

Minimum Credits: 3
Maximum Credits: 3
Course is concerned primarily with the structure and functions of proteins and nucleic acids. These are large polymers where structure and function are determined by the sequence of monomeric units. Topics will include the physical and chemical properties of the monomer units (amino acids/nucleotides); the determination of the linear sequence of these units; the size, shape and general properties of the biopolymers in aqueous systems; and the relation between structure and function, particularly in transport (hemoglobin) and in catalysis (enzymes).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2840 - REGULATION OF MEMBRANE TRAFFIC

Minimum Credits: 2
Maximum Credits: 2
Course analyzes membrane/protein traffic along both the biosynthetic and endocytic pathways. Emphasis placed on how this traffic is regulated. Topics include the role of g proteins (both heterotrimetric and small), coat proteins (coatamer 1 and 2 and adaptors), signal transduction cascades (pkc, pka, ip3, etc), and snare complexes in protein trafficking.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2940 - MOLECULAR BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Course will examine the molecular basis of life processes, with a primary emphasis on genes (what they are, what they do, how they determine the properties of an organism). Topics covered will include replication of DNA, transcription of DNA into MA, and translation of RNA into protein. Much of the course will be concerned with how these processes are regulated in response to changes in the environment, and how this regulation relates to the observed properties and behavior of the organism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2950 - SEMINAR JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
Research papers will be discussed prior to departmental seminar.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

BIOSC 2960 - DEPARTMENTAL SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students will attend lectures on selected topics of current research in the biological sciences. The lecturers will primarily be invited scientists from outside the university, with a few lectures by faculty from within the department or other departments in the university.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2970 - TEACHING OF BIOLOGICAL SCIENCES

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2972 - TEACHING MINOR BIOLOGCL SCIENCES

Minimum Credits: 1
Maximum Credits: 4
Graduate students in the department of biological sciences have the option of completing the requirements for a teaching minor, to be awarded concomitant with receipt of their advanced degree from this department.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 3001 - PREPARATION FOR THE STEM CLASSROOM

Minimum Credits: 1
Maximum Credits: 1
This seminar series is designed for Ph.D. students and post-doctorate fellows interested in pursuing an academic career and wish to gain didactic knowledge and skills related to teaching in a science, technology, engineering and mathematics (stem) classroom. Experienced faculty provide topics and discussion based seminars.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BIOSC 3002 - ADVANCED LEARNING THROUGH EVIDENCE-BASED STEM TEACHING

Minimum Credits: 1
Maximum Credits: 1
Designed for graduate students and postdocs preparing for academic careers in the stem disciplines, this course provides an introduction to the scholarship of teaching and learning (SOLT). This is the second course in a series; however, the former course (3001) is not a required prerequisite. The course will utilize material presented in a massive open online course (MOOC) available through coursera.org and sponsored by the center for the integration of research, teaching and learning (CIRTL). Participants will learn about effective teaching strategies and the research that supports them in addition to learning how to collect, analyze, and act upon their own evidence of student teaching. Topics include but are not limited to: 1. Learning through diversity, 2. Cooperative learning/peer instruction, 3. Inquiry-based labs, 4. Problem-based learning, 5. Flipped classroom pedagogy. Further, participants will learn the process for developing a teaching as research plan as well as the role of human subjects consent for classroom based research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

BIOSC 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Biological Sciences (PHD)

Biomedical Sciences

MSBMS 2010 - BIOCHEMISTRY AND PHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2028 - COMPREHENSIVE ANALYSIS OF DISEASE 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to give the students the opportunity to integrate all the knowledge accumulated during the program and in the fall session of CAD in a comprehensive study of disease states. Faculties will present lectures on various diseases with particular emphasis on the physiology and pharmacology. At the end of term there will be Special Topic Session in which students will present short lectures on current and interesting topics. The students will identify the topics and discuss them in advance with the course director. Participation to these sessions is not mandatory but will be considered in the final grade.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: BMP (BIOSCI-MS)

MSBMS 2029 - COMPREHENSIVE ANALYSIS OF DISEASE

Minimum Credits: 3
Maximum Credits: 3
This course is designed to give the students the opportunity to integrate all the knowledge accumulated during the program into a comprehensive study of disease states. Small groups of students will work collaboratively to develop an in-depth analysis of a specific disease, from the diagnosis to the pathogenesis, the molecular and cellular basis, and the treatment options currently available. Each group of students will work in a web-based platform under faculty supervision to develop an interactive, knowledge-based teaching/research study.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSBMS 2030 - HISTOLOGY AND CELL FUNCTION IN HEALTH AND DISEASE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: BMP (BIOSCI-MS)

MSBMS 2040 - METHOD AND LOGIC IN BIOMEDICINE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2055 - HUMAN ANATOMY

Minimum Credits: 2
Maximum Credits: 2
This course explores human structure and the organization of organ systems. Lectures are organized by anatomical regions, with the surface anatomy (surface landmarks for finding deeper structures) presented before the discussion of each region. The students will be provided learning tips to assist in retaining anatomical information and they will be introduced to the terms needed for effective communication in describing the body for understanding the anatomical basis of disease and clinical problem-solving.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2056 - INTENSIVE COLLABORATIVE GROUP GROSS ANATOMY LABORATORY LEARNING EXPERIENCE: LEARNING ANATOMY FROM CA

Minimum Credits: 1
Maximum Credits: 1
A novel learning approach that combines collaborative group project learning and traditional lectures/lab experiences will be used in the course to optimize student comprehension and retention of human anatomy. Cadavers, specimens, constructed models, and interactive 3D Anatomy virtual imaging programs will be used in gross anatomy laboratory setting to give the student a comprehensive view of anatomy.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade
Course Requirements: PLAN: BIOSCI-MS

MSBMS 2061 - FOUNDATIONS OF SUCCESSFUL BIOMEDICAL CAREER PLANNING AND DEVELOPMENT II

Minimum Credits: 1
Maximum Credits: 1
The course provides foundational training in career planning and professional development. Key skills that students build are: Increasing your capacity for self-directed career development; Fostering life-long career management habits; Maximizing your scholarly training success; Shaping positive career outcomes Students will engage in experiential learning, small-group discussions, and peer mentoring. These different approaches enable individually relevant and self-constructed understandings of career development, consistent with expectations of independence in scholarly activities. Areas for discussion include: self-assessments, exploration of different career options, how to set goals, career adaptability, and other topics identified by students. A final self-authoring paper will be required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis
Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2061 - FOUNDATIONS OF SUCCESSFUL BIOMEDICAL CAREER PLANNING AND DEVELOPMENT II

Minimum Credits: 1
Maximum Credits: 1
The course provides foundational training in career planning and professional development. Key skills that students build are: Increasing your capacity for self-directed career development; Fostering life-long career management habits; Maximizing your scholarly training success; Shaping positive career outcomes Students will engage in experiential learning, small-group discussions, and peer mentoring. These different approaches enable individually relevant and self-constructed understandings of career development, consistent with expectations of independence in scholarly activities. Areas for discussion include: self-assessments, exploration of different career options, how to set goals, career adaptability, and other topics identified by students. A final self-authoring paper will be required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2063 - PROFESSIONALISM AND NON-COGNITIVE AND DEVELOPMENT PART 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

MSBMS 2074 - EXPERIENTIAL LEARNING

Minimum Credits: 1
Maximum Credits: 10
The bmp offers experiential learning activities in the areas of community service, patient volunteering, laboratory research and clinical shadowing. For this course, the bmp student and instructor plan onsite experiential learning activities designed to provide goal oriented outcomes for the student. Students are expected to take initiative to find suitable matches and schedule several experiential sessions. Available opportunities are posted on the bmp website and matches are made each term to optimize the experiential benefit for all bmp students. Students are responsible for documenting all experiential dates and hours, along with what was learned in each activity. Students are also responsible for ensuring all activities are approved by the instructor. Students will also provide a five page maximum reflect on the experiences at the end of the term and a laboratory report for any research conducted, both of which are graded. Students are also required to ensure they complete the appropriate onsite requirements for the number of credits they are registered for.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: RESTRICT TO MSBMS

MSBMS 2075 - INDEPENDENT STUDY TOPIC EXPLORATION

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

MSBMS 2080 - CELL BIOLOGY PATHWAYS IN TREATMENT OF DISEASE

Minimum Credits: 2
Maximum Credits: 2
This course will explore how basic cell biology and genetic investigations have revealed the theoretical underpinnings of, and

revolutionized approaches to the understanding of, the basis of selected diseases and uncover tractable approaches to treatments or cures. A set of major cell pathways will be used to illustrate how new drug targets can be identified and can lead to dramatic advances in medical treatments. The course blends traditional lectures with self-directed student activities to prepare the students for interactive lecture discussions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: RESTRICT TO BMP

MSBMS 2090 - CELL SIGNALING AND PHARMACOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course examines the principles of drug action. The course covers the basic priciples of pharmacodynamics and pharmacokinetics. Particular emphasis is placed on the concept that the rational use of drugs is based on the understanding of the interactions, signaling mechanisms, and functional outcomes at the modular and cellular level.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: RESTRICT TO BMP

MSBMS 2102 - BMP PROFESSIONAL COMMUNICATION REFLECTION 1

Minimum Credits: 1
Maximum Credits: 1
The course will explore professional communication skills and strategies for written applications and interviews in the health sciences specifically, and professionalism generally. The object of study will focus on a practical summation of individual student educational and experiential activities in the BMP. Large group lectures, collaborative student think-pair-sharing, and team-based small group and large-group discussion workshops will be used to analyze and evaluate student educational and experiential activities in the context of professional competencies and goals. Faculty and staff mentored, collaborative team-based, and self-directed learning activities will continue to develop student skills and strategies for narrative, analytic and interpretative professional narratives including professional school application experiences and essays, and interviews.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2103 - BIOMEDICAL MASTERS PROGRAM PROFESSIONAL COMMUNICATION REFLECTION 2

Minimum Credits: 1
Maximum Credits: 1
This course will explore professional communication skills and strategies for written applications and interviews in the health sciences specifically, and professionalism generally. The object of study will focus on a practical summation of individual student educational and experiential activities in the BMP. Large group lectures, collaborative student think-pair-sharing, and team-based small group and large-group discussion workshops will be used to analyze and evaluate student educational and experiential activities in the context of professional competencies and goals. Faculty and staff mentored, collaborative team-based, and self-directed learning activities will continue to develop student's skills and strategies for narrative, analytic and interpretive professional narratives including professional school application experiences and essays and interviews.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: RESTRICT TO BMP

MSBMS 2105 - BMP SCIENTIFIC COMMUNICATION

Minimum Credits: 1
Maximum Credits: 1
The Scientific Communication course will explore the different ways science is described and communicated. Topics will include methods and techniques for efficient and clear scientific writing; the different types of publications (research papers, reviews, abstracts, letters, commentaries); the structure and organization of grants (especially research and fellowships); scientific posters and presentations, and peer review. The class will include presentation by faculty to introduce the most important concepts. Students will use their own research (current or past) as a basis for writing assignments on the various topics. Students will also review each other's work and significant time will be devoted to discussion, both in class and online.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2110 - ORGAN SYSTEMS PHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course discusses the integrative physiology of all of the major organ systems, including the cardiovascular system, respiratory system, renal system, gastrointestinal system, and reproductive system. The systems will be considered in the context of the function of the body as a whole, and how they respond during challenges (e.g. exercise) and pathological states. Current research related to the functioning of these systems will be emphasized throughout the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2200 - CLINICAL PHARMACOLOGY

Minimum Credits: 2
Maximum Credits: 2
This is an elective course in Clinical Pharmacology mostly based on clinical cases. These will include cases in clinical (applied) pharmacokinetics, drug-drug interactions and evidence-based pharmacotherapy. This course uses a combination of pre-class preparation and in-class discussion and analysis of each case.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: RESTRICT TO MSBMS

MSBMS 2210 - SYSTEMS NEUROPHYSIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will provide an overview of the neuroanatomy and functions of the major brain systems. Topics covered will include neural mechanisms for motor control, sensory processing and perception, cognition and memory, and higher cerebral functions. Major neurological diseases will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: RESTRICT TO MSBMS

MSBMS 2360 - BIOMEDICAL CAREER PLANNING 1

Minimum Credits: 1
Maximum Credits: 1
"Students will engage in a group coaching format. Together, we will critically examine and discuss questions pertaining to career planning

and implementation. Course topics are rooted in research and practical application. The underlying theories and research stem from positive psychology, neuroscience, applied practice, and one's own lived experience. Students will create artifacts that facilitate their career development. Common areas of interest include burnout, imposter phenomenon, sociocultural medicine, boundaries, and gap year preparation. Students will gain skills and perspectives to thrive in their career and life. Upon completion of this course, students will be able to: Implement research and self-reflection to enhance the individual career planning process. Summarize a variety of models, theories, and frameworks to achieve individual career and life satisfaction. Demonstrate skills such as oral and written communication, resilience, and adaptability. Sustain habits that facilitate career success and wellbeing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2361 - BIOMEDICAL CAREER DEVELOPMENT 2

Minimum Credits: 1
Maximum Credits: 1
The first two months of the course will be conducted asynchronously; materials and assignments will be available on Canvas. In person classes will resume in March and be facilitated in a coaching format. Together, we will critically examine and discuss career planning and development. Course topics are rooted in research and practical application. The underlying theories and mechanisms stem from career construction, positive psychology, neuroscience, applied practice, and one's own lived experience. Scholars will practice ongoing reflection, planning, and action. During the course scholars will create artifacts that will be used throughout their career.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

MSBMS 2365 - HEALTH EQUITY AND DIVERSITY AWARENESS

Minimum Credits: 2
Maximum Credits: 2
"We will critically examine and discuss overarching questions that focus on health equity within the biomedical sciences. We will pose, examine, and discuss questions to help understand the relationship between and among health and systems. Cultivating diversity awareness is a lifelong process. This course will build on existing knowledge and lay the groundwork for further exploration and action. Student interests and relevant research will drive course topics. Upon completion of this course, students will be able to: Summarize a variety of models, theories, and frameworks of health disparities and apply these in their biomedical science endeavors (research, medicine, etc). Translate health disparity research into interventions that can be used in biomedical science professions. Utilize discourse and dialogue skills to improve health equity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Biostatistics

BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING

Minimum Credits: 3
Maximum Credits: 3
Acquaints students with the concepts of statistical reasoning as applied to the study of public health problems. Students learn the general principles of statistical analysis and acquire the ability to utilize a statistical software package as a tool to facilitate the processing, editing, storing, displaying, analysis and interpretation of health research related data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: Graduate School of Public Health; PLAN: Excluded Plans = Biostatistics(DPH, PHD, MPH, MS, MSH)
Course Attributes: Global Studies

BIOST 2021 - SPECIAL STUDIES

Minimum Credits: 1
Maximum Credits: 15
Qualified students may undertake advanced work or research with the approval and under the guidance of a member of the staff.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BIOST 2025 - BIOSTATISTICS SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Biometry seminars introduce the students to current health problems involving the application and development of biostatistics methods and theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

BIOST 2040 - ELEMENTS OF STOCHASTIC PROCESSES

Minimum Credits: 3
Maximum Credits: 3
Covers generating functions and convolutions of random variables, the poison and compound poison distributions, branching processes, random walk, and the gambler's ruin problem, Markov chains, and simple birth and death processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2043 or 3011

BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Discusses techniques for the application of statistical theory to actual data. Topics include probability theory, estimation of parameters, and tests of hypothesis for both the discrete and continuous case.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

BIOST 2067 - APPLIED META-ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
Meta-analysis (MA) is a quantitative approach that provides a systematic way of integrating the findings of individual research studies. The purpose of this course is to familiarize attendees with statistical techniques and R packages specific to MA, to enable them to use these techniques in the execution of their own MA and equip them to interpret and critique existing MAs. This course is then designed to present an overview of MA from the theoretical models to their implementations in the popular publicly available free software R with a variety of examples. These examples are compiled from real applications in medical and public health literature and the analyses are illustrated in a step-by-step fashion using appropriate R packages. Topics include an overview of systematic literature review, fixed- and random-effects MA, MA for binary data, MA for continuous data, heterogeneity in MA, meta-regression, publication bias, and R packages for MA. It is strongly recommended that all students have taken an introductory course in biostatistical methods (e.g., BIOST 2039, or BIOST 2041, or equivalent). Prior programming knowledge of R is not required for this course.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2039 or BIOST 2041

BIOST 2068 - INTRODUCTION TO CASUAL INFERENCE

Minimum Credits: 3
Maximum Credits: 3
With the increasing demand for identifying causal effects, causal inference methods have been greatly developed in the last decades. In public health, most studies require more or less causal inference due to the prevalence of confounding and selection bias. This course will introduce 1) the concepts of causal effects, causal assumptions, and causal graphs, 2) widely-used causal inference methods (e.g., propensity score, instrumental variables, and causal mediation analysis), and 3) methods implementation and applications in public health. Students enrolling in this course are expected to have taken an introductory biostatistical course (BIOST 2038, 2039, or 2049) and familiar with programming. The course will be taught through lectures, followed by homework and a final project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOST 2069 - STATISTICAL METHODS FOR OMICS DATA

Minimum Credits: 2
Maximum Credits: 2
This 2-credit course is a graduate level course to cover popular statistical and computational methods for high-throughput omics data analysis. With the rapid advances of many omics technologies, the course will focus on the fundamental concepts of various topics (e.g. data preprocessing, association analysis, causal mediation analysis, differential analysis, statistical learning, pathway analysis, etc.) and their specific applications to different omics data types (e.g. microarray, next-generation sequencing, single cell sequencing, mass spectrometry, microbiome, etc.). The major target audience is graduate students (master or PhD students) interested in omics data analysis and related research. Through homework problem sets, computer labs and a final project, students train with hands-on materials to understand the methods, implement the algorithms and interpret results in real omics applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOST 2080 - ADVANCED STATISTICAL LEARNING

Minimum Credits: 2
Maximum Credits: 2
This is a 2-credit course in advanced statistical learning, covering topics related to the statistical interpretation and theory behind machine learning models/methods. Emphases will be given to in-depth derivation of models/algorithms from topics covered in BIOST 2079 (Introductory Statistical Learning for Health Sciences) as well as additional topics on modern statistical learning methodologies, with special focus on methods for health science applications. This course is designed for graduate students in the Department of Biostatistics and other interested graduate students who already have sufficient statistical and programming background. Students are expected to be familiar with R. Experience in C/C++, Python or Matlab may be helpful, but is not required. Programming skills/training shall be demonstrated by previous programming (or programming heavy) courses in R, Python, Matlab, C/C++, etc.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 2049 or 2142) and (BIOST 2079 or 2155);

BIOST 2081 - MATHEMATICAL METHODS FOR STATISTICS

Minimum Credits: 3
Maximum Credits: 3
Differentiation and integration of functions of several variables. Infinite sequences and series. Fundamentals of matrix algebra. Class examples and homework problems will emphasize applications to probability and statistics.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Biostatistics (PHD, MS, MPH)

BIOST 2099 - CAPSTONE

Minimum Credits: 2
Maximum Credits: 2
The capstone course is a heavily directed and mentored statistical data analysis project course leading to an ETD formatted thesis and formal oral presentation of the work. This course will be an intense data analysis and writing course with the goal of producing an ETD formatted thesis document containing rigorous analytic methods, appropriately summarized analysis results with logical, statistically and scientifically valid conclusions. The Capstone course will ensure that the written thesis milestone demonstrates the student's competency in biostatistics (and area of concentration if applicable) as well as oral and written communication skills in general.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Biostatistics (MS); Required to have passed MS comprehensive exam.

BIOST 2131 - FOUNDATIONS OF STATISTICAL THEORY

Minimum Credits: 4
Maximum Credits: 4
The course covers the basic theory of probability and statistical inference with a focus on the appropriate use of standard methods and on the construction of new statistical inference tools. Topics covered in the first half include joint, marginal, and conditional probabilities; random variables and functions thereof; distribution characteristics of random variables; basic asymptotic theory and univariate theorems including Chebyshev's inequality, the law of large numbers, and the central limit theorem. Topics covered in the second half include principles and methods of constructing estimators (e.g., MLE, MME, CRLB), confidence intervals, and hypothesis testing (including Neyman-Person and generalized likelihood ratio tests); data reduction principles and techniques, and their relationship to optimal statistical inference (including sufficiency and Rao-Blackwell principle); basic likelihood-based, exact, conditional, and asymptotic statistical inference. The course is taught through lectures and recitation sessions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: BIOST-MS or BIOST-PHD

BIOST 2137 - FOUNDATIONS OF STATISTICAL THEORY

Minimum Credits: 4
Maximum Credits: 4
The course covers the basic theory of probability and statistical inference with a focus on the appropriate use of standard methods and on the construction of new statistical inference tools. Topics covered in the first half include joint, marginal, and conditional probabilities; random variables and functions thereof; distribution characteristics of random variables; basic asymptotic theory and univariate theorems including Chebyshev's inequality, the law of large numbers, and central limit theorem. Topics covered in the second half include principles and methods of constructing estimators (e.g., MLE, MME, CRLB), confidence intervals, and hypothesis testing (including Neyman-Person and Generalized Likelihood Ratio tests); data reduction principles and techniques, and their relationship to optimal statistical inference (e.g., sufficiency, Rao-Blackwell principle); basic likelihood-based, exact, conditional, and asymptotic statistical inference. The course is taught through weekly series of two lectures and one recitation session clarifying the typical theoretical problems and proving computational examples illustrating theoretical concepts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOST 2141 - BIOSTATISTICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
BIOST 2141 is an introductory applied biostatistics course for biostatistics graduate students, other quantitative public health students, and health career professionals who will make use of statistical methods in research projects, interpreting literature and possibly develop new biostatistical methods in the future. This class is intended for students needing a more research-oriented approach than that provided in BIOST 2011 (Principles of Statistical Reasoning) and an approach with a greater emphasis on mathematical foundation than provided in BIOST 2041 (Introduction to Statistical Methods I). Students in BIOST 2141 are expected to have a working knowledge calculus including multivariable differentiation and integration. Topics covered in this course include exploratory and descriptive analyses, both quantitative and graphical. Probability is discussed, including sample spaces, probability measures, probability calculus, and popular continuous and discrete distributions. Estimation and hypothesis testing are discussed in detail for one- and two-sample problems for both continuous and discrete data. One-way ANOVA, ANCOVA, simple linear regression, and correlation methods are explored. Nonparametric and computationally intensive resampling and simulation-based methods are discussed in addition to classical parametric approaches. Broad goals include: the use of R to analyze data sets and answer research questions; recognition of situations when procedures are and are not appropriate; and intuitive understanding of the rationale used in creating the statistical procedures presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: BIOST-MS or BIOST-PHD

BIOST 2142 - APPLIED REGRESSION ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course in statistical modelling intended for Masters or PhD students in biostatistics or other disciplines who have already had basic training in statistical methods. The course focuses on all types of regression methods with the following learning objectives: To fit and interpret linear regression models with multiple continuous and/or categorical predictors. To fit and interpret generalized linear models (GLMs) with emphasis on logistic and Poisson regression. To justify and apply standard modelling procedures using data, including model interpretation and assessment of model adequacy. To analyze data sets taken from the fields of medicine and public health. To develop oral and written communication skills through the description of analytic strategies and the summarization and interpretation of results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2041 or BIOST 2039 or BIOST 2141

BIOST 2143 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Course topics include linear mixed models; generalized estimating equations (GEEs); and generalized linear mixed models for analyzing longitudinal and clustered data, from an applied perspective. Students will learn the justification and applicability of standard procedures, model interpretation, and assessment of model fit.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2049 or BIOST 2142

BIOST 2146 - INTRODUCTION TO HEALTH DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course focuses on teaching basic data science concepts and data analysis methods that are motivated by dealing with real life problems in public health. Students will become familiar with data science terms such as data wrangling and data visualization. Key topics include exploratory data analysis, data cleaning, and visualization and communicating results. Students will learn how to prepare data for visualization, select appropriate visualization types, and develop efficient workflows for data presentation. This course will mainly use the

R programming language. The course lectures will cover the following general themes: data structures and representation, data wrangling and processing, computational tools and techniques, and case studies illustrating steps of analysis of real data, including examples from public health.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2141 or 2041

BIOST 2150 - APPLIED SURVIVAL ANALYSIS: METHODS AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course covers fundamental concepts and methods important for the analysis of datasets where the outcome is the time to an event of interest, such as death, disease occurrence, or disease progression. An important feature of survival data is censoring and truncation. Topics include quantities for summarizing and presenting time-to-event data; non-parametric estimation and hypothesis testing methods such Kaplan-Meier estimator and (weighted) log-rank tests; semi-parametric Cox proportional hazards model and other commonly used parametric models; methods for model development and diagnostics, and sample size considerations. Statistical theory is presented in the context of informing practical data analysis; homework assignments and examinations emphasize appropriate analysis strategy and model interpretation. Students are expected to be familiar with fundamental statistical concepts such as probabilities, distributions, likelihood, hypothesis testing, estimation, and inference. Basic knowledge of either SAS or R programming is also required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2049 or BIOST 2142

BIOST 2151 - BAYESIAN DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This is a course in Bayesian methods for applied statistics and data science whose broad goal is to provide students with the skills needed to be able to select, conduct, report and interpret appropriate Bayesian analyses for a wide variety of applied problems. General topics covered include Bayesian concepts of statistical inference, Markov chain Monte Carlo and other computational methods, linear, hierarchical and generalized linear models, model selection and diagnostics, and Bayesian learning. The course explores the use of the popular and free software packages R, JAGS and Stan for conducting Bayesian analyses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2039 or BIOST 2141 or BIOST 2041 and BIOST 2049 or BIOST 2142

BIOST 2154 - STATISTICAL METHODS FOR OMICS DATA

Minimum Credits: 2
Maximum Credits: 2
This 2-credit course is a graduate level course to cover popular statistical and computational methods for high-throughput omics data analysis. With the rapid advances of many omics technologies, the course will focus on the fundamental concepts of various topics (e.g. data preprocessing, association analysis, causal mediation analysis, differential analysis, statistical learning, pathway analysis, etc.) and their specific applications to different omics data types (e.g. microarray, next-generation sequencing, single cell sequencing, mass spectrometry, microbiome, etc.). The major target audience is graduate students (master or PhD students) interested in omics data analysis and related research. Students are trained with hands-on materials to understand the methods, implement the algorithms and interpret results in real omics applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 2049 or BIOST 2142) and (BIOST 2037 or BIOST 2131 or BIOST 2043 or BIOST 3011)

BIOST 2155 - INTRODUCTORY STATISTICAL LEARNING FOR HEALTH SCIENCES

Minimum Credits: 2
Maximum Credits: 2
This 2-credit course is a graduate level course to introduce basic concept and methods for statistical learning with emphasis on modern health science applications. The syllabus includes: linear regression with regularization, supervised machine learning, unsupervised clustering and dimension reduction. Target audience will be second year Biostatistics master students or early PhD students with interests in statistical learning techniques for health science data. Students will be trained with hands-on materials to understand the methods, implement the algorithms and interpret results in real applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 2039 or BIOST 2141) and (BIOST 2049 or BIOST 2142)

BIOST 2160 - DATA VISUALIZATION FOR HEALTH DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course is designed to prepare students to learn the principles and best practices of data visualization. Students will learn how to use data visualization to communicate and interpret health data, as well as to guide exploratory analyses of health datasets. In this course, students will learn how to best tailor data visualizations to effectively communicate and tell stories to a wide range of audiences and outputs, from presentations to scientific publications. Additionally, students will learn how to identify misleading health data visualizations from public resources, and to create visualizations that accurately reflect the data, helping audiences make sense of the information. A substantial component of this class will be dedicated to learning how to generate data visualizations in R. Traditional and modern plots will be explored in this course, including bar plots, scatterplots, line plots, heatmaps, dendrograms, choropleth maps, contour maps, mosaic plots, and density plots.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2041 or BIOST 2141

BIOST 2162 - CLINICAL TRIALS: METHODS AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
The course lectures integrate web-based material covering fundamental concepts in the design and conduct of modern clinical trials. Topics include: experimental designs, interim monitoring, analysis methods for comparative clinical trials, ethical, organizational and practical considerations of design, case studies, and international guidelines for publication of trials in major journals and meta-analyses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2039 or BIOST 2141 and BIOST 2041

BIOST 2165 - STATISTICAL EVALUATION OF BIOMARKERS AND CLASSIFICATION TOOLS

Minimum Credits: 3
Maximum Credits: 3
The course provides an introduction to the concepts and approaches for statistical evaluation of classification markers and tools applied in various detection and prediction tasks. Topics include evaluation of the accuracy of classifiers and diagnostic tests, biomarkers and classification/prognostic models, ROC curves, decision-theoretic approaches, combining multiple markers for improved classification, the accuracy of future event prediction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 2037 or BIOST 2131) and (BIOST 2039 or BIOST 2141)

BIOST 2168 - INTRODUCTION TO CAUSAL INFERENCE

Minimum Credits: 3
Maximum Credits: 3
This 3-credit course is a graduate-level course that will cover modern statistical methods for estimating causal effects. With the emerging statistical literature on causal inference in the last decades, the course will first introduce the fundamental concepts of causal effects, causal assumptions, and causal diagrams. We will then focus on popular statistical methods such as propensity score, instrumental variables, and causal mediation analysis and their applications in public health. The target audience is graduate students with statistical background and interests in causal inference and related research. Students will be trained with hands-on materials to understand causal inference methods, implement them with R packages, and interpret results in real data applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2039 or BIOST 2141

BIOST 2173 - SAS FOR DATA MANAGEMENT AND ANALYSIS

Minimum Credits: 2
Maximum Credits: 2
The goal of this course is to provide students with an understanding of the SAS program environment as well as the skills needed to use SAS as a tool to conduct research, prepare data, and perform analyses. Upon completion of the course the student will have an understanding of SAS at the intermediate level and will be adequately equipped to take the SAS base programming certification. The course covers the utility of SAS as a data management, data manipulation, and data analysis tool. The focus will not be statistical analysis, but rather how to use SAS as a programming tool. Emphasis will be placed on program code writing. Concepts will be illustrated with numerous examples from basic descriptive analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PREQ: BIOST 2041 or BIOST 2039 or BIOST 2141

BIOST 2174 - ADVANCED R COMPUTING

Minimum Credits: 2
Maximum Credits: 2
BIOST 2174 is an advanced statistical computing course using R designed for graduate level biostatistics students with basic R programming background. The course will cover topics, including but not limited to, R in modeling and optimization, advanced R graphics, functional programming, object-oriented field guide, efficient computing in R, GUI for R-shiny, embedding C/C++, R package/documentation, Github, etc. The course will also include real life application for students to practice the programming techniques learnt in class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 2037 or BIOST 2131) and (BIOST 2039 or BIOST 2141)

BIOST 2175 - PYTHON FOR AI IN HEALTH DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This is a 3-credit course that will introduce Python programming basics and provide instruction on frequently used programming patterns, concepts, and libraries used by data scientists and statistical analysts working in Python, with emphasis on artificial intelligence (AI) and machine learning (ML) applications in health data science. Through this course, students will learn good coding, documentation, and workflow habits in Python and learn AI/ML tools for public health-oriented data. Through three health data-focused case studies, students will learn to apply the Python-based skills learnt in this course to real-world health data.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: BIOST-MS or BIOST-PHD

BIOST 2179 - BIOSTATISTICS CONSULTING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
The Biostatistics Consulting Practicum provides advanced students (second-year masters and doctoral) with exposure and practical experience in consulting on the biostatistical aspects of research problems arising in the biomedical or other allied fields. Students, initially under the supervision of a faculty member, participate in discussions with investigators leading to the design and/or analyses of a current research problem. Students taking the course provide consultation to clients (i.e., faculty, residents, fellows, and students in the Health Science Schools or University of Pittsburgh). Sessions are held between the faculty instructor and students taking the course to review and discuss the problems brought to the consulting service.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

BIOST 2181 - HEALTH DATA SCIENCE: DATA MANAGEMENT AND PROGRAMMING

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to foundational data science concepts and methods of data analysis, with an emphasis on real-world problems in public health. Students will learn key terminology such as data wrangling, exploratory data analysis, and data visualization. Throughout the course, students will develop skills in preparing data for analysis, cleaning and transforming datasets, selecting effective visualization techniques, and communicating analytical results clearly. The course will emphasize developing efficient, reproducible workflows for data presentation and interpretation. The primary programming language used will be R, though some basic Python will be introduced. Lectures will cover a range of topics, including data structures and representation, data manipulation and processing, computational tools and techniques, and case studies that illustrate the complete analysis pipeline using real-world public health data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2041 or BIOST 2141

BIOST 2182 - HEALTH DATA SCIENCE: DATA VISUALIZATION AND BIG DATA

Minimum Credits: 3
Maximum Credits: 3
This course is designed to prepare students to learn the principles and best practices of data visualization. Students will learn how to use data visualization to (1) best communicate complex health data and (2) guide exploratory analyses and the interpretation of big health data. In this course students will learn how to use data visualization as a means to communicate and tell stories to a wide range of audiences and for various outputs, from presentations to scientific publications. Students will learn by working directly with large health datasets from various sources, including electronic health records, genomics experiments, and national health surveys. A substantial component of this class will be dedicated to learning how to generate data visualizations in R.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2181 and (BIOST 2141 or BIOST 2041)

BIOST 2183 - HEALTH DATA SCIENCE: STATISTICAL LEARNING AND ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
This course will introduce artificial intelligence (AI) and machine learning (ML) tools with special emphasis on biomedical data. The

course starts with a review of basic coding skills and builds up to implementation of state-of-the-art artificial intelligence tools at the end of the course, focusing on both classical ML as well as modern deep learning techniques. The syllabus includes three modules: the first module explains basic ML techniques for classification and regression, the second module covers ML techniques support vector machines, and random forests, and the third module introduces state-of-the-art AI concepts and provides PyTorch tutorials alongside theoretical insights. Students will be trained with hands-on materials to understand the methods, implement algorithms, and interpret results in real applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 2041 or BIOST 2141 or BIOST 2142 or BIOST 2181) and BIOST 2081

BIOST 2198 - MS THESIS PREPARATION

Minimum Credits: 1
Maximum Credits: 1
This course is preparation necessary to complete BIOST 2199: MS Thesis. It will involve brainstorming a thesis topic, discussing possible data sets, writing an outline for a possible data analysis plan, thinking of potential research questions, writing a project prospectus, and identifying faculty thesis committee members.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis
Course Requirements: PLAN: BIOST-MS

BIOST 2199 - MS THESIS

Minimum Credits: 1
Maximum Credits: 2
This course involves data analysis and writing with the goal of producing an ETD formatted thesis document containing rigorous analytic methods, appropriately summarized analysis results with logical, statistically and scientifically valid conclusions.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis
Course Requirements: PREQ: BIOST 2198; PLAN: BIOST-MS

BIOST 3000 - TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PLAN: BIOST-PHD

BIOST 3010 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: BIOST-PHD

BIOST 3011 - INTRODUCTION TO STATISTICAL INFERENCE 1

Minimum Credits: 3
Maximum Credits: 3
The course covers basic theory of probability and mathematical statistics. Topics include sample space, probability, random variables and expectation of a random variable; joint distribution, conditional distribution, independence and transformations for random variables; a few representative and popular distributions, including binomial, multinomial, Poisson, normal, t- and F-distributions; statistical inference on data: statistics, confidence intervals, hypothesis testing, test statistics, Monte Carlo and Bootstrap; Convergence in probability, convergence in distribution, central limit theorem.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOST 3012 - INTRODUCTION TO STATISTICAL INFERENCE 2

Minimum Credits: 3
Maximum Credits: 3
This course focuses on theory of statistical inferences. Topics covered include principles and methods of constructing and evaluating point estimators, sufficiency and completeness concepts and their applications, methods of constructing interval estimators, and approaches for developing and evaluating statistical hypothesis tests.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2037 or BIOST 2131 or BIOST 2043 or BIOST 3011

BIOST 3021 - ADVANCED STATISTICAL INFERENCE 1

Minimum Credits: 3
Maximum Credits: 3
This is the first course of the sequence that covers advanced topics in probability theory and statistical inference. This course introduces large sample theories, including basic modes of convergence in point estimation and distributions. It covers several point and interval estimation methods, including the Newton-Raphson and Expectation-Maximization algorithms, hypothesis tests, and their asymptotic properties, with particular attention to maximum likelihood estimation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: BIOST-PHD; PREQ:(BIOST 2141 or BIOST 2039 or BIOST 2049 or BIOST 2142) and (BIOST 2044 or BIOST 3012)

BIOST 3022 - ADVANCED STATISTICAL INFERENCE 2

Minimum Credits: 3
Maximum Credits: 3
This is the second course of the sequence that covers advanced topics in probability theory and statistical inference. It covers various methods for parameter estimation and statistical inference, hypothesis testing, Monte Carlo simulations, resampling based inference procedures, and other related large sample theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: BIOST-PHD; PREQ: BIOST 2051 or BIOST 3021

BIOST 3025 - LINEAR MODELS

Minimum Credits: 3
Maximum Credits: 3
This course is providing an introduction to the theory of linear models. In this class, we will discuss various topics including least squares estimation, the Gauss Markov model, the Aitken model (Generalized linear model), BLUEs, distributional theory such as multivariate

normal and noncentral distributions, inference in linear models (linear hypothesis testing, likelihood ratio test, confidence intervals, multiple comparisons), Cochran's Theorem, sequential SS, and model checking of underfitting and overfitting. This is a theoretical course and requires knowledge of statistical theory and linear algebra.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 2044 or 3012); PLAN: Biostatistics (BIOST-PHD)

BIOST 3042 - MIXED MODELS

Minimum Credits: 3
Maximum Credits: 3
This is a PhD level course in Mixed Models. Students are expected to be comfortable and familiar with linear algebra (e.g., matrix notation and computation) and have taken courses in linear/generalized linear models. Using a mixed model allows one to relax the usual independence assumptions from linear/generalized linear models and take into account complicated data structures. This course will cover mainly theoretical aspects of various types of mixed models, together with practical implications of their use. Topics covered will include linear mixed models, generalized mixed models, mixed models for categorical data, repeated measures data analysis and cross-over trials with mixed models. Mathematical formulations and statistical assumptions of the fitted models will be covered. Key concepts of the theories and estimation methods behind these mixed models will also be illustrated. The main software used for fitting the mixed models will be SAS or R.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: BIOST-PHD; PREQ: BIOST 2083 or BIOST 3025

BIOST 3050 - SURVIVAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
The problem of analyzing time-to-event data, often referred to as survival data, arises in many fields such as medicine, public health, engineering, economics, and demography. An important feature with survival data is censoring and truncation. The materials covered in this course include introduction of basic concepts and terminologies, estimation of summary statistics for survival data, hypothesis testing of comparing time-to-event distributions under censoring and/or truncation, regression methods for survival data, and multivariate models for survival data. The statistical techniques will be exemplified mainly through medical or biological data. The course will focus on both theories and applications. Students are expected to be familiar with fundamental statistical concepts and theories such as probabilities, distributions, likelihood, hypothesis testing, estimation and inference. Knowledge on using SAS and R programming for data management and analysis is also required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: (BIOST 2039 or BIOST 2141) and (BIOST 2044 or BIOST 3012)

BIOST 3065 - ANALYSIS OF DATA WITH MISSING VALUES

Minimum Credits: 3
Maximum Credits: 3
This course will present missing-data problems in statistics and discuss naive methods such as complete-case analysis, available-case analysis and imputation; standard likelihood-based methods, theory and application of multiple imputation, data augmentation, Gibbs sampler, and some recently developed methodologies in the missing data literature and related fields.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 3012 or BIOST 2044) & (BIOST 2051 or BIOST 3021)

Business Accounting

BACC 2060 - INDEPENDENT STUDY IN ACCOUNTING

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BACC 2100 - MACC INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
To enroll for an IFC through the MACC program, you must be a MACC student and work for a minimum of 10 hours a week for 10 weeks during the semester you intend to take the internship for credit. You may receive up to six internship credits, but only three per semester, and no more than three credits for an experience. The grade for these credits will be pass/fail (satisfactory/unsatisfactory). The deadline to apply for an internship for credit is the date the add/drop period ends for that given semester. All internship offers must be approved by the MACC office prior to enrollment for that experience. Performance appraisals must be submitted to your faculty advisor and to career services and your employer must complete a midpoint and final performance appraisal.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

BACC 2236 - ACCOUNTING INFORMATION SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Focuses on the design and implementation of accounting information systems and their ability to: collect data on the activities of an organization, accumulate and summarize the data, and make the information available to managers for analysis, decision-making and control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2238 - AUDITING

Minimum Credits: 3
Maximum Credits: 3
Introduces auditing process and profession. Main topics include nature and purpose of auditing, auditing standards, professional conduct, auditor legal liability and approaches in auditing financial statements. Emphasizes a risk-based approach to selecting appropriate auditing techniques. Examines auditor's decision process relating to internal control assessment, audit decision process relating to internal control assessment, audit sampling and obtaining audit evidence about financial accounts. Examines extent of auditor's responsibility to uncover fraud.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2251 - FORENSIC ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3

"Fraud is extremely costly to our society, and the costs seem to be growing. The AICPA recently called forensic accounting one of the seven hot, new, "sizzling" career areas in accounting. It is estimated that there will be a shortage of between 25,000 and 50,000 professionals working in this area in the next few years in the U.S., So there are many opportunities for students knowledgeable in fraud to work in various federal agencies (e.g. FBI), major corporations, and professional service firms. The objectives of the forensics course are to familiarize students with several forms of fraud and the methods that fraud examiners use to prevent and detect it. Students will develop expertise in detecting financial statement fraud from the external auditor perspective, and learn how to use technology to detect fraud. They will acquire a basic understanding of how interviews are conducted in order to detect deception. The class will also provide a historical view of financial statement fraud. The tools used in the class will include interviewing, document examination, and public records searches, which will be helpful to students wanting to become consultants, auditors, tax professionals, managers, etc. The class, of course, includes an ethics component. It will help students to understand the common ethical dilemmas that they might encounter in the business world, and will help prepare them to resist pressure to commit fraud."
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BACC 2252 - TAXATION FOR ENTITIES

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to help students understand how important features of the internal revenue code influence decisions regarding how to organize and structure business operations and select the most appropriate form of doing business. After beginning with a general discussion of regulations governing practice before the Internal Revenue Service (IRS), the course continues with a comparison of the issues surrounding the choice of taxable business entity, comparing the regular corporation (c corporation), the small business corporation (s corporation), the partnership, and the sole proprietorship. Further lectures incorporate determinations of entity tax bases and resulting tax obligations with special emphasis placed upon differences for each entity type. Tax planning is an integral part of the course. Income shifting, tax deductions, tax credits, income exclusions, book (GAAP) vs. taxable income, and mergers and acquisitions (M&A) are discussed in detail. The course uses case studies and tax return preparation to help students to apply the theory and details of the tax code. Course materials are updated as tax laws change.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ACCT-MS or ACCTBA-MS

BACC 2254 - ADVANCED FINANCIAL ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3
This course covers topics that are of particular interest to financial report preparers and auditors. Special emphasis is placed on accounting for business combinations and consolidated financial reporting. Other topics include international accounting, accounting for partnerships, and accounting by fiduciaries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Accounting (MS)

BACC 2255 - ACCOUNTING DISCLOSURES FOR DERIVATIVES

Minimum Credits: 1
Maximum Credits: 1
This accounting elective will focus on derivative instruments and their impact on accounting and internal controls. The course will cover various topics tied to derivative instruments including the benefits, hedging, the risks, cash flow implications, internal controls, accounting & reporting requirements, taxation, and regulations. The course will analyze various incidents where internal controls were compromised and the implications. Upon successful completion of this course, the student will have the knowledge and background required to account for, audit, and monitor the use of derivative products. This course will also help those students who plan on sitting for the CPA

examination.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BUSACC 1238

BACC 2256 - STRATEGIC COST MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course deals with strategic implications of alternative methods of product cost measurement. The discussions will primarily be case-based and will include cost measurement issues in both conventional and modern manufacturing environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Accounting (MS)

BACC 2258 - STRATEGIC COST MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
The quality, timeliness and credibility of the cost information used in corporate decision-making can have a significant impact on value creation. This is because cost information is important not only in strategy formulation and in the development and implementation of action plans that link strategies to value creation, but also because such data serve as measures of financial performance for products, processes, organizational sub-units and managers. In particular, product and service cost estimates have a major influence on corporate strategic decisions such as pricing, resource allocation, product development, supply chain design and customer focused management. In addition, product costs are informative signals of operational efficiency. Therefore, they constitute financial measures of the success of management actions such as continuous improvement and business process reengineering. Over-aggregate or obsolete cost systems can have a significant adverse impact on cost reduction in particular and overall corporate strategy and competitiveness in general. The objective of this course is to develop an integrated approach to analyzing these issues. In particular, we will study (a) how product cost measurement affects strategy and resource allocation decisions; (b) how to be sophisticated users of cost feedback and how to understand the strategic distortions that are induced by flaws in cost system design; (c) the strategic role of value-driver information and the relationship between process improvement and cost reduction; (d) the use of budgetary control systems and financial measures in performance evaluation and management and (e) incentive conflicts in organizations and their mitigation through appropriate mechanisms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: RESTRICTED ACCT-MS,ACCTBA-MS

BACC 2270 - PERSONAL WEALTH AND TAXES

Minimum Credits: 3
Maximum Credits: 3
Personal Wealth and Taxes introduces personal wealth management and tax implications of various approaches including: 1. Budgets and taxes: Understanding financial statements, budgets, and tax returns 2. Asset management: Managing cash and savings and making auto and housing decisions 3. Managing credit and consumer loans: Understanding what impacts a credit report and how to structure credit to improve credit worthiness and lower cost of capital. 4. Managing insurance needs: Learning about life, health, and property insurance. 5. Managing investments: Planning and investments in stocks and bonds, mutual funds, ETFs, and real estate. 6. Retirement planning: Maximizing retirement savings, employer matching, and preserving your estate.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2401 - FINANCIAL ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3
The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view. This includes what is (and what is not) included in the reports, how and when events affect the statements, and what can be inferred from these reports about the firm's past activities, present position and the future prospects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BACC 2402 - FINANCIAL ACCOUNTING IN HEALTHCARE ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2466 - RISK MANAGEMENT AND COMPLIANCE ISSUES FACING INTERNATIONAL ORGANIZATIONS

Minimum Credits: 1
Maximum Credits: 1
This course will be valuable to MBA and mac students interested in working for global businesses, regardless of their desired career paths. As business organizations continue to seek growth in markets outside the United States and Western Europe, they will face increasingly complex and difficult challenges, including compliance with U.S. And foreign criminal and civil laws in places that are corrupt. Compliance with the U.S. Foreign corrupt practices act, which forbids businesses from providing certain benefits to government officials, is essential for global organizations, as penalties are severe. And to succeed in their careers, auditors will need to understand that businesses in certain geographic areas maintain multiple sets of books and hide bribery and tax fraud schemes. Strategic planners and supply-chain professionals will face cross-border risks, including demands by government customs and tax inspectors for bribe payments. Energy executives will confront violence, corruption and supply-chain problems in many oil and gas-producing areas. Sales professionals will confront demands for kickbacks. The course will cover these issues, and will provide students with the knowledge and compliance tools necessary to advance their professional careers in a global economy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BACC 2510 - ANNUAL REPORTS TO SHAREHOLDERS

Minimum Credits: 1
Maximum Credits: 1
This financial accounting elective covers the rules for financial disclosures under the U. S. Securities and Exchange Commission (SEC) and exposes students to the annual financial reporting processes followed by public companies in the United States. In our study, we will focus on the fundamentals of the important filings made by public companies with the SEC, including these important disclosures: Management's Discussion and Analysis, Critical Accounting Estimates, Overview of Business, Quantitative and Qualitative Disclosures about Market Risk, the report of the Independent Auditors and the full set of company financial statements themselves. Our study covers the material accounting judgements that companies make in their financial statements as well as the discretionary disclosures made to help stakeholders better understand the business environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BACC 2401; PROG: Joseph M. Katz Grad Sch Bus

BACC 2511 - GOING PUBLIC & PROXY STATEMNTS

Minimum Credits: 1
Maximum Credits: 1
A continuance of BACC 2510 and includes topics such as understanding current reports on Form 8-K, the company's annual Proxy statement solicitations and the process of going Public (filed on Form S-1). The course also covers going public through direct listing and through the use of a Special Purpose Acquisition Company (SPAC). These advanced topics in SEC Reporting touch on the various ways that companies can list shares to the public and the differing regulatory requirements under each method. In our study of proxy solicitation materials, we cover the various elements of executive compensation and the disclosures regarding the pay philosophy made by the board of directors. Shareholder advocacy as well as the responsibility of the outside auditors are included in this section of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BACC 2510; PROG: Joseph M. Katz Grad Sch Bus

BACC 2523 - ACCOUNTING DATA ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
Accounting data analytics exposes macc students to the role of big data in accounting and the information technology tools and techniques used by accountants and auditors to produce more timely and accurate reports. Topics include advanced excel, data modeling, statistical sampling and cluster analysis, business intelligence, and xbrl generation and analysis.The course will cover data analytics covering four major themes: financial reporting, performance evaluation, audit analytics, and tax. Each theme will include hands-on instruction using commercial and open source software and requires students to complete a related data analysis project. Accounting data analytics is different from other database and information systems courses in that it will show students how to use specific tools to complete projects and develop an analytical mindset with a specific focus on accounting and auditing processes. This is primarily a project-based course. The students will complete three projects, showing their mastery of the tools, decisions, and the steps they followed to reach their conclusions. The final exam would be used to evaluate general understanding of the concepts discussed throughout the semester. There is potential for additional ebl components including field trips if we can work out logistics. I'm currently developing relationships with the accounting firms to bring in local experts and to work on real-world cases.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2524 - INTERNAL AUDIT: RISK & ADVISORY

Minimum Credits: 1
Maximum Credits: 1
Students are introduced to generally accepted auditing standards (GAAS). Internal control is studied in detail with emphasis on how to test for its effectiveness. Audit objectives, planning and sampling techniques are developed as a basis for the audit opinion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BACC 2525 - FINANCIAL STATEMENT ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Financial statement analysis focuses on the evaluation of publicly traded company financial statements and related note disclosures as well as the correlation of this historic financial performance to the company's stock prices. This course will assist students' development of a systematic approach to analyzing reported financial data and understanding the underlying risks and possible inconsistencies among comparative companies. Requirements of the course include interim exams and written and oral presentations of analysis.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: Accounting (MS)

BACC 2528 - MANAGERIAL ACCOUNTING

Minimum Credits: 1
Maximum Credits: 1
Students learn how the costs of products and services are determined in cost accounting systems and how this data is used in managerial decisions and in planning and control of business operations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BACC 2401; PROG: Katz Graduate School of Business

BACC 2533 - ACCELERATED INTERMEDIATE FINANCIAL REPORTING

Minimum Credits: 3
Maximum Credits: 3
Accelerated intermediate financial reporting fulfills the prerequisites of intermediate financial reporting 1 and intermediate financial reporting 2 for students who are entering the MACC program. This course studies the preparation, communication, interpretation and analysis of financial data with emphasis on the information needs of users of financial information prepared under us GAAP. General topics covered in this course include revenue recognition, inventory accounting, long term assets and impairment, investments, current liabilities and contingencies, long term liabilities, capital and retained earnings, leases, pensions and postretirement benefits, income taxes, and preparation of the statement of cash flows. Students are expected to have an accounting background. This course is designed to sit on top of an existing foundation in accounting and will assume students already have taken several financial accounting courses or knowledge obtained through work experience. It is expected that students are fluent with accrual accounting and the accounting cycle and that they have already studied some of the topics in the course in depth. The course will move quickly.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2534 - CONTROLLERSHIP

Minimum Credits: 1
Maximum Credits: 1
This accounting elective is designed for MAcc students seeking a role in corporate accounting and controls. The course will cover the changing role of the controller and the major functions managed by the controller of a typical company. Topics covered include: role of the controller, general accounting, cash management, accounts receivable, accounts payable, payroll, financial planning and budgeting, management reporting and designing well-controlled financial processes and systems. The content will focus not only on the processes managed by the controller, but also the optimization of these processes, policies and procedures and leadership issues. The use of experts from the accounting community will be used as a complement to the theoretical materials presented to illustrate the practical applications and challenges of controllership. Because the course is practical in nature, an experience-based learning group project will be a large part of the curriculum and learning experience offered to students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2537 - TAXES AND MANAGEMENT DECISIONS

Minimum Credits: 1
Maximum Credits: 1
Designed as an introduction to business taxation for majors in areas such as finance or financial planning. Focuses on how managers and analysts can recognize tax problems, consequences and opportunities associated with common business events.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BACC 2401; PROG: Katz Graduate School of Business

BACC 2542 - ACCOUNTING AND FINANCE LAW

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide macc and mba candidates with advanced legal information that is necessary for effectuating management level responsibilities in the contemporary business environment. This course will enhance a business student's knowledge of the law (past that of the three credit business law elective course that is offered) in a manner that strategically is consistent with the content of the CPA exam.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BSEO 2315 or 2528; PROG: Joseph M. Katz Grad Sch Bus

BACC 2543 - TAX POLICY 1

Minimum Credits: 1
Maximum Credits: 1
Our nation was born from a revolution over taxation without representation. Nearly 250 years later, the debate over tax policy continues to dominate political debates and presidential campaigns. Why the tax system attracts all this attention is no mystery. It is the aspect of government that directly affects more people than any other. This course will explore the history of tax policy in the united states, the tax legislative process in congress, how our tax policies influence people's decisions and behavior, international tax considerations, and ideas for future tax reform. Students will discuss what factors are important in designing a good tax system and survey the social justices and injustices that arise from how the government raises its revenue. Upon completion of this course, students should be able to think critically about our tax system and form opinions grounded in facts and policy. This course is for any student that wants to become a more educated citizen (and voter!) With respect to our nation's ongoing debate over tax reform.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BACC 2401; PROG: Joseph M. Katz Grad Sch Bus

BACC 2549 - STRATEGIC COST ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
This course deals with strategic implications of alternative methods of product cost measurement. The discussions will primarily be case-based and will cover cost measurement issues in both conventional and modern manufacturing environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BACC 2401 and 2528; PROG: Katz Graduate School of Business

BACC 2557 - ACCOUNTING RESEARCH AND WRITING

Minimum Credits: 1
Maximum Credits: 1
This course focuses on improving students' writing, deductive reasoning, and problem-solving skills as they conduct research to make a recommendation on the accounting treatment for transactions for which no direct or clear guidance currently exists. Weekly writing assignments are evaluated on both content and the quality of the writing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BACC 2401; PROG: Joseph M. Katz Grad Sch Bus

BACC 2558 - NON-PROFIT AND GOVERNMENTAL ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3
This course focuses on financial reporting and disclosure for not-for-profit and governmental entities based on the standards and principles promulgated by the financial accounting standards board (FASB) and the governmental accounting standards board (GSAB). Students will learn how such entities prepare their financial reports and how to interpret and use such information. The course covers financial reporting for not-for-profit entities, balancing the focus on internal operations with fiduciary responsibility. In addition, the course examines the objectives of financial reporting for governmental units and the preparation and use of the financial statements for such entities. A sample of specific entities will be reviewed to illustrate the preparation and use of their financial statements. In addition, accounting software for governmental transactions will be introduced.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: RESTRICTED ACCT-MS,ACCTBA-MS

BACC 2559 - TAXES AND DECISION MAKING

Minimum Credits: 3
Maximum Credits: 3
This course provides students with a comprehensive foundation of Federal Income Tax policy and an understanding of how it applies to Individuals, sole proprietorships, partnerships, S-Corps, C-Corps, and property transactions. The course uses a textbook, tax return simulations, chapter examples, and class assignments to help students learn the most important features of the Internal Revenue Code. Students also identify and evaluate the tax issues associated with a variety of business and personal transactions, the tax implications for different taxable entities, and how to calculate the regular federal tax and additional taxes and tax credits associated with these transactions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BACC 2560 - VOLUNTEER INCOME TAX ASSISTANCE

Minimum Credits: 3
Maximum Credits: 3
The course provides training to students related to basic tax return preparation and more complex issues facing this client population, including the availability of government assistance and refundable tax credits. In addition to assisting the local Pittsburgh community, we also assist students and scholars enrolled/employed at the University of Pittsburgh and Carnegie Mellon University. Therefore, student preparers get exposure to international tax return preparation. Significant use of technology and virtual preparation methods are used in the course. Students are trained to use tax preparation software, tax research methods on the Internal Revenue Service website, and virtual document storage using the IRS secured website. Students will work with clients in person as well as virtually, and therefore, must be proficient in all platforms. Students will also guide taxpayers about to how to navigate these methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2560 - VOLUNTEER INCOME TAX ASSISTANCE

Minimum Credits: 3
Maximum Credits: 3
The course provides training to students related to basic tax return preparation and more complex issues facing this client population, including the availability of government assistance and refundable tax credits. In addition to assisting the local Pittsburgh community, we also assist students and scholars enrolled/employed at the University of Pittsburgh and Carnegie Mellon University. Therefore, student preparers get exposure to international tax return preparation. Significant use of technology and virtual preparation methods are used in the course. Students are trained to use tax preparation software, tax research methods on the Internal Revenue Service website, and virtual document storage using the IRS secured website. Students will work with clients in person as well as virtually, and therefore, must be

proficient in all platforms. Students will also guide taxpayers about to how to navigate these methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2561 - SUSTAINABILITY REPORTING

Minimum Credits: 1
Maximum Credits: 1
In today's world, businesses, governments, and consumers are increasingly recognizing the importance of transparent reporting to hold companies accountable for their environmental, social, and governance practices. Sustainability reporting has emerged as a powerful tool for measuring, disclosing, and communicating a company's sustainability story and performance while driving continued business success. This course will provide you with an understanding of sustainability reporting and its significance in today's business landscape. We will explore the key principles, frameworks, and guidelines that companies use to report their sustainability metrics for internal and external use. You will also gain insights into the benefits, challenges, and best practices associated with managing and reporting on environmental, social, and governance topics. By the end of this course, students will be able to: 1) Understand how to measure environmental, social, and governance data and incorporate insights into corporate decision-making 2) Identify relevant regulatory requirements related to non-financial disclosures and analyze impacts on an organization 3) Communicate an effective and transparent sustainability story using quantitative and qualitative metrics and disclosures 4) Assess sustainability performance as an external user of sustainability reporting
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BACC 2401

BACC 2562 - VOLUNTEER INCOME TAX ASSISTANCE

Minimum Credits: 3
Maximum Credits: 3
This course is 3.0 credits. Students must be enrolled at Pitt Business pursuing an accounting degree. Pitt Business students must have completed or be concurrently enrolled in BUSACC 0030. Financial Accounting. Students performing a supervisory role must have completed a prior year as a preparer. The Volunteer Income Tax Assistance (VITA) program exposes undergraduate and graduate students to the preparation of federal, state, and local tax returns for individuals and families in lower socio-economic circumstances. The course provides training to students related to basic tax return preparation and more complex issues facing this client population, including the availability of government assistance and refundable tax credits. In addition to assisting the local Pittsburgh community, we also assist students and scholars enrolled/employed at the University of Pittsburgh and Carnegie Mellon University. Student preparers may get exposure to international tax return preparation. Significant use of technology and virtual preparation methods are used in the course. Students are trained to use tax preparation software (Taxslayer for U.S. citizens and resident aliens; Sprintax for nonresident aliens), tax research methods on the Internal Revenue Service website, and virtual document storage using the IRS secured site GetYourRefund.org. Students will work with clients in person as well as virtually, and therefore, must be proficient in all platforms. Students will also guide taxpayers about to how to navigate these methods. By the end of this course, first year student preparers will be able to: 1) Understand the basics of individual tax law 2) Prepare simple tax returns 3) Communicate effectively with taxpayers from diverse backgrounds In addition, students returning for a second year in a supervisory role, will develop skills supervising the work of first year preparers and providing constructive feedback.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

BACC 2801 - FINANCIAL ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3
The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view. This includes what is (and what is not) included in the reports, how and when events affect the statements and what can be inferred from these reports about the firm's past activities, present position and the future prospects.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BACC 2802 - FINANCIAL ACCOUNTING IN HEALTHCARE ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2802 - FINANCIAL ACCOUNTING IN HEALTHCARE ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2802 - FINANCIAL ACCOUNTING IN HEALTHCARE ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2802 - FINANCIAL ACCOUNTING IN HEALTHCARE ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 3001 - INTRODUCTION TO ACCOUNTING RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This seminar is designed to provide new accounting doctoral students with an overview of accounting research. The course will discuss the variety of topics and methods addressed by accounting scholars, and will seek to provide insight into the characteristics that distinguish the highest quality research. Analytical research methods and topics, as well as applications in managerial accounting, will receive particular emphasis in the first half of the course. In the second half, we will read and analyze representative accounting research employing capital markets, archival managerial and experimental methods.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BACC 3010 - INDEPENDENT STUDY IN ACCOUNTING

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BACC 3014 - EXPERIMENTAL RESEARCH IN ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3
The course covers recent experimental studies that apply behavioral decision theory, psychology, and economics to address a variety of accounting research questions. The course focuses most heavily on recent work. The goals of this course are to (1)familiarize students with recent experimental research in accounting, (2) help students develop the skills necessary to critically evaluate such research, and (3) generate ideas for future experimental research topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BACC 3017 - ACCOUNTING WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
Presentation of research papers in various aspects of accounting and related areas by faculty and distinguished visitors. The student is expected to attend the workshop, participate in discussions, and present a workshop paper.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BACC 3021 - ARCHIVAL RESEARCH IN MANAGERIAL ACCOUNTING

Minimum Credits: 1
Maximum Credits: 1
This seminar will focus on studying management control and performance measurement issues largely from an economics perspective using archival methods. Topics discussed will include, but not be limited to, analysis and economic impact of cost systems, use of financial measures for performance evaluation and compensation, impact of incentive systems on organizational performance, non-financial measures and balanced scorecard. The course materials will consist of papers in accounting. Course requirements include active class participation, presentations/discussions/summary reports of papers, replication of earlier studies (where data are available), and a final examination.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BACC 3025 - CAPITAL MARKETS RESEARCH IN ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3

This course provides students with a solid understanding of capital market research in accounting and empirical research training. The class will cover topics such as the relation between stock prices and earnings, stock market anomalies, and analyst and management forecasts. Students will also replicate some classic finance and accounting papers in order to provide them with some hands-on experience working with compustat, crsp, ibes, and sdc data using sas statistical programming. The class will help students to better evaluate research in workshops, develop new ideas and do empirical tests.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BACC 3052 - CRITICAL THINKING IN ACCOUNTING II

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BACC 3053 - CRITICAL THINKING IN ACCOUNTING 3

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BACC 3099 - READINGS IN ACCOUNTING

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

BACC 3114 - BEHAVORIAL RESEARCH IN ACCOUNTING 1

Minimum Credits: 1
Maximum Credits: 1
In this course we will discuss experimental studies that apply behavioral decision theory, psychology, and economics to address a variety of accounting issues.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BACC 3115 - EXPERIMENTAL RESEARCH IN ACCOUNTING 2

Minimum Credits: 1
Maximum Credits: 1
In this seminar, PhD students will be exposed to research examining financial accounting and auditing questions using experimental methods. The seminar is also a continuation of experimental behavioral decision-making research in accounting, critically evaluating experimental research and generating future research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BACC 3571 - ACCOUNTING RESEARCH

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to provide students with the theory and concepts underlying budgeting practices (i.e., what has existed, is currently in use, and has been proposed for contemporary purposes). It will focus on research related to budgeting and controls, how these topics relate to a firm's strategy, management motivation, performance measures and risk management. Topics will include budgeting in uncertain times, the balanced scorecard, and "beyond budgeting" approaches, as well as others. The pedagogical approach is to address these topics through case studies and to introduce and apply relevant research findings.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

Business Administration

BUSADM 3001 - BEHAVIORAL RESEARCH METHODS

Minimum Credits: 3
Maximum Credits: 3
This doctoral seminar is designed to be among the first in your program, and is oriented towards conducting quality research in whatever your business discipline, with an eye towards becoming a respected scholar in that discipline. The course covers both classic and recent research in a carefully-chosen set of topics, and with a bias toward articles in high-quality business journals. We will examine several characteristics of ¿good¿ research, critique the work of others, and learn from critiques of our work along with what I call ¿steering¿ rather than harsh judgments and discouragement. Research methods differ somewhat for each discipline. While behavioral research in business is focused on people more than organs or organizations, there are some studies of organs like the brain in some ¿neuro¿ behavioral studies, and there are studies of people in the context of their organizations in some field studies. Therefore, there is overlap in many cases. Because the course focuses on research methods, our bias will be on empiricism, which represents gathering of data for support of some theory. While most fields accept research from a variety of perspectives, behavioral fields have a staggering diversity of points of view, such as argumentation, theory-building, experimentation, field studies, case studies, and archival studies, to mention just a few.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BUSADM 3011 - INTERNATIONAL MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This doctoral seminar will cover the foundations of the field of international management drawing on multiple theoretical perspectives: economics, strategic management, and organizational behavior and theory. The goal of the course is to provide students with an understanding of the intellectual lineage and behavioral assumptions underlying the different approaches to studying international management. We will explore why firms choose to invest overseas and what determines their selection of location and ownership structure. We will look at the role that firm capabilities play in the international context, the influence of regional differences on organization design choices, as well as the nature of comparative management. The goals of the course will be to explore the intellectual foundations of key questions in the international management literature and to explore the ways in which the theories can be useful in undertaking empirical studies. Additional time will be devoted to specific international management topics that most closely match students' interests.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BUSADM 3013 - WORK AND ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
This seminar is intended for Ph.D. students who wish to develop an understanding of the theoretical underpinnings of research on the management of knowledge and work in organizations. It reviews the major theoretical perspectives, but places a particular emphasis on the current empirical literature related to human resource management. Because of the multi-disciplinary nature of this research space, readings draw on a broad range of material including studies from sociology, organization theory, strategy, economics, and policy. These are used to develop an integrative understanding of the underpinnings of work and employment-related research published in top tier management journals.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BUSADM 3030 - MANAGING THE TRIPLE BOTTOM LINE

Minimum Credits: 3
Maximum Credits: 3
Issues such as climate change and global warming, human rights, and health and sanitation for all have garnered significant attention in recent years. Leading businesses realize that it is no longer enough to maximize profits and cater to shareholders but as well critical to integrate the wellbeing of the planet and its people into their business models. Such a transformation to managing the triple bottom line of people, planet and profit requires us to look at business and its operations through a new lens. This doctoral seminar will focus on theories, concepts and methodologies that we can use to understand the role of the firm in 21st century society and develop strategies for long run sustainability. The course will be interdisciplinary, drawing on literatures in strategy, marketing, organizational behavior, operations, and finance as well as methods spanning lab experiments to structural equation models to understand the conditions under which creating social and environmental value can drive business value. The course will feature academic guest speakers from the aforementioned disciplines of business to highlight the interdisciplinary nature of sustainability research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Attributes: MCSI - Sustainability Focused

BUSADM 3040 - RESEARCH AND THEORY ON DIVERSITY, EQUITY AND INCLUSION

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on research, theory and applications related to diversity, equity and inclusion (DE&I) within organizations. We will examine DE&I across three levels of analyses - individual, group and organizational. Our primary goal is to better understand the ways in which research and theory has addressed topics, processes and outcomes related to diversity and its impact on key outcomes studied by organizational scholars. To accomplish this, we will review a wide array of research and theory that will provide the necessary lens for you to connect this work to your own fields of study and future research. We will also explore a variety of frameworks, strategies and research tools used to advance our understanding of this dynamic and critically important topic.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BUSADM 3199 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

BUSADM 3501 - QUANTITATIVE RESEARCH METHODS 1

Minimum Credits: 3
Maximum Credits: 3
Quantitative Research Methods I (Topics: Hypothesis Testing and Analytical Modeling) This course will help develop the concepts and skills needed for effective analysis of data and the interpretation of results for decision making. Course will review inferential statistics: confidence interval, hypothesis tests, and regression. Cover optimization (LP review, DEA, Network Modeling, Integer Programming, Nonlinear programming, and Simulation), as well as, Management Science and Operations Research techniques: - Build analytical and modeling skills for both deterministic & stochastic optimizations. - Understand Simulation, Decision - and Queueing-Theory to assist in better management decisions. - Develop skills needed for effective analysis of data and the interpretation of results for decision making. Possible software package for the course are Excel, Tableau, SPSS, SAS-JMP.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3501 - QUANTITATIVE RESEARCH METHODS 1

Minimum Credits: 3
Maximum Credits: 3
Quantitative Research Methods I (Topics: Hypothesis Testing and Analytical Modeling) This course will help develop the concepts and skills needed for effective analysis of data and the interpretation of results for decision making. Course will review inferential statistics: confidence interval, hypothesis tests, and regression. Cover optimization (LP review, DEA, Network Modeling, Integer Programming, Nonlinear programming, and Simulation), as well as, Management Science and Operations Research techniques: - Build analytical and modeling skills for both deterministic & stochastic optimizations. - Understand Simulation, Decision - and Queueing-Theory to assist in better management decisions. - Develop skills needed for effective analysis of data and the interpretation of results for decision making. Possible software package for the course are Excel, Tableau, SPSS, SAS-JMP.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3502 - QUANTITATIVE RESEARCH METHODS 2

Minimum Credits: 3
Maximum Credits: 3
This course is designed to broaden and enrich students' knowledge and understanding of statistical concepts. Multivariate statistical techniques can be used to analyze data in many fields such as Finance, Production and Operations, Accounting, Marketing, Personnel Management, etc. Through overviewing actual applications in various fields and in-class exercises involving real-world data, students can apply the techniques to topics such as consumer and market research, supply chain analytics, creditworthiness and risk assessment, stress test, and early warning signals outside pre-set limits, and make better business decisions. The second half of this class will dive deeper into the statistical techniques, tools, and processes necessary to solve analytic problems in a multitude of business domains. In this class, we will conduct an overview of data mining techniques, focusing primarily on business-oriented datasets and examples.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3503 - BEHAVIORAL RESEARCH METHODS 1

Minimum Credits: 1
Maximum Credits: 1
This doctoral seminar is intended to be taken in the first semester, first year of the program, and prepares students to continue to Behavioral Research Methods 2 (BUSADM 3507). Topics focus on behavior rather than macroeconomic or archival research models. We focus on defining the scientific method, knowledge, and theories and frameworks; understanding theory and modeling; conducting effective sampling; formulating research questions; designing and carrying out true and quasi-experiments; choosing among types of research (quantitative and qualitative); and testing for validity and reliability in measures.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3503 - BEHAVIORAL RESEARCH METHODS 1

Minimum Credits: 1.5
Maximum Credits: 1.5
Behavioral Research Methods (Topics: Inquiry Strategies, Measurement, and Sampling) Reviews options for performing quantitative and qualitative research studies in firms that focus on individuals' attitudes, intentions, and behaviors. Firms can investigate research questions concerning employees, customers, and trading partners. For quantitative methods, the course will cover topics such as how to create a behavioral study strategy, formulate research questions based on theory, design questionnaires and surveys, design experiments, carry out the studies, and assess the results. Qualitative topics to be covered include methods for designing and conducting studies involving interviews, focus groups, and archival documents such as filings, news reports, and social network posts. Methods for analyzing unstructured data will be covered, using software such as Dedoose, NVIVO, and/or LIWC. Machine learning concepts will also be discussed. Co/Prerequisite: Quantitative Research Methods I.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3504 - QUANTITATIVE RESEARCH METHODS 1A

Minimum Credits: 1
Maximum Credits: 1
This course will show you how to interpret and extract information from data, and to use your experience and judgment to make decisions in complex environments in a systematic and consistent manner. It will also provide the necessary tools to carry out the correct analyses needed in other disciplines. The emphasis in this course is not on memorization or mimicking text examples. In real applications, your computer is the best tool for number crunching. Your function is to think and reason about the types of analyses to do. Statistical thinking is more an art than a science. While there are guidelines, and there are wrong ways to do things, in general, there is no flowchart you can use to figure out the "right" way to handle a set of data.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3505 - QUANTITATIVE RESEARCH METHODS 1B

Minimum Credits: 1
Maximum Credits: 1
This course is a combination of management-science/operations research (MS/OR) and Decision Analysis Techniques. The MS/OR portion of the course develops and builds modeling skills using optimization methodologies. The topics covered include: Linear programming (review), Integer programming and Non- Linear programming. The decision analysis under uncertainty will be discussed using optimistic, pessimistic, most likely and expected value criteria. Decision making under conflict/game theory concepts will be discussed briefly. Other topics covered may include Queuing Theory and Simulation. By the end of the course, the students should be able to identify, formulate and solve a real-life problem using the above techniques.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3506 - BEHAVIORAL DECISION-MAKING AND CHOICE

Minimum Credits: 1
Maximum Credits: 1
In this course, you will develop a broad foundation of key topics in the decision-making research arena and critically evaluate theoretical and empirical aspects of articles (conceptual). This course will assist you to strengthen your ability to apply this research to identify, develop, and present your research ideas (practical). Each session, we will discuss a key topic in the decision-making literature (that is, how people really make choices in the real world). The topics covered in this seminar will range from normative utility maximization theory to heuristics and biases, to applications in the marketplace.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3507 - BEHAVIORAL RESEARCH METHODS 2

Minimum Credits: 1
Maximum Credits: 1
This doctoral seminar is designed to be taken in the second semester of the first year in the DBA program. It is oriented towards collecting meaningful behavioral data for a research project. The course covers pragmatic issues of how to design factorial and correlational studies, how to perform qualitative research at a basic level, how to integrate judges' scores, and how to design (using the Dillman method) and implement questionnaires on Qualtrics. The tools will be very useful in the third year of the program.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3508 - QUANTITATIVE RESEARCH METHODS 2A

Minimum Credits: 1
Maximum Credits: 1
This course is designed to broaden and enrich students' knowledge and understanding of statistical concepts. Multivariate statistical techniques can be used to analyze data in many fields such as Finance, Production and Operations, Accounting, Marketing, Personnel Management, etc. Through overviewing actual applications in various fields and in-class exercises involving real-world data, students can apply the techniques to topics such as consumer and market research, supply chain analytics, creditworthiness and risk assessment, stress test, and early warning signals outside pre-set limits, and make better business decisions. The course will teach students to better derive insights from data, ask questions to shape business vision and to drive value. They will also be able to improve business processes by using the right data insights as decision makers and incorporating these insights into management decisions. The main purpose of this course is to enhance students' statistical and analytical skills to the level necessary to deal with Data Mining and other essential material in the Business Analytics domain.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3509 - QUANTITATIVE RESEARCH METHODS 2B

Minimum Credits: 1
Maximum Credits: 1
Business Analytics is a strategic initiative for many companies and organizations. Many organizations use data analysis and decision science techniques to drive strategic decisions and to solve critical problems. This class will dive deeper into the statistical techniques, tools, and processes necessary to solve analytic problems in a multitude of business domains. The amount of data available to companies and other organizations has grown and continues to grow, exponentially. Companies that manage to successfully incorporate data analysis in their decision-making are both more productive and more profitable. As a result, a professional's ability to use data to extract insights and generate predictions has become increasingly valuable. In this class, we will conduct an overview of data mining techniques, focusing primarily on business-oriented datasets and practical examples.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BUSADM 3510 - QUANTITATIVE RESEARCH METHODS 3

Minimum Credits: 1
Maximum Credits: 1
In this unique statistics course, students will receive personalized guidance tailored specifically to their individual projects. Instead of traditional class meetings, the instructor will hold one-on-one or small group consulting sessions, providing targeted feedback and expert advice on their project's statistical design, data analysis, and interpretation. This approach ensures that all students receive dedicated attention to their specific challenges and goals, making the learning experience highly relevant and practical. The instructor's insights will

help students apply the statistical methods appropriate to their projects, which should yield more robust and insightful findings.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

BUSADM 3511 - RESEARCH DESIGN

Minimum Credits: 1
Maximum Credits: 1
The purpose of this seminar is to workshop the DBA research practicum projects. Each student will present their project, and the class and the instructor will offer suggestions for strengthening the project. We will draw on previous content knowledge to develop and refine research questions and hypotheses, as well as knowledge of research methods developed throughout time in the program. Relevant guests (such as the primary advisor) will be invited to attend.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

BUSADM 3598 - PRACTICUM RESEARCH PROJECT

Minimum Credits: 1
Maximum Credits: 15
DBA students are required to demonstrate their capacity to engage in a sustained research effort by completing a Practicum Research Project (PRP). The PRP entails an independent investigation of a problem of acknowledged significance and size in a management-related area. Generally accomplished at the conclusion of coursework, the DBA candidate would formulate a research problem, review the literature, devise a research plan, collect and analyze meaningful data to draw appropriate conclusions from their findings. The PRP is designed to allow students to investigate a problem relevant to a current issue in the business world. An ideal problem would involve rigorous processes that identify and apply existing theory.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

Business Economics

BECN 2019 - ECONOMICS FOR INTERNATIONAL BUSINESS

Minimum Credits: 3
Maximum Credits: 3
Investigates key aspects of the international economics environment. The first half introduces the international monetary system. Reviews the balance of payments, foreign exchange rate systems, adjustment mechanism, the foreign exchange market, and international money and capital markets. In the second half, topics include theories of international trade and investment restrictions on trade, commercial policies of the United States.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BECN 2401; PROG: Katz Graduate School of Business
Course Attributes: Russian & East European Studies

BECN 2060 - INDEPENT STUDY IN MANAGERIAL ECONOMICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS

Minimum Credits: 3
Maximum Credits: 3
This course develops an understanding of how market-based economic systems reconciles the separate needs of consumers and producers, and provides an economic framework for managerial decisions. Topics include: pricing, output, and quality decisions; the impact of productivity improvements on costs; quality-cost tradeoffs; transactions costs as a determinant of the boundaries of the firm; market imperfection and the role of regulation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BECN 2509 - GLOBAL MACROECONOMICS: INSTITUTIONS AND POLICY

Minimum Credits: 1
Maximum Credits: 1
This elective course focuses on the forces which drive or determine overall national/global economic activity. The course is organized around the progressive development of an "open economy" macroeconomic model which is capable of handling a number of key policy and other variables.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BECN 2510 - MACROECONOMICS AND GROWTH IN EMERGING ECONOMIES

Minimum Credits: 1
Maximum Credits: 1
This follow-up course continues the focus on the forces which drive or determine overall national/global economic activity. This course expands the "open economy" macroeconomics framework developed in BECN 2509."
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: BECN 2509; PROG: Katz Graduate School of Business
Course Attributes: Global Studies

BECN 3010 - INDEPENDENT STUDY IN ECONOMICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BECN 3099 - READINGS IN MANAGERIAL ECONOMICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad Letter Grade

BECN 3531 - ADVANCED TOPICS IN APPLIED MICROECONOMICS A

Minimum Credits: 1
Maximum Credits: 1
This course will consist of various applications of microeconomics in the field of Industrial Organization. The field of Industrial Organization focuses on the conduct of firms as implied by the competitive structure of the market in which they operate and the welfare implication of such conduct. Several dimensions of firm conduct are addressed, including various pricing mechanisms, product mix selection, advertising strategies, internal organization of the firm, and the implication of asymmetry of information on firm behavior and market outcomes.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BECN 3532 - ADVANCED TOPICS IN APPLIED MACROECONOMICS B

Minimum Credits: 1
Maximum Credits: 1
Economic events shape global policy and strategic decision making for businesses. These factors drive overall national economic activity, movements in major macroeconomic variables, especially interest rates and exchange rates, and influence the performance of national and global financial markets. A keen understanding of the 'macro'-economic environment is key to analyzing such factors. The course will introduce students to the empirical analysis of the growth forces by providing numerous hands-on opportunities using real-world data. The students are expected to build a thorough econometric analysis using available World Bank Data to determine elements that are responsible for driving growth and advancement. This will enable students to handle cross-country panel data sets, visualize data, perform descriptive analysis, create econometric model specifications that requires comprehensive statistical analysis and interpret results that would help readers gain deeper insight.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

Business Finance

BFIN 2015 - SHORT-TERM FINANCING

Minimum Credits: 1
Maximum Credits: 1
Focuses on short-term financial management. Major topics include cash management, investment in money market instruments, banking regulations, liquidity policy, financial statement forecasting and simulation credit policy and credit management, and working capital management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Katz Graduate School of Business

BFIN 2030 - VALUATION 1

Minimum Credits: 1
Maximum Credits: 1
This course provides students with the skills and framework for measuring and managing the value of companies. The course begins by describing how firms create value and then develops the tools required to measure value. Students are required to demonstrate their facility with the techniques.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Katz Graduate School of Business

BFIN 2031 - CREATING VALUE THROUGH RESTRUCTING

Minimum Credits: 1
Maximum Credits: 1
Building on concepts developed in valuation (BFIN 2030), this course examines how and why different types of corporate restructuring affect firm value. The course uses both case studies and readings from the applied corporate finance literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BFIN 2030; PROG: Katz Graduate School of Business

BFIN 2035 - VALUATION

Minimum Credits: 3
Maximum Credits: 3
This course examines the topic of value: what it is, how to measure it, and how to use it to guide managerial decisions. This is done by accomplishing three objectives: 1) providing students with a conceptual framework for thinking about value; 2) providing students with tools for estimating value and measuring value creation and destruction; and 3) teaching students how to apply valuation models in different settings. Prerequisites: BFIN 2409 Financial Management 1, BFIN 2410 Financial Management 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BFIN 2036 - CORPORATE FINANCE

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to corporate financial management. The course builds on BFIN 2006 (introduction to financial management) to provide students with the conceptual framework and analytical tools necessary to appreciate, understand, and analyze the problems facing corporate financial managers. The course consists of four main parts. The first part develops the tools necessary to conduct the analysis of corporate finance problems. These tools include the analysis of data reported on financial statements, building pro-forma financial statements, the basics of put and call options, and an introduction to corporate valuation techniques. The second part of the course examines how managers set the two primary corporate financial policies: capital structure and payout policy (e.g. Dividends and share repurchases), and the process of restructuring in financial distress and bankruptcy. The third part of the course analyzes the process of issuing securities in the capital markets, including the role of the investment banker. Finally, the fourth part explores several aspects of mergers and acquisitions, including the motives for these transactions, the structure of the deal, and the role of private equity firms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Joseph M. Katz Grad Sch Bus (PKATZ)

BFIN 2039 - INVESTMENT MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Focuses on security analysis, portfolio analysis, and the fundamentals of investment theory. Topics include bond and stock valuation, determination of interest rates, effects of inflation and taxes on security values.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410 ; PROG: Katz Graduate School of Business

BFIN 2042 - ACQUISITION OF PRIVATELY HELD COMPANIES

Minimum Credits: 1
Maximum Credits: 1
The course will provide an introduction to the acquisition of privately held companies along with strategies for value creation in the acquired business. The course, which is exclusively taught using the case method, takes lessons taught in the valuation courses extending these concepts to the valuation of privately held business, the structuring of the acquisition balance sheet and the execution of the acquisition process. While a discussion of secured financing alternatives will be included, the application of junior capital, both mezzanine debt and equity will be the focus of the course. A risk analysis of the target will be performed and an investment thesis intended to illustrate value creation techniques will be central to each class discussion. Upon completion, students will be better prepared how to assess both operational and financial forms of risk, develop techniques intended to reduce both forms of risk, and consider value creation strategies in marketing, operations, finance and management. Each case will involve a real company acquired over the years by PNC equity partner along with actual selling memorandum, diligence prepared by PNC principals, market research firms, accounting firms and law firms employed by PNC as part of their diligence process.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Joseph M. Katz Grad Sch Bus (PKATZ)

BFIN 2043 - INTERNATIONAL FINANCIAL MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Conceptual foundation of international financial management. Begins with a review of foreign exchange markets followed by the asset decision. Analyzes capital budgeting decisions of multinationals and taxation of international transactions. Discusses risk management in a global environment, international sources of financing, analysis of the nature of foreign, money and capital markets; and analysis of international banking.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Katz Graduate School of Business

BFIN 2060 - INDEPENDENT STUDY IN FINANCE

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BFIN 2061 - INDEPENDENT STUDY IN FINANCE 2

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BFIN 2062 - INDEPENDENT STUDY IN FINANCE 3

Minimum Credits: 1
Maximum Credits: 9

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BFIN 2068 - MARKETS AND TRADING

Minimum Credits: 1
Maximum Credits: 1
This course is designed to give participants a broad understanding of the operations of various financial markets with special focus on liquidity, market structure and trading. With this objective in mind, the course will concentrate on the operations of exchanges, trading systems and broker-dealer intermediaries. Participants will be exposed to a range of issues regarding the formulation of trading decisions and market structure design and regulation. Simulation software will be used to provide hands-on experience with making tactical trading decisions in different market structure environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2069 - FIXED INCOME SECURITIES

Minimum Credits: 1
Maximum Credits: 1
This course examines the concepts that are most frequently encountered in the market for fixed income securities. Specifically, the course describes the most important fixed income securities and markets and develops tools for valuing these securities and managing their interest rate and credit risk. Historically, "fixed-income" refers to securities which promise fixed cash flows over their lives such as a fixed-rate coupon bond. Now, it is generally accepted that a fixed income instrument is one whose value is driven by the level of interest rates and/or the value of a related underlying asset. This classification would include floating rate bonds, callable bonds, bond futures, bond options, caps, floors and collars, interest rate swaps, credit derivatives and asset-backed securities. The analysis of fixed income securities is quantitative in nature. We will focus on the intuition behind the various concepts presented in class but there will be a fair amount of computation involved. Students should be comfortable with linear algebra, calculus, probability distributions, regression analysis and statistical concepts like mean, variance and correlation (covariance). The course will also assume a high level of familiarity with a spreadsheet package like microsoft excel.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2126 - INVESTMENTS ANALYSIS & STRATEGIES

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to provide students with thorough practical and theoretical exposure to the credit segment of securities markets. The course covers the major topics of bond pricing, international markets, term structure of interest rates, duration, convexity and their implications for portfolio management, interest rate models, asset-backed securities, interest rate derivatives and credit risk analysis. Real-world examples are utilized to demonstrate connections with the theoretical framework.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BFIN 2130 - VALUATION 2

Minimum Credits: 1
Maximum Credits: 1
This is a continuation of valuation 1.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: BFIN 2030; PROG: Katz Graduate School of Business

BFIN 2140 - REAL ESTATE FINANCE

Minimum Credits: 1
Maximum Credits: 1
This course provides an introduction to real estate with a focus on the valuation and financing of real estate. The following topics are expected to be covered as the course focuses on income producing properties: economic theory of real estate, valuation technique (including pro-forma cash flow projections), financing strategies, risk analysis, taxation, and the securitization of real property interests. No prior knowledge of the industry is required, but students are expected to rapidly acquire a working knowledge of real estate terminology and real estate markets. Classes are conducted in a standards lecture format with discussion required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Katz Graduate School of Business

BFIN 2141 - REAL ESTATE FINANCE

Minimum Credits: 3
Maximum Credits: 3
Real estate represents the largest asset class in the world and is historically the asset most closely associated with wealth in every culture and country. Our objective is to understand the financial characteristics of income-producing real estate by focusing on capital costs, cash flow characteristics, discount rates, exit values, and required rates of return. We will explore some of the unique characteristics that shape the economic performance of real estate assets. We will deploy a set of analytical tools to model potential economic outcomes of real estate investments; review the most common sources of capital deployed in income producing properties; and explore how securitization and secondary markets have revolutionized financing approaches, not always with positive results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BFIN 2410

BFIN 2145 - FINANCIAL MODELING

Minimum Credits: 3
Maximum Credits: 3
The course will apply finance theory to solve various problems in financial management and investments. It will take a hands-on approach in building financial spreadsheet models using Microsoft excel. Students will learn to address issues that arise in various areas of financial analyses. These issues include but are not limited to discounted cash flow valuation, cost of capital estimation, asset return calculations, portfolio theory, index models, option pricing models, bond pricing and investment performance analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: COREQ: BFIN 2409 and 2410; PLAN: Joseph M. Katz Grad Sch Bus

BFIN 2150 - RISK MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course examines financial risk management from the perspective of the corporate manager. We will examine three issues. The first is why a corporation should manage risk. To understand this, we need to consider how corporations create value for shareholders and the frictions they face that create wedges between what the corporation produces and what is ultimately passed through to shareholders. The second issue is how a corporation should manage risk. This requires an understanding of certain financial instruments that are generally

referred to as derivatives - instruments whose values derive from other more fundamental assets such as commodities, currency exchange rates, stocks (equities) and bonds (interest rates). The building blocks for many of these financial instruments are two basic derivative instruments, forwards/futures and options. The third issue is the cost of risk management. We will start by pricing forwards/futures and options under the assumption that markets are efficient and there is no arbitrage. We will then use Monte Carlo simulation as a tool for pricing more exotic derivatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BFIN 2306 - FINANCIAL MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
An introduction to the tools used in corporate financial decision making. Develops two basic valuation models commonly used in finance--present value models and the capital asset pricing model and focuses on the use of these models in corporate decision making. Examines capital budgeting, corporate structure policy, and corporate dividend policy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BFIN 2307 - HEALTHCARE AS AN ASSET CLASS - A PRIVATE EQUITY PERSPECTIVE

Minimum Credits: 1
Maximum Credits: 1
The course endeavors to create an understanding of the global private equity market, identify stakeholders, assess evaluation techniques of portfolio companies, examine the financing techniques, review how portfolio companies are managed and evaluate exit realization strategies. The discussion focuses on Healthcare as an asset class and its growing importance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BFIN 2308 - MERGERS, ACQUISITIONS AND CORPORATE RESTRUCTURING

Minimum Credits: 1
Maximum Credits: 1
This course will examine strategic and practical issues associated with restructurings, including those related to mergers, acquisitions, divestitures, activist investors, governance challenges, financial distress, and leveraged buyouts. We will investigate these issues in the context of a firm's overall strategic goals and discuss how restructuring strategies must be formulated to be consistent with a firm's business strategy and corporate culture. We will focus on the tools for measuring value and value creation/destruction and the economics underlying the value creation process. The goal of this course is to provide a practical overview of the market for corporate assets viewed from the perspective of firms, employees, bankers, consultants, and investors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BFIN 2342 - ALTERNATE ASSETS: FROM VC TO PE

Minimum Credits: 3
Maximum Credits: 3
The course endeavors to create an understanding of the global private equity market, identify stakeholders, assess evaluation techniques of portfolio companies, examine the financing techniques, review how portfolio companies are managed, and evaluate exit realization strategies. The discussion will also include the importance of private equity in capital markets, current trends in investments, and the type of investors. This course will focus on financial aspects of private equity investing to deepen the understanding of traditional corporate finance, as well as supplement other aspects such as entrepreneurship and management practices. It may be noted that this course is best

suited for students have already undertaken basic finance courses. This course is largely case study based and students need to have a good grounding in the theory of finance. Class participation has significant weightage towards the final grade. Per the McKinsey & Company, Global Private Equity Report 2024, private markets continued to grow. These markets which include, private equity, real estate, infrastructure, natural resources etc., both fund raising ($858 billion of new capital) and assets under management (AUM), at $7.4 trillion worldwide, continued an impressive cycle of expansion that began in 2008. Over the decades, since the early 1950's when this asset class started to form, it is now an important component of funding source for most businesses across the globe, big or small.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BFIN 2409 - FINANCIAL MANAGEMENT 1

Minimum Credits: 1
Maximum Credits: 1
The main objective of this course is to gain understanding of the theory and practice of financial decision making. This course develops the tools and framework necessary to address the question what investment projects should be undertaken to maximize shareholder wealth? To examine this question, we will learn how to value an uncertain stream of cash flows and apply the concept of the time value of money in valuing bonds and equity. The course covers a number of market-based investment criteria and develops an entity valuation model, based on discounted cash flows (DCF) used for standard capital budgeting decisions. We will conclude with a short introduction to the concept of risk and return, resulting in the cost of capital. We will cover a case discussion on capital budgeting to put our framework in a more realistic environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: BACC 2401 or BQOM 2401; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2410 - FINANCIAL MANAGEMENT 2

Minimum Credits: 1
Maximum Credits: 1
This course builds on financial management i and develops an asset pricing framework used in corporate finance based on the trade-off between risk and return. We use modern portfolio theory to determine a suitable asset pricing model and arrive at determining the relevant discount rate to reflect the risk associated with the cash flow we focused on in financial management i. Finally, we will address how financing and capital structure choices affect project and firm value using the above techniques and methods. The course will conclude with three valuation methods: WACC, APV, and FTE and an extensive case discussion. Financial management i & ii are prerequisite courses for any other finance elective in the curriculum.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BFIN 2409; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2420 - FINTECH

Minimum Credits: 3
Maximum Credits: 3
This course focuses on applications of new technologies in financial settings. The course introduces FinTech topics such as digital lending, blockchain and cryptocurrency, and digital wealth management. Applications of machine-learning and big-data techniques in finance are also examined. The course also explores various trading technologies, algorithmic trading, and portfolio management tools such as risk/return optimization and value-at-risk. The course leverages current data acquisition tools and statistical software packages to improve students' analytical skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BFIN 2409 and 2410

BFIN 2430 - CORPORATE FINANCIAL STRATEGY

Minimum Credits: 3
Maximum Credits: 3
This is an advanced course in corporate financial strategies. The objective of the course is to highlight the role of finance in strategic decision-making and to extend, integrate, and apply what students have learned in other courses in the context of complex business cases. The courseexamines the interplay between asset management issues and liability management issues in a variety of different contexts, with an emphasis on situations in which firms find themselves in changing business environments or in situations where change is needed to enhance value. Key strategic and financial choices will be examined in the context of large capital structure changes, mergers, acquisitions, divestitures, LBOs, debt restructurings, activist investor activity, incentive conflicts, and the creation of specialized organizational forms. The course focuses on the role of corporate financial strategies in the value-creation process and discusses how corporate financial strategies and decisions must be optimally formulated in the context of a firm's business strategy and corporate culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

BFIN 2510 - EMERGING TOPICS IN FINANCE 1

Minimum Credits: 1
Maximum Credits: 1
This course is offered periodically to cover unique and timely topics in finance. The topics vary but generally coincide with particular areas of expertise on the part of a finance faculty member or an executive-in-residence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

BFIN 2512 - EMERGING TOPICS IN FINANCE 2

Minimum Credits: 1
Maximum Credits: 1
This course is offered periodically to cover unique and timely topics in finance. The topics vary but generally coincide with particular areas of expertise on the part of a finance faculty member or an executive-in-residence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

BFIN 2555 - PRACTICUM PORTFOLIO MANAGEMENT AND SECURITY ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
The students in this class will have hands-on experience in the areas of security analysis, security selection and portfolio management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BFIN 2410 and 2030; CREQ: BFIN 2039; PROGRAM: Joseph M. Katz Grad Sch Bus

BFIN 3000 - FINANCE FUNDAMENTALS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BFIN 3010 - INDEPENDENT STUDY IN FINANCE

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BFIN 3030 - FINANCE RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BFIN 3031 - CORPORATE FINANCE THEORY AND METHODS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BFIN 3032 - CORPORATE FINANCE SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BFIN 3033 - CORPORATE FINANCE SEMINAR 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BFIN 3034 - CORPORATE FINANCE SEMINAR 3

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BFIN 3036 - EMPIRICAL ASSET PRICING

Minimum Credits: 1
Maximum Credits: 1
This doctoral seminar covers empirical research on institutional investors. Both asset pricing and corporate finance topics will be addressed

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BFIN 3044 - CORPORATE FINANCE SEMINAR 4

Minimum Credits: 1
Maximum Credits: 1
The primary objective of this PhD course on banking is to provide an in-depth understanding of the crucial role banks play in the financial system and the broader economy. Through a detailed examination of various aspects of banking, students will explore why banks exist, the uniqueness of banks, and activities on both sides of the balance sheet. The course will also delve into the regulatory issues, the role of banks in monetary policy transmission, and the relationships between banks, financial markets, and the real economy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BFIN 3099 - READINGS IN FINANCE

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

BFIN 3561 - CORPORATE FINANCE RESEARCH

Minimum Credits: 1
Maximum Credits: 1
The primary objective of this course is to provide you with the knowledge and skills necessary to make objective, data-driven, financial decisions under uncertainty. In this process, you will learn/improve your research methodologies which will help you better set a research question and collect/filter/analyze financial data to make sound objective recommendations/decisions. This course covers the following seven topics: 1. Asset pricing models, risk measurement, and event studies. 2. Fundamental accounting-based asset pricing & cost of capital. 3. Financial statement analysis using data mining techniques, assessing the real economy. 4. FinTech and access to finance. 5. Corporate Valuation Under Uncertainty, ESG, IT, & Intangibles. 6. Multinational Corporation Hedging FX Strategies. 7. Capital Budgeting, Investment Decisions, and Venture Capital.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

Business Human Resources Mgt

BHRM 2060 - INDEPENT STUDY HUMAN RESOURCES MANAGEMENT

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BHRM 3010 - INDEPENT STUDY HUMAN RESOURCES MANAGEMENT

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BHRM 3099 - READINGS HUMAN RESOURCES MGT

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

Business Marketing

BMKT 2031 - MARKETING RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course provides a comprehensive introduction to the concepts, techniques, and applications of marketing research. Students learn how to design and conduct studies that generate insights for marketing decision-making. Topics include qualitative, quantitative, and mixed research methods; hypothesis development; experimental design; and focus group techniques. Students also develop skills in formulating research questions, collecting and analyzing data, and communicating research findings to diverse audiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BQOM 2401; CREQ: BMKT 2409; PROG: Joseph M. Katz Grad Sch Bus

BMKT 2035 - CONSMR BEHAV THEORY & PRACTICE

Minimum Credits: 3
Maximum Credits: 3
A variety of social and psychological theories and concepts related to consumer behavior as well as their practical application to the field of marketing are examined and discussed. Students have the opportunity to further apply what they learn through case presentations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BMKT 2036 - APPLIED BEHAVIORAL ECONOMICS

Minimum Credits: 1
Maximum Credits: 1
This course will introduce students to the theory and application of "behavioral economics," a sub-domain that has gained considerable practical popularity across a range of fields, including marketing, finance, accounting, human resources and public policy. Popularized by books such as "Predictably Irrational" by Dan Ariely and "Nudge" by Cass Sunstein and Richard Thaler, Behavioral Economics focuses on the ways that humans' natural psychological tendencies can be used or overcome in ways that lead to desirable outcomes. Importantly, behavioral economics acknowledges that humans generally do not conform to the assumptions that underlie classical economics and that the ways in which we fail to be rational, self-interested, perfect information processors can be used to our benefit, rather than to our detriment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BMKT 2060 - INDEPENDENT STUDY IN MARKETING

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BMKT 2061 - INDEPENDENT STUDY IN MARKETING MANAGEMENT 2

Minimum Credits: 1
Maximum Credits: 9
Self designed elective course in marketing management.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMKT 2062 - INDEPENDENT STUDY IN MARKETING MANAGEMENT 3

Minimum Credits: 1
Maximum Credits: 9
Self designed elective course in marketing management.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMKT 2306 - MARKETING MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Topics include the role of marketing in a developed society, consumer behavior, competitive behavior, social and technological change, demand analysis and measurement, marketing research and model building, and marketing planning, strategy, and control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BMKT 2409 - MARKETING MANAGEMENT

Minimum Credits: 1
Maximum Credits: 1
This course examines the role of marketing in creating value for the firm. It helps students answer the central question of marketing strategy, what value to provide and to whom, using the tools of segmentation, targeting, and positioning (STP) of brands. The course shows how central aspects of marketing mix programs, product, place, pricing, and promotion, all follow from an effective STP program, and how marketing support functions such as marketing research, advertising, and new product development can support effective marketing decisions. Emerging trends in digital marketing, competition and globalization are examined. The course emphasizes experience-based learning to develop the necessary marketing knowledge and skills among students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMKT 2513 - CONSUMER BEHAVIOR 1

Minimum Credits: 1
Maximum Credits: 1
Examines a wide variety of social science concepts as they relate to the behavior of consumers. Although consumer research methodology is not a main focus, students will be expected to become familiar with the more common research techniques used to study consumers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: BMKT 2411 or BMKT 2409; PROG: Joseph M. Katz Grad Sch Bus

BMKT 2522 - SALES LEADERSHIP AND MANAGEMENT

Minimum Credits: 1
Maximum Credits: 1
This course is somewhat unique in that it stresses hiring characteristics that should be sought by the sales manager and various leadership and management techniques that have proven effective. The entire course will provide assistance to the student in sales positions following graduation and will form the basis for sales management decisions in future years.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Katz Graduate School of Business

BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course deals with the development of new products. It focuses on the set of decisions that need to be made in the development of new products and tools useful for making these decisions. This course will also introduce the student to a systematic treatment of marketing on a global scale. In addition to examining the problems of performing various market functions in other countries, heavy emphasis will be given to analyzing and understanding the different cultures in which a firm's products might be marketed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Katz Graduate School of Business

BMKT 2527 - BRANDING IN THE AGE OF AI

Minimum Credits: 1
Maximum Credits: 1
The rapid rise of artificial intelligence has ushered in an era of hyper-digitalization, transforming marketing, technology, and organizational strategy. This course equips modern marketers, entrepreneurs, and managers with frameworks to navigate these shifts and lead cross-functional innovation in the age of AI. Grounded in the six-pillar of strategic brand marketing framework students will explore purpose, phygital experiences, platform, participation, personalization, and partnerships. Through case studies and applied projects, students will learn to design adaptive, ethical, and evidence-based branding strategies for the hyper-digital marketplace.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BMKT 2528 - ADVERTISING

Minimum Credits: 1
Maximum Credits: 1
Advertising is a complex phenomenon - at once leading, lagging and reflecting the values of society. The pragmatic, operational and

decision-making aspects of advertising are emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Joseph M. Katz Grad Sch Bus

BMKT 2530 - SERVICES MKTG:STRATEGIES/TACTICS

Minimum Credits: 1
Maximum Credits: 1
Services account for over 75% of the US GDP and over 75% of US jobs. The primary goal of this course is to prepare students to be effective executives in an increasingly service-oriented and technology-driven economy. The course is designed to help students understand the unique nature and characteristics of service products, the special marketing challenges posed by this intangible core, and the ways to tackle these challenges effectively and efficiently. Students participate in discussion, live cases, and a customer journey mapping project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Katz Graduate School of Business

BMKT 2532 - PRICING STRATEGIES AND TACTICS

Minimum Credits: 1
Maximum Credits: 1
The course focuses on an important element of the marketing mix. While product, promotion and distribution are aspects of the mix that will help create value to consumers, the price creates value to the firm in the form of profits.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Joseph M. Katz Grad Sch Bus

BMKT 2533 - BUSINESS TO BUSINESS

Minimum Credits: 1
Maximum Credits: 1
Most mba graduates will join organizations that market their products and/or services to other businesses, institutions or government agencies. Such marketing is referred to as business-to-business (b2b) marketing. In this class we will look at those management activities that enable a supplier firm to understand, create and deliver value to other businesses, governments and/or institutional customers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Katz Graduate School of Business

BMKT 2537 - ADVANCED MARKETING STRATEGY

Minimum Credits: 1
Maximum Credits: 1
This graduate-level course examines how artificial intelligence is transforming marketing research and practice. Students learn to analyze and interpret diverse data types, including text, visual, and audio data, through hands-on exercises using AI-based tools and APIs. The course integrates perspectives from marketing, psychology, and computer science to help students understand both the applications and limitations of AI technologies in marketing contexts. Key topics include natural language processing, computer vision, and voice analytics, as well as the ethical, legal, and regulatory implications of AI adoption. The course emphasizes critical thinking about how policy, regulation, and consumer perception shape the responsible use of AI in marketing.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Katz Graduate School of Business

BMKT 2544 - SHOPPER ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
To achieve the objectives of this course, we will be using several methods during the semester, including lectures, guest speakers, readings, and class assignments/presentations. The philosophy underlying this course may be a bit different than you are accustomed to. While lectures will be a component, the general approach will be that of a practicum. That is, you will be exposed to a concept or database, then apply those concepts and databases via a project which is presented to the class. Readings are drawn from both business publications and academic journals. You are strongly encouraged to bring in other relevant materials that you encounter.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: BMKT 2411 or BMKT 2409; PROG: KATZ Graduate School of Business

BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS

Minimum Credits: 1
Maximum Credits: 1
This course presents a data-driven approach to strategic and tactical marketing decision making in the context of digital and social media. Covering the three main media types of paid, owned, and owned media, students will learn about frameworks and methods that allow them to take data from sources such as google, Facebook, and twitter to be able to generate valuable and actionable managerial insights. The focus is on learning how to use digital and social media activity data to make better decisions, not on statistical methodologies (however, familiarity with excel is needed). The course will involve a combination of lectures, guest speakers, and hands-on workshops. This course is part of the digital marketing certificate and complements the "marketing and social media strategy" course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: BMKT 2515 or 2553

BMKT 2553 - SOCIAL MEDIA STRATEGY

Minimum Credits: 1
Maximum Credits: 1
Social media is changing how business is done around the world in almost every industry. How does social media effect your business? This course provides students with a detailed and up-to-date understanding of social media from a business strategy perspective. Through a series of lectures, case studies, and workshops, students learn how to identify opportunities for using social media in a variety of business areas, including marketing, operations, advertising, services, and human resources. The course takes a broad perspective and considers how social media it can be used successfully for business-to-consumer, business-to-business, and intra-company purposes. A central theme in this course is for students to apply what they learn to their own businesses and industries in order to identify opportunities for strategic, value creating uses of social media in their companies. After taking this course students will see how social media impacts business in many different ways and goes beyond simply using Facebook, twitter, or other popular social platforms for basic marketing purposes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BMKT 2554 - MARKETING DESIGN AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course presents a data-driven approach to strategic and tactical marketing decision making in the context of digital and social media.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BMKT 2569 - BRAND MANAGEMENT

Minimum Credits: 1
Maximum Credits: 1
This course explores the role played by brands in influencing consumers' choices, and investigates how to move effectively manage such brands. The course uses a variety of tools including lectures, cases, simulations, in-class exercises, hands-on, industry visitors and individual pro jects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BMKT 2411 or BMKT 2409; PROG: Katz Graduate School of Business

BMKT 2573 - AI IN MARKETING

Minimum Credits: 3
Maximum Credits: 3
This advanced graduate-level course explores the intersection of marketing research and artificial intelligence. The course aims to equip students with cutting-edge tools and techniques to analyze and interpret diverse data types, including text, images, video, and audio. Through hands-on exercises, students will learn to understand, develop, and implement AI-driven solutions in marketing. The course also emphasizes the importance of ethical and legal considerations in the application of AI technologies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BMKT 2031

BMKT 2609 - BUSINESS DISRUPTION SERIES: MARKETING

Minimum Credits: 0
Maximum Credits: 1
A business disruption course allows students the opportunity to engage with emerging research, technology, and business innovations that may disrupt and revolutionize established business theories, markets, and products. The experience will take the form of a mini-course, experience, or activity and may be a 0.5-credit or 1-credit course, depending on the nature of the experience and stated outcomes of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

BMKT 3001 - CONSUMER BEHAVIOR 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BMKT 3002 - CONSUMER BEHAVIOR 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BMKT 3010 - INDEPENDENT STUDY IN MARKETING

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BMKT 3014 - MARKETING STRATEGY

Minimum Credits: 3
Maximum Credits: 3
Identifies the foundations of all aspects of marketing including product development and management distribution channel activity, sales force management, sales promotion, pricing, planning and strategy, information systems, and marketing organization and management, among other topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMKT 3017 - MARKETING MODELS

Minimum Credits: 3
Maximum Credits: 3
Examines applications of management science techniques and methodology to improve marketing decision making. Emphasis will be on the use and interpretation of multivariate statistical methods and/or the application and implementation of operations research rather than their theoretical development. Students develop knowledge of at lEast one managerially relevant problem area and apply or critique the application/implementation of management science techniques through real data analysis or simulation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BMKT 3025 - MARKET BEHAVIOR RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BMKT 3099 - READINGS IN MARKETING

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

BMKT 3551 - RESEARCH IN MARKETING

Minimum Credits: 1
Maximum Credits: 1
The purpose of this seminar is to give you an overview of the foundations of marketing strategy research and familiarize you with recent marketing strategy research. Marketing strategy examines strategic decisions and actions taken by firms in various sub-areas within marketing, and integrates consumer-level perspectives as an input to marketing strategy. This seminar examines marketing strategy from a multidisciplinary perspective and utilizes theories emanating from economics, sociology, psychology, management, as well as marketing. There are many interesting levels of analysis in marketing strategy research, including individual, dyadic, group, firm, inter-organizational, and industry level. In addition, this seminar will introduce you to a variety of research designs and techniques for doing marketing strategy research. Each week we will cover literature on a specific topic.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BMKT 8001 - BUSINESS DISRUPTION SERIES: MARKETING

Minimum Credits: 1
Maximum Credits: 1
A business disruption course allows students the opportunity to engage with emerging research, technology, and business innovations that may disrupt and revolutionize established business theories, markets, and products. The experience will take the form of a mini-course, experience, or activity and may be a 0.5-credit or 1-credit course, depending on the nature of the experience and stated outcomes of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

Cardiothoracic Surgery

CTSURG 5461 - PEDIATRIC CARDIOTHORACIC SURGERY

Minimum Credits: 0
Maximum Credits: 0
Four-week elective with clinical experience on pediatric cardiothoracic surgery service. Student will actively participate in care of pediatric cardiac surgery patient and attend weekly med/surg cardiology conference. Covers types of congenital heart disease, physiology and patho-physiology and current methods of operative intervention for palliation or repair. Time can be spent participating in clinical or laboratory research in progress.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

CTSURG 5462 - ADULT CARDIAC SURGERY ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
This is a four-week (4) elective that offers a student clinical experience on the adult cardiac surgical service at UPMC Presbyterian. The student will participate in the preoperative, intraoperative, and postoperative care of a variety of patients suffering from acquired cardiac diseases, including but not limited to coronary artery disease, valvular and aortic and end stage heart failure. The student will be expected to understand anatomic and physiologic concepts that will be reviewed from preoperative studies and available for intraoperative interpretation. Active participation in the operating room and ICU will be encouraged.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

CTSURG 5463 - ADULT THORACIC SURGERY

Minimum Credits: 0
Maximum Credits: 0
Students will be assigned to the thoracic service of UPMC. Participation will be in operative experiences, clinic setting and ward work. Focuses will be on benign and malignant surgical problems of the lungs, esophagus, mediastinum, chest wall and diaphragm. Students will be exposed to minimally invasive approaches including esophagostomy, lobectomy and others.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

CTSURG 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

CTSURG 5840 - CARDIOTHORACIC SURGERY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
This elective is available to interested and motivated students. This elective provides opportunities to learn basic research methodology which may include approach to experimental design, protocol development, data analysis and evaluation of results. Student may participate in ongoing research in the lab and on patients.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

CTSURG 5900 - EXTRAMURAL CARDIOTHORACIC SURGERY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in cardiothoracic surgery may be arranged at an institution other than the University of Pittsburgh school of medicine. Arrangements must be made in accordance with the process set out in the UPSOM catalog with all appropriate approvals to be received before the course may be added to the student's schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Cell Biol & Molecular Physio

MSCBMP 2800 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate

Course Component: Thesis Research
Grade Component: Grad SN Basis

MSCBMP 2840 - REGULATION OF MEMBRANE TRAFFIC

Minimum Credits: 2
Maximum Credits: 2
Course analyzes membrane/protein traffic along both the biosynthetic & endocytic pathways. Emphasis placed on how this traffic is regulated. Topics include the role of g-proteins (both heterotrimetric & small), coat proteins (coatamer 1 & 2 & adaptors), signal transduction cascades (pkc, pka, ip3, etc.), & Snare complexes in protein trafficking. Also, we will discuss the role of the cytoskeleton in transporting cargo & signal transduction. Membrane traffic in several specialized cell types will be covered including polarized epithelial cells, cells of the immune system, & neurons.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBMP 2852 - RESEARCH SEMINAR IN CELLULAR BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Advanced research seminar with journal club format specializing in current aspects of membrane trafficking.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSCBMP 2853 - RESEARCH SEMINAR IN REPRODUCTIVE PHYSIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Advanced research seminar with journal club format specializing in current aspects of reproductive physiology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSCBMP 2855 - RESEARCH SEMINAR IN MOLECULAR PHYSIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Advanced research seminar with journal club format specializing in current aspects of molecular and cellular physiology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

MSCBMP 2870 - HISTOLOGY

Minimum Credits: 5
Maximum Credits: 5
The objective of this lecture/lab course is student comprehension of the relationship between cell structure and organ function, and the application of this knowledge to the identification of light and electronmicroscopic images of cells and organs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBMP 2875 - EXPERIMENTS AND LOGIC IN CELL BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
The purpose of experiments and logic in cell biology (ELCB) is to engage the students of the cell and molecular physiology graduate program in a self-directed seminar structured to stimulate the students' ability to think scientifically and critically as future scientists. The iterative, collaborative and collegial process of ELCB is the same used by teams of collaborating scientists to develop and solve biomedical projects.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Medicine (PMEDS)

MSCBMP 2880 - CELLULAR BIOLOGY OF NORMAL AND DISEASE STATES

Minimum Credits: 4
Maximum Credits: 4
This one-term course will explore the cellular basis of multiple disease states. The course, which meets twice a week (two hours each session), will be taught through both lecture and in class discussion of primary literature. Each of seven modules will examine normal cell biology and function and then define how defects in these processes lead to the spectrum of pathologies associated with each disease. Discussion of how bench top findings can be translated to treatments in the clinic will be facilitated by a diverse faculty that includes both basic and physician scientists. The seven modules are as follows: the first examines insulin secretion and signaling and how these events are perturbed in diabetes mellitus. The second module focuses on cell-cell adhesion and its role in cancer progression and epithelial barrier function. The third module defines how defects in endocytosis of the low-density lipoprotein receptor leads to hypercholesterolemia. The fourth analyzes the cellular basis of hypertension and how altered internalization of the epithelial sodium channel leads to elevated blood pressure. The fifth module investigates the role of apical membrane recycling and how defects in aquaporin-2 traffic leads to nephrogenic diabetes insipidus. The sixth module appraises the current state of our understanding of cystic fibrosis and how degradation of defective cystic fibrosis transmembrane conductance regulator by the quality control machinery in the endoplasmic reticulum and cell periphery leads to disease. The last module examines cell migration in wound healing and angiogenesis. At the end of the course students will have an increased understanding of normal cellular function and how research in cell biology can lead to a deeper understanding of diseases that impact millions of people each year.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCBMP 2885 - IMAGING CELL BIOLOGY IN LIVING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
The focus of this new course will be to study relevant problems in cell biology, immunology, developmental biology and neurobiology and how they have been solved using imaging approaches. For example at the cell level we will investigate how techniques such as TIRF and high speed confocal have addressed basic problems in endocytosis; at the organismal level we will use multiphoton, confocal, fret, and other approaches to understand aspects of cell biology in cell polarity, respiration and organ development in c. Elegans, Drosophila, Zebra fish and mice. In each case the application will focus on how imaging tools are used to study defined problems in living systems. The course will follow a lecture/demo/journal club format. Lectures will be two part, the first 1/3 will be a description of the technology, how it was developed and how it works (10-15 minutes) followed by description of the scientific problem and how it was solved. This will be followed by lab demonstrations showing the approach in action. Lectures will be interspersed with a journal club discussion of a relevant paper on each technology. Students will prepare the journal club presentations in an alternating fashion. Examination will be a combination of class participation, journal club and written exam.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBMP 2890 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in cell biology or physiology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Cell Biol & Molecular Physio (PHD) or Interdis Biomedical (UNK)

MSCBMP 2895 - CELLULAR PHYSIOLOGY OF THE KIDNEY

Minimum Credits: 2
Maximum Credits: 2
This summer course will provide an introduction to the kidney and lower urinary tract, with emphasis on kidney structure and function. The course, which meets once a week (two hours each session), will be taught through both lecture and in class discussion of the primary literature. Discussion of how bench top findings can be translated to treatments in the clinic will be facilitated by a diverse faculty that includes both basic and physician scientists. You will first learn about the specialized cell types that comprise the kidney and lower urinary tract. Subsequently, you will be introduced to renal stem cells and how they lead to kidney development. Next, you will learn the functions of the kidney, including regulation of water and ion balance. This will be followed by a discussion of the lower urinary tract. Finally, you will learn how drugs can be used to treat kidney dysfunction and how kidney transplants can be used to treat those patients with end-stage renal disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBMP 3800 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of forty credits of this course are required for the Ph.D. degree in the school of medicine.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Cell Biol & Molecular Physio (PHD)

MSCBMP 3835 - DNA REPAIR JOURNAL

Minimum Credits: 1
Maximum Credits: 1
The course is a journal club on current topics in DNA repair as it relates to human disease, DNA damage processing, genome stability, telomere biology, cancer and aging. Primarily designed for students in the second year of their graduate program and beyond. Presentations will be held twice per month during the fall and spring semester. In order to receive credit for the course, students must attend a minimum of 80% of the sessions, present once per semester, participate in class discussion and complete anonymous peer-evaluations for each presenter. One week prior to presentation, presenters will identify a recent publication in the field and distribute it to their classmates. Presenters must define the hypothesis of the paper, provide background and significance, describe experimental methods used, interpret the data, conclude whether the data support the authors' conclusions and propose future experiments. Grades will be determined by attendance (10%), class participation (20%) and quality of presentation (70%).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSCBMP 3840 - REPRODUCTIVE DEVELOPMENT FROM MODEL ORGANISMS TO HUMANS

Minimum Credits: 2
Maximum Credits: 2

This course focuses on the molecular aspects of the transition from gamete to a reproductive organism. The course progresses through the building of germ cells, fertilization and stem cell participation to sex determination, gonad morphogenesis, puberty, menopause and pregnancy. This course highlights both human and model organisms to bring together diverse aspects of the cell and developmental biology of reproductive tissues and their impact on disease pathology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INTBP 2000

Cellular & Molecular Pathology

MSCMP 2280 - BASIC UNDERSTANDING OF PROFESSIONALISM AS RELATED TO GRADUATE EDUCATION

Minimum Credits: 1
Maximum Credits: 1
Students will be introduced to the underpinning concepts of Professionalism in the context of graduate education at the University of Pittsburgh School of Medicine. This will include formal training in activities related to Title IX as required by the University of Pittsburgh.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

MSCMP 2306 - SYNTHETIC BIOLOGY JOURNAL CLUB AND INVITED SPEAKERS

Minimum Credits: 1
Maximum Credits: 1
Students will read and discuss top Synthetic Biology related articles for journal club. Some sessions will present invited speakers focusing on Synthetic Biology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSCMP 2700 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis

MSCMP 2730 - MOLEC MECHS TIS GROWTH & DIFFRN

Minimum Credits: 3
Maximum Credits: 3
The course covers the anatomy, embryology, histology, function, and growth regulation (growth factors, receptors, and signaling pathways) of various differentiated tissues (central nervous system, lung, liver, pancreas, urinary and reproductive systems, breast, endocrine system, skin, bone, skeletal muscle, bone marrow). Multidisciplinary lectures are given by the members of the departments of pathology, cell biology and physiology, medicine, and surgery who have ongoing research in these areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCMP 2740 - MOLECULAR PATHOBIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is structured to introduce students to the integration between basic and clinical research on the molecular pathogenesis of highly relevant human diseases such as diabetes, congestive heart failure, bone disease, neurodegenerative disorders and asthma. The course provides students with an overview of the natural history of the diseases, their diagnosis and clinical management. This will be followed by in-depth discussions concerning the pathologic substrate of the disease, with particular attention focused on the molecular mechanisms of disease progression. In addition to current basic science research, students will be exposed to the clinical impact of basic science discoveries upon the development of new therapeutic interventions. We discuss current research trends and factors that enhance fundability of research projects, the current knowledge gaps of the science and impact of therapeutic development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCMP 2750 - RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a course faculty advisor. With prior permission, during the spring of their first year or fall of their second year in the program, students may elect to present their thesis project instead, in preparation for their comprehensive exam. The course meets weekly. during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscripts/data as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

MSCMP 2760 - TISSUE ENGINEERING: FROM DESIGN TO CLINICAL TRANSLATION

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to introduce students to the fields of tissue engineering and regenerative medicine. Tissue engineering is defined as the development and manipulation of laboratory-grown molecules, cells, tissues, or organs to replace and/or support the function of injured body parts. Regenerative medicine is a related and overlapping field, focusing on methods that enable the body to heal itself rather than using laboratory made constructs. Tissue engineering and regenerative medicine are highly interdisciplinary and therefore cross numerous engineering and medical specialties. Upon completing this course, the graduate and undergraduate students should: understand the basic principles behind human cell and tissue biology, be familiar with the general types of biomaterials used in tissue engineering and regenerative medicine, understand techniques utilized to design, fabricate, and functionally assess tissue engineered systems, including human microphysiological systems. Students should be able to apply the combined knowledge of tissue organization, tissue engineering and regenerative medicine strategies to design a unique, reasonable tissue engineered or regenerative solution to an unmet clinical need. This course covers cell and tissue biology, biomaterials, drug delivery, engineering methods and design, and clinical implementation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCMP 2770 - BIOMATERIALS AND BIOCOMPATIBILITY

Minimum Credits: 3
Maximum Credits: 3
Synthesis and properties of polymeric biomaterials; surface modification; surface characterization; biodegradation; metallic biomaterials and corrosion; protein adsorption; cell adhesion; coagulation and thrombosis; complement and the foreign body response; biomaterial-centered infection; sterilization; natural biomaterials
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCMP 2780 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Students will focus on a selected topic in cellular and molecular pathology and write a paper under the direction of a faculty advisor.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

MSCMP 2790 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in cellular and molecular pathology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Cellular & Molecular Pathology (PHD) or Interdis Biomedical (UNK)

MSCMP 2820 - SYNTHETIC BIOLOGY-ENGINEERING LIVING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
An introduction to the engineering of biological systems with synthetic biology tools. Emphasis on synthetic biological networks and biological control. Design and analysis of computational and experimental tools in synthetic biology including microfluidic systems. Applications of synthetic biology in biomedical, chemical, and environmental engineering problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCMP 3700 - PHD DISSERTATION RESEARCH (Thesis)

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis

MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS

Minimum Credits: 3
Maximum Credits: 3
This course presents biochemical and clinical aspects of cancer biology and therapy, designed for graduate students training in the basic sciences or medicine. The lectures cover fundamental topics in cancer biology and pathology, the biology of major cancer types, viral oncogenesis, and an overview of cancer therapeutics including chemotherapy, DNA repair-based therapies, targeted therapies, hormonal therapies, and immunotherapy. This course also covers experimental models and databases used in cancer research and the process of cancer drug development.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCMP 3715 - BIOINF CANCER BIOL & THERPUTCS

Minimum Credits: 1
Maximum Credits: 1
Reading and discussion on bioinformatics resources available to enhance research on cancer biology and therapeutics. We will discuss bioinformatics databases and other resources related to: regulatory networks and signal transduction pathways, genes associated with cancer risk and the progression of cancer; cytogenomics, sources of information on the distribution of cancer occurrence and trends in the us population, databases DNA repair genes, their structure & function, models of cancer progression & responses to therapy, biomarkers for cancer detection, treatment & prevention.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

MSCMP 3730 - TOPICS IN EXPERIMENTAL NEUROPATH

Minimum Credits: 1
Maximum Credits: 1
This course critically evaluates the latest scientific literature concerning diseases of the central nervous system. Emphasis will be placed on methodologies as they are applied to the study of human neurologic diseases. Participants will present their own research data or scientific papers and lead the classroom discussions. This course is open to students of all levels and will include both basic scientists and clinicians (residents, faculty).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSCMP 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Extracellular matrix (ECM) is a fundamental structural and signaling component of all tissues and plays a defining role in cellular and tissue responses to homeostatic cues, regeneration, inflammation, wound healing, and disease. Indeed, virtually every aspect of tissue biology and function is influenced by ECM composition, organization, and dynamics. The objective of this course is to provide students with a comprehensive understanding of the fundamental biology of ECM, its role in tissue function, and its emerging applications in bioengineering and regenerative medicine. The course will begin with an overview of the structure, biosynthesis, and gene regulation of the major protein and glycosaminoglycan components of the ECM. This will be followed by lectures on ECM-cell interactions, with emphasis on integrin-mediated adhesion, intracellular signaling cascades, and allosteric protein interactions that transmit extracellular signals to intracellular targets regulating cell proliferation, differentiation, function, and cell-cell communication. Because TGF-ß is a central regulator of ECM synthesis and remodeling, a dedicated lecture will focus on ECM gene regulation and TGF-ß-dependent signaling pathways. Subsequent lectures will cover histologic and imaging techniques for visualization of ECM and will examine specific tissue models in which ECM remodeling defines biological outcomes. Liver regeneration will be used as a detailed example, highlighting early ECM remodeling, re-synthesis during regeneration, and the role of ECM signaling in regulation of liver size and termination of the regenerative response. Additional focused lectures will address ECM function in wound healing, central nervous system repair, and bone and cartilage biology. The role of ECM as a barrier and regulator of cancer invasion will be examined, along with the cellular and molecular mechanisms by which cells invade and remodel ECM during tumor progression, organogenesis, and embryonic tissue morphogenesis. The course will conclude with cellular and bioengineering approaches that leverage ECM for tissue reconstruction and modeling, including decellularized organs, hyaluronic acid-based biomaterials and signaling, ECM in vascular, joint, and muscle reconstruction, and the use of ECM in microphysiological systems (organ-on-chip platforms), three-dimensional culture systems, and 3D bioprinting technologies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCMP 3740 - STEM CELLS

Minimum Credits: 3
Maximum Credits: 3
The course will provide a comprehensive overview on this intriguing and timely topic. The course will focus on the biology of stem cells and their role in health and disease with emphasis on development, carcinogenesis, aging and tissue engineering. Lectures on various aspects of stem cells from renowned experts will cover embryonic, adult, and induced pluripotent stem cells. Specific lectures will include stem cells in the blood, placenta, bone, liver, brain, adipose, pancreas, gonads, lung, gut, skin, breast, dental/oral tissues and eye. Students will also be educated on therapeutic cloning, bio-ethical issues, synthetic and systems biology, and existing laws governing stem cell research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCMP 3750 - ANGIOGENESIS

Minimum Credits: 3
Maximum Credits: 3
Angiogenesis is one of the important research areas in biomedical sciences. Formation of new and remodeling of existing blood vessels are fundamental processes involved in organism tissues homeostasis. Aberrant angiogenesis and vascular remodeling contribute to the development and progression of major cardiovascular and non-cardiovascular diseases. This course will provide extensive knowledge of developmental and pathological angiogenesis, as well as most recent advances in its clinical applications. Topics include: 1. Angiogenesis and vascular remodeling in physiological and pathological processes; 2. Molecular and cellular regulation of angiogenesis and vascular remodeling; 3. Methodologies and techniques for angiogenesis studies; 4) Current advances in angiogenic therapies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCMP 3760 - REGENERATIVE MEDICINE RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
The seminar in regenerative medicine provides exposure to cutting-edge research in the broad fields of regenerative medicine, tissue engineering, and synthetic biology. The course blends lectures by experienced faculty, work-in-progress talks by graduate students, and professional development seminars (e.g., alternative careers in science, grant writing, and scientific communication). Lectures are held approximately twice per month, and student engagement is strongly encouraged. Grades are based on attendance and participation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

MSCMP 3770 - CELL THERAPY

Minimum Credits: 3
Maximum Credits: 3
This course showcases cell therapy from theory to practice, from the bench to the bedside and is meant to be unlike any other graduate course. In each area of cell transplantation lectures are provided by those who have implemented cell transplantation techniques and have moved it to a clinical therapy. Most of the lectures in the course are given by those who actually do the patient transplants. Immunology and pharmacology and cellular engineering & edition will be addressed as it directly relates to cellular therapy. Stem cell biology will not be addressed individually but will be raised in the context of specific applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCMP 3780 - SYSTEMS APPROACH INFLAMMATION

Minimum Credits: 2
Maximum Credits: 2
This course is focused on particular topics of great biologic complexity in critical illness, where modeling has the potential to translate in improved patient care. Lectures are provided by basic (biological and mathematical sciences) and clinical faculty, in conjunction with members of industry and speakers from outside institutions. This information will be communicated within the framework of defined themes that describe the complexity of inflammation in acute and chronic illnesses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCMP 3790 - BASICS OF PERSONALIZED MEDICINE

Minimum Credits: 3
Maximum Credits: 3
Personalized (or Precision) medicine is rapidly becoming a clinical reality, driven by ongoing discoveries in cell biology, genomics, proteomics, and metabolomics coupled with greater understanding of disease processes. The translation of these discoveries-particularly in diagnostic, prognostic, and theragnostic applications-has accelerated dramatically. As personalized medicine continues to evolve, its successful implementation will increasingly require close collaboration between physicians and basic scientists. However, a major obstacle to this integration is the limited training of basic scientists in the principles of clinical test development and validation. This course is designed to close that gap by providing students with a foundational understanding of clinical development, testing, and validation, and by fostering an appreciation for how these processes differ from traditional investigational research. Through focused topic areas, the course explores key concepts and practical considerations in personalized medicine. The first part of the course introduces the core principles and overarching concepts of clinical test development, emphasizing the qualitative differences between clinical assays and research-based studies. Topics include entrepreneurial considerations, advanced molecular techniques, diagnostics, and ethical considerations. The remainder of the course is dedicated to distinct testing modalities targeting either nucleic acids or proteins and other external effectors. Topics include inherited genetic diseases and predispositions; acquired genetic alterations in cancer; metabolomic profiling of endocrine disorders; immune network analysis in transplantation and rejection; proteomic profiling in blood disorders; and advanced 3D bioprinting and non-animal model systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Chemical Engineering

CHE 2013 - MOLECULAR MANUFACTURING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CHE 2016 - FUNDAMENTAL PRINCIPLES OF BIODEGRADABLE METALLIC ALLOYS

Minimum Credits: 3
Maximum Credits: 3
Biodegradable metals have emerged as a new class of materials with significant potential for myriad biological applications, in particular, the craniofacial, orthopedics and cardiovascular areas. The latter has already witnessed clinical trials with few patients already being implanted with a biodegradable metallic stent. This course is designed to introduce the principles and various fundamental concepts of this novel class of metallic alloys. These include fundamental principles of metal alloy physics and theory, important concepts of phase diagrams, physical metallurgy concepts, metallic glass theory, processing fundamentals, biocompatibility, and toxicity issues. The effect of microstructure on biocompatibility and corrosion will also be discussed. The course objective is to introduce the student to this new family of bio-functional metals and their biodegradable properties. In doing so, the student will be familiar with these materials and their useful applications. The students are expected to have had courses in thermodynamics and physiology.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

CHE 2017 - CHEMICAL ENERGY AND THE NATURE OF THE CHEMICAL BOND

Minimum Credits: 3
Maximum Credits: 3
An overview of energy transformations arising from chemical bonding in chemical catalysis, electrocatalysis, and combustion. Students will be introduced to qualitative quantum chemistry concepts: potential energy and kinetic energy operators, wave functions, electron correlation, and GVB diagrams for analysis of chemical bonds and molecular structures in energy transformations. Students are expected to have completed Undergraduate physical chemistry course on quantum mechanics or equivalent or have prior consent from the instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

CHE 2018 - INTRODUCTION TO SURFACE ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Surface and interface engineering is critical to many important applications, e.g., coating, composite, biomedical device and membrane. With the fast growth of nanotechnology, understanding the surface properties becomes even more important since nano-sized materials, e.g., graphene, have no bulk phase but surfaces. This course combines elements of physical chemistry and materials of surface and interface in order to serve as the introduction to the surface engineering. The course spans from surface tension, capillary, superwettability to lubrication as well as 2D materials, allowing a comprehensive view to both classic surface science and cutting-edge surface technology. By the end of this class, students will understand both the fundamental principles of surface science and engineering approaches on tailor a given solid surface.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CHE 2043 - ELECTRON MICROSCOPY IN MATERIALS SCIENCE

Minimum Credits: 3
Maximum Credits: 3
Electron optics, lens aberrations, depth of field, depth of focus, resolution, contrast, bright and dark field microscopy, selected area diffraction, calibration, specimen preparation, electron scattering, electron diffraction, Bragg's law, Laue conditions, structure factor, Ewald construction, double diffraction, twinning, Kikuchi lines, contrast theory, kinematical theory of diffraction by perfect and imperfect crystals, limitations, column approximation, extinction contours, dynamical theory, special techniques, high voltage microscopy, applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS

Minimum Credits: 3
Maximum Credits: 3
In-depth development of basic thermodynamic relations for macroscopic systems is covered. Emphasis on mathematical foundation and application of free energy concepts to system analysis. Topics in solution theory are covered.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 2201 - FUNDAMNTL OF REACTION PROCESSES

Minimum Credits: 3
Maximum Credits: 3
The basic principles for the analysis of reaction rates in heterogeneous reacting systems will be discussed with special emphasis on three-phase reaction systems. The fundamentals of multiphase reactor design will also be presented as time permits.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 2250 - CARDIO CLINICAL INTERNSHIPS

Minimum Credits: 1
Maximum Credits: 6
Professional application training in cardiovascular medicine and surgery. Students will spend three months each in bioengineering practice training programs within cardiology, cardiothoracic surgery, and vascular surgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1

Minimum Credits: 4
Maximum Credits: 4
A systematic development of the basic concepts and equations for heat, mass, and momentum transfer. Extensive problem solving of fundamental and practical natures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1

Minimum Credits: 3
Maximum Credits: 3
Application of mathematical techniques to chemical engineering problems requiring the solution of ordinary differential equations and partial differential equations. Series solutions, transform solutions, vector calculus, and quadrature are covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 2540 - PRACTICAL ELECTROCHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
This graduate-level elective focuses on the practice of electrochemistry in laboratory analysis and in a wide range of technological applications. We will begin with a brief overview of the fundamentals of electrochemistry in terms of thermodynamics, kinetics, and transport processes. We will then dive immediately into practical concepts with a survey of laboratory methods and technological/industrial

applications of electrochemistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CHE 2545 - PROCESS INTENSIFICATION - REACTION ENGINEERING FOR THE 21ST CENTURY

Minimum Credits: 3
Maximum Credits: 3
What is PI? "Process intensification" (PI) refers to the design and implementation of novel manufacturing processes to achieve drastic improvements in energy efficiency, productivity, and safety, while strongly reducing emissions, cost, and physical footprint. To put it simply: it's a reaction engineer's contribution to making the chemical industry more sustainable by "making more with less". While the historical roots of PI date back to the 1970s, it has only emerged as a technological trend over the past two decades and is now gaining rapid momentum across all sectors of the chemical industry. What will you learn? In this course, we will discuss various approaches to achieve process intensification, identify overarching principles that underlie PI, and learn about current drivers and barriers for implementation of PI across the chemical industry. Students will learn about novel "intensified" equipment and operating modes, approaches to decarbonize chemicals processing, and graduate students will be challenged to apply PI principles to their own realm of research. Who should enroll? The course is tailored for senior undergraduate and graduate students with a solid foundation in reaction engineering fundamentals, i.e. either ChE400 (Reactive Process Engineering) or an equivalent "Kinetics & Reactor Design" course is a minimum prerequisite. This class will be especially valuable to students with interest in clean and sustainable manufacturing, or the circular economy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CHE 2550 - SOLVING ENGINEERING PROBLEMS WITH COMPUTATIONAL CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
This course will discuss theoretical and computational methods in chemistry and their applications to chemical engineering problems. Emphasis will be given on performing computational chemistry calculations for the prediction of chemical structures, properties, reaction mechanisms, etc., connecting molecular with macroscopic level behavior. This course will keep a balance between lectures on basic computational chemistry theories/models and hands-on experience with computational chemistry calculations. Students will have a class project, and will be encouraged to identify a project related to their own research interests.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CHE 2600 - PRINCIPLES AND PROPERTIES OF COMPLEX ENGINEERED MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Complex engineered materials are a new class of systems comprising a variety of inorganic materials. This course is designed to introduce the principles and various functional properties exhibited by inorganic materials at the Nano, Micro and Meso scales. Since inorganic materials comprising metallic and non-metallic systems are a very complicated class of materials that display myriad properties, this course is outlined to discuss the most important properties. Thus, the course will mainly cover optical, electrical, thermal and electrochemical properties of both crystalline and amorphous inorganic complex engineered materials. In each category, the principles underlining each property will be discussed followed by the material class, behavior and applications. The effect of microstructure on each of the properties will also be discussed. The course objective is to introduce the student to these complex engineered materials family and their properties. In doing so, the student should be able to identify a material for a particular application.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 2631 - DESIGN FOR CIRCULAR ECONOMY

Minimum Credits: 3
Maximum Credits: 3
The current linear consumption model of raw material extraction, production, use, and disposal has dominated the global economy for hundreds of years. While an extremely wasteful approach to resource management, the linear model was tractable so long as it was employed by a small fraction of the global population, namely the developed world, so that both raw material acquisition and waste management remained economically viable. Today, we clearly see that this linear model has led to serious unintended global consequences. Circular economy (CE) offers promising solutions. CE principles are based on efficient use of resources and eliminating waste from product life cycles through clever design. Valuable material either moves in loops through the economy, or, if biologically derived, returns to the ecosystem to serve as nutrients; a truly circular economy thus keeps material in continuous use by design. The goal of this course is to provide students a thorough introduction to circular economy, along with integrating design. This course will provide students with skills and knowledge related to CE. Through experiential and project-based learning, the students will develop circular economy affinity groups that will tackle a pressing challenge including design for degradation solutions for ocean plastics and design for reuse of construction materials.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CHE 2754 - PRINCIPLES OF POLYMER ENGINEERNG

Minimum Credits: 3
Maximum Credits: 3
This course deals with the elements of polymer science and engineering necessary for entry-level understanding of polymer technology. While the chemistry determines macromolecular microstructure, an understanding of polymer manufacture and processing requires the addition of physical chemistry and transport phenomena. The essential material covered in this class includes the elements of polymers thermodynamics, rheology, mechanical behavior, and equipment design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 2811 - BIOMATERIALS & BIOCOMPATIBILITY

Minimum Credits: 3
Maximum Credits: 3
Chemical and physical properties of orthopaedic and cardiovascular biomaterials. Wear and corrosion of implant materials; fracture healing; inflammatory response; fixation and loosening of permanent implants; protein absorption; coagulation cascade, bacterial adhesion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CHE 2822 - ADVANCED TOPICS IN CHEMICAL ENGINEERING

Minimum Credits: 2
Maximum Credits: 2
This course introduces the fundamentals of capillarity via canonical problems in surface tension and wetting phenomena. Topics include static wetting phenomena (e.g. contact angles, shapes of menisci and drops), dynamic phenomena in which viscosity plays a role (e.g. rupture of menisci, coating operations), and thermodynamics (e.g. capillary condensation, nucleation).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CHE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

CHE 2901 - VIBE CODING FOR ENGINEERS

Minimum Credits: 1
Maximum Credits: 1
In this course, students learn how to use new AI-centric coding techniques to quickly complete simple projects, but also to tackle projects that would normally be considered too ambitious for a single person. The course will cover (1) installation, (2) theory of vibe coding, (3) beautiful visualization of data, and (4) deployment. No coding experience is required although students may need to cover a modest amount of AI-service fees (~$50).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CHE 2910 - SPECIAL PROJECTS

Minimum Credits: 1
Maximum Credits: 12
Individual study programs at MS Level.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

CHE 2980 - MS RESEARCH METHODOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course involves the discussion and application of research methodology important for the successful completion of MS thesis research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 2982 - ISSUES IN RESEARCH AND TEACHING

Minimum Credits: 2
Maximum Credits: 2
This course will present to graduate students issues relating to safety, ethics in science, and research methods. Topics in scientific writing, data analysis and oral presentation skills will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 2999 - M.S. THESIS

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

CHE 3001 - GRADUATE SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: PROG: Swanson School of Engineering

CHE 3004 - PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide students who are engaged in thesis or dissertation research an opportunity to participate in an internship with an external organization. The internship must be related to the thesis or dissertation research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PROG: Swanson School of Engineering

CHE 3910 - INDIVIDUAL STUDY

Minimum Credits: 1
Maximum Credits: 3
Individual study program at Ph.D. Level.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

CHE 3980 - PHD RESEARCH METHODOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course involves the discussion and application of research methodology important for the successful completion of Ph.D. dissertation research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 3990 - ADVANCED GRADUATE PROJECTS

Minimum Credits: 1
Maximum Credits: 15
Preliminary work for Ph.D. Dissertation.
Academic Career: Graduate

Course Component: Thesis Research
Grade Component: Grad SN Basis

CHE 3999 - PH.D. DISSERTATION

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Chemistry

CHEM 0755 - ORGANIC CHEMISTRY LAB: RESEARCH EXPLORATION

Minimum Credits: 2
Maximum Credits: 2
In this course students will work in teams to write original research proposals. They will then design and carry out appropriate experiments, collect and interpret data and ultimately report results in both oral and written formats.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis

CHEM 1490 - MOLECULAR DRIVING FORCES

Minimum Credits: 3
Maximum Credits: 3
This course introduces the foundational principles of physical chemistry as they apply to complex biological systems. Students will explore how core concepts from thermodynamics, statistical mechanics, kinetics, and intermolecular forces govern the behavior of biomolecules such as proteins, nucleic acids, and lipids. The course will bridge macroscopic observations with microscopic molecular driving forces, providing a quantitative framework for understanding and predicting biological phenomena. Topics will include the role of entropy in determining equilibrium, the thermodynamics of biomolecular interactions, the kinetics of enzyme catalysis, and the molecular basis of self-assembly and recognition. Through a combination of theoretical principles and case studies in chemical biology, students will develop the analytical skills necessary to address contemporary research questions at the chemistry-biology interface.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

CHEM 1820 - CHEMICAL BIOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to cutting-edge approaches in chemical biology that reveal how small molecules can precisely control biological processes and how biological systems can be engineered to create entirely new molecules. Students will explore modern strategies such as CRISPR-Cas genome editing, genetic code expansion, optochemical biology, and targeted protein degradation. A second area focuses on how to perform chemistry inside living cells, highlighting Nobel Prize-winning technologies like bioorthogonal and bioconjugation chemistry that have enabled breakthroughs such as antibody-drug conjugates. The course concludes with an exploration of biocatalysis and enzyme engineering for the synthesis of natural products, pharmaceuticals, and other high-value chemicals. By the end, students will understand how to harness chemical biology to drive innovation in research, therapeutics, and biotechnology.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

CHEM 1825 - CHEMICAL BIOLOGY II LAB: SYNTHETIC BIOLOGY LAB

Minimum Credits: 2
Maximum Credits: 2
This synthetic biology Course-Based Undergraduate Research Experience (CURE) transforms the lab into a discovery space where students design and test real biological systems while contributing to authentic research. In the inaugural theme, every student enrolled in this lab will engage in authentic research through the design and validation of novel biosensors for detection of biologically significant analytes. Such sensors have wide-ranging potential applications in areas such as precision medicine (diagnosing disease), environmental science (monitoring toxic algae blooms), and agriculture (protection of crops from pathogens). Towards their proposed biosensor, students will gain experience with DNA design, CRISPR base editing, protein engineering, and AI-guided molecular design, supported by modern biophysical and analytical tools. Students work in teams to develop original research proposals, collect preliminary data, and present a final proposal for their idea.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis

CHEM 1840 - HIGH-THROUGHPUT AND OMICS METHODS IN CHEMICAL BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
In this course students will discover how chemistry powers the next generation of biological discovery. This course connects analytical chemistry, organic chemistry and biochemistry to systems biology, showing how advances in analytical and organic chemistry have transformed our ability to study entire genomes, proteomes, and metabolomes at once. Students will learn how high-throughput techniques such as next-generation sequencing, mass spectrometry, library screens and selections, and flow cytometry to reveal how networks of biomolecules shape cellular behavior. Through case studies in drug discovery, protein interaction mapping, and signaling analysis, students will see how omics methods are driving breakthroughs in biology. By combining chemical insight with systems thinking, this course equips students with the conceptual and technical foundation to innovate in research fields from synthetic biology to precision medicine.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

CHEM 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1
Maximum Credits: 12
Course designed to be taken by master's degree students who are writing their thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

CHEM 2090 - SEMINAR IN CHEMISTRY

Minimum Credits: 1
Maximum Credits: 1
This course is created for graduate students to register for their thesis seminar when they do not declare a division or do not satisfy divisional requirements. Only students planning to present a seminar should register for this course. Others may attend without registering.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CHEM 2110 - CHEMICAL SYMMETRY: APPLICATIONS IN SPECTROSCOPY AND BONDING

Minimum Credits: 3
Maximum Credits: 3

Group theory and molecular symmetry, with emphasis on their application to the theoretical aspects of bonding in inorganic and organometallic complexes, as well as to the experimental techniques (electronic, vibrational, and photoelectron spectroscopy) typically used to elucidate the nature of intramolecular interactions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2120 - DESCRIPTIVE INORGANIC AND ORGANOMETALLIC CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
This course is intended to provide a solid background in modern inorganic chemistry for those doing research in all branches of chemistry. Much of the course material is descriptive, but the objective of the selection and presentation of the material will be to develop an understanding of the principles controlling the structures and reactivity of inorganic materials. Aspects of all areas of inorganic chemistry will be discussed, including main group, transition metal, and organometallic chemistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2130 - PHYSICAL METHODS IN INORGANIC AND MATERIALS CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
Inorganic and materials chemistry encompasses vast classes of chemical compounds spanning the solution and solid state which necessitate a diverse collection of physical characterization methods for understanding their chemical constitutions, structures, and physical properties. This course presents the most common and relevant methods of characterization from both a theoretical and practical perspective, which are introduced in the context of topical areas in inorganic and materials chemistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2180 - INORGANIC CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
Modern bonding theories are developed to the level that permits some understanding of the effects of structure and bonding on chemical properties. Periodic relationships are discussed and applied to selected families of elements. Emphasis is placed on those aspects of structure, bonding and periodic relationships that are helpful in unifying a large body of chemical knowledge. Selected topics of current interest in inorganic chemistry are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2190 - SEMINAR IN INORGANIC CHEMISTRY

Minimum Credits: 1
Maximum Credits: 1
Only students planning to present a seminar should register for this course. Others may attend without registering.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CHEM 2210 - ELECTROANALYTICAL CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
Fundamental electrode processes common to all electrochemical cal methods; thermodynamics and kinetics of electrode processes; reaction coordinate diagrams for faradaic currents; exchange current and activation polarization; non-faradaic currents and electric double layer. Mass transfer processes. Linear sweep, cyclic and pulse voltammetric methods and their application to analysis as well as the study of reaction mechanisms and problems in battery technology, electrocatalysis, photovoltaic cells and chemically modified electrodes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2220 - CHEMICAL SEPARATIONS

Minimum Credits: 3
Maximum Credits: 3
A broad thermodynamic and kinetic framework encompassing all chemical separations is used to classify techniques. Concepts such as separation efficiency are generalized. The most powerful and widely used separations techniques are chromatographic, thus solution chemistry will be discussed to provide a chemical framework for chromatography. The use of gas and liquid chromatography will be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2230 - ANALYTICAL SPECTROSCOPY

Minimum Credits: 3
Maximum Credits: 3
This course will be broken into two sections. In the first section we will discuss different components of spectrometers, with a focus on optical spectroscopy. In the second section we will focus on understanding what we can learn from using spectroscopy and what sort of dynamical processes can be observed with different spectroscopic techniques. Topics to be covered include: spectrometer design, selection rules, line shapes, time-dependent perturbation theory, and the time-dependent approach to spectroscopy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2240 - MASS SPECTROMETRY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

CHEM 2290 - SEMINAR IN ANALYTICAL CHEMISTRY

Minimum Credits: 1
Maximum Credits: 1
Only students planning to present a seminar should register for this course. Others may attend without registering.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CHEM 2310 - ADV ORGANIC CHEMISTRY 1

Minimum Credits: 3
Maximum Credits: 3
A qualitative discussion of modern mechanistic interpretations of relations between structure and reactivity. Special emphasis is placed on the roles of reactive intermediates such as Carbonium ions, carbanions, carbenes and radicals. Study of the factors that influence the equilibria and reaction mechanisms of organic molecules.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2320 - ADV ORGANIC CHEMISTRY 2

Minimum Credits: 3
Maximum Credits: 3
A course designed to cover modern synthetic methods for the assembly of complex organic molecules (stereospecific olefin synthesis, cycloaddition reactions, sigmatropic rearrangements, organometallic chemistry, natural product synthesis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2330 - ORGANOMETALLIC CHEMISTRY

Minimum Credits: 2
Maximum Credits: 2
A single-semester two-credit lecture course focusing on the mechanistic and synthetic aspects of state-of-the-art organometallic chemistry will be offered. Understanding how organometallic structure and electronics influence reactivity patterns will provide students with predictive tools for interpreting and exploiting organometallic reactivity. The course will focus on the thermodynamics, kinetics and stereoselectivity of main group- and transition metal-mediated reactions having applications in organic synthesis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2370 - SYNTHETIC ORGANIC CHEMISTRY

Minimum Credits: 2
Maximum Credits: 2
This early graduate level course builds onto sophomore organic I and II courses by applying the learned principles to the synthesis of FDA-approved drug molecules. The emphasis of the course will be on analyzing the molecular structures of drugs in a retrosynthetic fashion, followed by developing suitable synthetic routes to these molecules. The reaction mechanisms of key steps of theses syntheses will be discussed in detail. Further discussion will include fundamental functional group interconversions, chemoselectivity, and protecting group use, enantioselective synthesis, and organometallic chemistry. Students will learn about the complexities of modern drug molecules, how their structures can be analyzed, and how they are synthesized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2380 - TECHNIQUES OF ORGANIC RESEARCH

Minimum Credits: 2
Maximum Credits: 2
A course which serves as a guide to the interpretation of ultraviolet, infrared, nuclear magnetic resonance and mass spectra of organic compounds.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2390 - SEMINAR IN ORGANIC CHEMISTRY

Minimum Credits: 1
Maximum Credits: 1
Only students planning to present a seminar should register for this course. Others may attend without registering.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CHEM 2430 - QUANTUM MECHANICS AND KINETICS

Minimum Credits: 3
Maximum Credits: 3
Basic quantum mechanics, with emphasis on the theory of chemical structure and dynamics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2440 - THERMODYNAMICS & STATSTCL MECHNC

Minimum Credits: 3
Maximum Credits: 3
Development of equilibrium statistical mechanics and thermo dynamics. Applications to chemical systems. These applications include solutions, phase transitions (Ising Model) and reaction theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2490 - SEMINAR IN PHYSICAL CHEMISTRY

Minimum Credits: 1
Maximum Credits: 1
Only students planning to present a seminar should register for this course. Others may attend without registering.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CHEM 2600 - SYNTHESIS & CHARCTRZTN POLYMERS

Minimum Credits: 3
Maximum Credits: 3
Synthesis and characterization of polymers is focus of course. Current methods of polymer synthesis will be surveyed, practical implementation of reactions and kinetic consequences of reaction strategies in homopolymer, copolymer and block copolymer synthesis. Techniques for characterization of polymer molecular weight, chemical composition, and stereochemistry (Ft-Ir, NMR, other spectroscopic and chemical methods) will be discussed. Brief treatment of polymer solution thermodynamics and selected topics in polymer chemistry will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2620 - ATOMS, MOLECULES AND MATERIALS

Minimum Credits: 3
Maximum Credits: 3

This course will use qualitative molecular orbital theory to understand the design and performance of new materials. A link will be made between "small molecule" intuition and the solid-state perspective on large molecules, clusters and solids.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2700 - GRADUATE RESEARCH SEMINAR

Minimum Credits: 0
Maximum Credits: 0
Seminar given by faculty on graduate research opportunities in chemistry. This course is designed especially to help students in their selection of a research adviser.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

CHEM 2710 - CHEMISTRY RESEARCH ROTATION EXPERIENCE

Minimum Credits: 1
Maximum Credits: 1
First year graduate students will spend a term carrying out research in various laboratories in order to make a well informed decision about choosing a PhD research adviser.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad LG/SNC Basis

CHEM 2810 - BIOLOGICAL CHEMISTRY 1

Minimum Credits: 3
Maximum Credits: 3
This course considers the chemical properties of amino acids, oligopeptides, and proteins; the biosynthesis of proteins; the physical interactions that determine the proper ties of proteins; the conformational properties of polypeptide chains and biomacromolecules, integral membrane proteins and ion channels; interactions between proteins and other molecules; enzyme kinetics; catalytic antibodies; and biosynthesis of small molecules.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2820 - BIOLOGICAL CHEMISTRY 2

Minimum Credits: 3
Maximum Credits: 3
This course will discuss select biological systems and problems and the chemical tools that are being developed in order to study and address them. In addition to an introduction to cell biology and molecular and cell biological techniques, topics may include: conditional control of gene editing, forward and reverse chemical genetics, sensors of cellular processes, protein bioconjugation, small molecule inhibitors of kinase function, activity-based probes, small molecule dimerizers of proteins, and targeted protein degradation. This will lead to the following expected learning outcomes: basics of cell biology, biological techniques and vocabulary relevant to the field of chemical biology, important research topics and research areas in the field of chemical biology, navigating and critical reading of chemical biology primary articles and review articles, and knowledge of key labs that are major contributors to the field of chemical biology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2830 - SYNTHETIC BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2890 - SEMINAR IN BIOLOGICAL CHEMISTRY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CHEM 2970 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

CHEM 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
Research credits towards a MS and Ph.D. degree.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

CHEM 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 12
Research credits for the Ph.D. Degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

CHEM 3001 - PREPARATION FOR THE STEM CLASSROOM

Minimum Credits: 1
Maximum Credits: 1
PREPARATION FOR THE STEM CLASSROOM
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CHEM 3002 - ADVANCED LEARNING THROUGH EVIDENCE-BASED STEM TEACHING

Minimum Credits: 1
Maximum Credits: 1
This course consists of a MOOC offered by Coursera, jointly developed at Boston University, Vanderbilt, Michigan State and Wisconsin-Madison, combined with in-person class meetings of the local learning community at the University of Pittsburgh. Students will meet with the facilitator for the course, Dr. Mary Besterfield-Sacre, four times during the semester to go over the material in the online sessions, and to relate it to their teaching experiences in labs, discussions, and classrooms. The course will draw on the expertise of experienced stem faculty, educational researchers, and staff from University teaching centers, many of them affiliated with the center for the integration of research, teaching and learning (CIRTL), a network of 22 research universities collaborating in the preparation of stem graduate students and post-docs as future faculty members.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Hybrid

CHEM 3100 - ADVANCED TOPICS INORGANIC CHEM 1

Minimum Credits: 1
Maximum Credits: 1
Minicourse. Topics vary from term to term, but all focus on some aspect of inorganic chemistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 3300 - ADVANCED TOPICS ORGANIC CHEM 1

Minimum Credits: 1
Maximum Credits: 1
Minicourse. Topics vary from term to term but all consider some specific aspect of organic chemistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 3310 - ADVANCED TOPICS ORGANIC CHEM 2

Minimum Credits: 2
Maximum Credits: 2
Minicourse. Topics vary from term to term but all consider some specific aspect of organic chemistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 3380 - ORGANIC GROUP MEETING

Minimum Credits: 1
Maximum Credits: 1
A weekly meeting to discuss the most recent advances in organic chemistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 3390 - SYNTHETIC ORGANIC COLLOQUIUM

Minimum Credits: 1
Maximum Credits: 1

A weekly workshop on current synthetic organic chemistry literature and state of the art research.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad LG/SNC Basis

CHEM 3410 - ADVANCED TOPICS PHYSICAL CHEM 2

Minimum Credits: 2
Maximum Credits: 2
Minicourse. Topics vary from term to term but all consider some specific aspect of physical chemistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 3460 - INTRO MODERN COMPUTATIONAL SCI

Minimum Credits: 3
Maximum Credits: 3
This course will emphasize the application of microcomputers and numerical methods for solving problems of importance in chemistry. Methods to be studied include solving systems of linear and differential equations, lEast squares fitting, eigenvalue problems, solution of nonlinear equations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 3700 - SCIENTIFIC PROPOSAL WRITING

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

CHEM 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
Directed study in a specific area of chemistry to enhance preparation for graduate research.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

Chinese

CHIN 1089 - THE WORLD OF CHINA

Minimum Credits: 3
Maximum Credits: 3
This course will survey the wax and wane of pop culture through disparate phases of social and political developments of modern china. The readings will introduce students to works of literature, art, and film to see how tradition and modernity, elite and mass cultures, East and West conflict and converge; how china absorbs, adapts as well as resists capitalistic modernity while embracing global market economy; how china grapples with urban alienation, social flux, moral laxity and other negative aspects of industrialization and urbanization. The course will make available to students a host of art images, dvd clips and e-texts to enhance and expand their perception

of modern china.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

CHIN 2000 - RESEARCH AND THESIS MA DEGREE

Minimum Credits: 1
Maximum Credits: 6
This course recognizes work performed in the course of preparing the thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Attributes: Asian Studies

CHIN 2025 - ASPECTS OF THE CHINESE LANGAUGE

Minimum Credits: 3
Maximum Credits: 3
Aspects of the chinese language will offer a linguistic introduction to Chinese. No prior knowledge of linguistics is assumed although familiarity with linguistic analysis is a plus. The Chinese language is substantially different from English or other Indo-European languages. It is also distinct from some other East Asian languages. For instance, it has a logographic writing system and is a tonal language. Its word order is more flexible than English and is a topic-prominent language. It does not have rich grammatical inflections but has a limited number of aspectual markers. The course serves the following purposes: (1) introduce the basic facts of the Chinese language including its development, the phonology, morphology, the semantic and syntactic aspects of Mandarin Chinese, and the interactions of the language with Chinese culture and the society; (2) introduce elementary linguistic concepts relevant to Chinese to enable students to use the right tool to describe and critically analyze the features of a language; (3) encourage students to reflect on their language learning experience or knowledge of other languages to conduct reasoning, such as analyzing the sources of difficulty in their studying of Chinese; (4) to inspire interest in a range of topics including differences in modern and classical chinese, philosophical belief embodied in the language, Chinese culture manifested in the language (such as the notion of politeness, face, etc.), and to lay a foundation for further studies in linguistics as well as in those relevant topics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2027 - CHINESE AS A SECOND LANGUAGE AND BILINGUALISM

Minimum Credits: 3
Maximum Credits: 3
The course introduces students to research methods and findings on Chinese as a Second Language (CSL) and it familiarizes students with pedagogical and issues of learning in CSL. The course content includes (1) linguistic perspectives of CSL and second language learners' grammatical knowledge development, including how key structures are acquired and typically dealt with in language classroom; (2) psycholinguistic experimental methods and cognitive development of bilingual speakers of Chinese and English, including in character recognition/production, vocabulary acquisition, morphological awareness development, etc.; (3) corpus approaches in CSL and applications; (4) pragmatics in L2 Chinese; (5) other CSL topics such as learner motivation, Chinese as a heritage language, proficiency assessment, and technologies in CSL. The course will use a combination of lectures, discussions, and presentations. Class will be conducted largely in English, while enrolled students are expected to have an intermediate or above level Chinese proficiency.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2040 - LITERARY CHINESE 1 CLASSICAL

Minimum Credits: 3
Maximum Credits: 3
This is a course in classical Chinese whose purpose is to acquaint the student with the language and syntax of classical Chinese.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2041 - LITERARY CHINESE 2 CLASSICAL

Minimum Credits: 3
Maximum Credits: 3
A continuation of Chinese 1040, this course will further develop the student's knowledge of vocabulary and syntactical patterns of classical Chinese.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2041 - LITERARY CHINESE 2 CLASSICAL

Minimum Credits: 3
Maximum Credits: 3
A continuation of Chinese 1040, this course will further develop the student's knowledge of vocabulary and syntactical patterns of classical Chinese.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2045 - THE CHINESE WRITING SYSTEM IN EAST ASIA

Minimum Credits: 3
Maximum Credits: 3
The Chinese script is presumed to be difficult to the untrained eye, but much of the myth lies in misunderstandings or misinformation. The course will introduce students to the Chinese writing system through historical and applied linguistic perspectives, and it will provide opportunities of discussion on how the Chinese script influences topics in anthropology, arts, education, and politics in the East Asian region. Students will gain foundational knowledge regarding the linguistic features of the Chinese writing system, including its historical development, acquire an insight into the cultural aspect of the script, and be challenged to apply such knowledge to make critical inquiries on the relationship between the writing system and literacy development, cognitive science, visual arts, and society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CHIN 0001 or instructor permission

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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2047 - CHINESE AND WESTERN POETRY

Minimum Credits: 3
Maximum Credits: 3
A comparative study of Chinese and Western lyric poetry. This course explores the world of feeling as expressed in the poetry of two vastly different worlds: china and the West and focuses on the language of feeling in a poetic medium. The purpose of this course is to appreciate how differences between the two poetic traditions is essential to a better understanding of the two cultures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies, West European Studies

CHIN 2059 - ADAPTED FOR THE SCREEN: CHINESE LITERATURE AND FILM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Film Studies

CHIN 2083 - MASTERPIECES OF CHINESE LITERATURE: PREMODERN

Minimum Credits: 3
Maximum Credits: 3
This course is devoted to the study of Chinese literature from ancient times to the end of the 19th century. Lectures and readings include prose (historical, philosophical and literary texts, legends and myths of the remote past, ancedotes, short stories and fantastic tales of ghosts and love) and poetry (from the book of songs to the poetry of the T'ang and Sung periods).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2084 - MASTERPIECES OF CHINESE LITERATURE: MODERN

Minimum Credits: 3
Maximum Credits: 3
A critical analysis of some of the most representative literary works in modern China from a literary and socio-political perspective.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

CHIN 2085 - INTRODUCTION TO EAST ASIAN CINEMA

Minimum Credits: 3
Maximum Credits: 3
This course investigates the ways in which film addresses and treats the major socio-cultural issues in modern society through a critical study of the works of Chinese and Japanese master filmmakers. The course focuses on changes in marriage and family patterns, women's roles and the plight of youth.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

CHIN 2086 - LOVE IN CHINESE AND WESTERN LITERATURE

Minimum Credits: 3
Maximum Credits: 3
The course will explore and compare expressions of love in Chinese and Western literature. The course will examine a succession of theories and ideas of love such as platonic, religious, courtly, romantic and post-romantic from the Western tradition; love in Confucianism, Mohism, Taoism, and Buddhism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Gender, Sexuality & Women's Studies

CHIN 2088 - NEW CHINESE CINEMA

Minimum Credits: 3
Maximum Credits: 3
Students will study Chinese films made by filmmakers of mainland China and Taiwan. They will learn about origins, development, themes, and styles with major directors and important films of new Chinese cinema being studied. Students will have an opportunity to understand contemporary Chinese culture and society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

CHIN 2089 - THE WORLD OF CHINA

Minimum Credits: 3
Maximum Credits: 3
Various topics are covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2090 - GREAT MINDS OF CHINA

Minimum Credits: 3
Maximum Credits: 3
First segment on Confucianism, including the Analects and Menicus, will be studied with relevant commentaries, stressing implications for chinese cultre, especially in ethical and socio-political dimensions. Second segment on Taoism, Lao Tzu and Chuang Tzu, will be studied

with emphasis on im pact on the arts and literature. Final segment on Buddhism will concentrate on representative sutras of the tradition, diamond sutra and texts from the Chan (Zen) master's.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2700 - CHINESE TRANSLATION THEORY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course is intended for speakers of English who possess advanced Chinese proficiency. It is an overview of theory and practice of translation from Chinese to English, including the training on hands-on translation practices. Students will use real-life translation materials such as news articles, legal documents, commercial flyers, financial reports, and technical manuals to simulate a professional translation process. Basic techniques and strategies that are practiced commonly in the translation field will be introduced and further reinforced through lectures, and research and analysis of Chinese-English bilingual websites.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHIN 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
Tutorial for advanced graduate study.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

Civil & Environmental Engineer

CEE 2085 - GRADUATE DEPARTMENTAL SEMINAR

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2105 - ADV CIVIL ENGRNG MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Advanced topics in material behavior - fatigue, creep, fracture, etc. - As applied to high performance civil engineering materials; high strength low alloy steel, high strength concrete, composite materials, laminated timbers, etc., With special emphasis upon infrastructure rehabilitation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2106 - NONCONVENTIONAL ENGINEERING MATERIALS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on materials science topics relevant to the application of nonconventional materials in [civil] engineering structures, infrastructure and products. Increasingly, engineers are looking to [often locally-sourced] nonconventional materials to augment or replace resource-intensive conventional engineered materials, such as steel and concrete. This is especially true in resource-scarce regions of the planet. This course will address a broad range of nonconventional materials falling into three categories: i. advanced reinforced polymer composites (GFRP, CFRP, BFRP, pGFRP) and metals (Al and Ti); ii. traditional and vernacular materials such as earth-based materials and bamboo; iii. historic materials (and the repair and restoration thereof); Course deliverables are partially project driven, allowing students to pursue materials issues of interest to their plan or study or research. This course is open to all Engineering and Architecture students (as a technical elective).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: CEE 1105 or ENGR 0022; CEE and ENGR Undergraduates must have at least 75 credit hours completed and a GPA greater than 3.2.; BS (Architecture) students may take course with permission

CEE 2201 - CONSTRUCTION COST ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course teaches the methodology for estimating construction costs. The course covers all types of costs and all types of construction. The student is introduced to standard reference materials and to computerized estimating systems. The course teaches methods and procedures for developing accurate estimates and the basis for follow-on cost control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering

CEE 2202 - CONSTRUCTION SCHEDULING

Minimum Credits: 3
Maximum Credits: 3
This course teaches the student the theory and practice of planning, scheduling, and controlling the time and cost of construction projects. The course covers various advanced techniques such as cost duration analysis, critical resource analysis, stochastic modeling, and cost control. The course teaches the use of contemporary computerized software systems with hands-on application.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: Global Studies

CEE 2203 - CONSTRCT METHODS AND EQUIPMENT

Minimum Credits: 3
Maximum Credits: 3
This course teaches the student how to plan, organize, and execute construction operations. The course includes typical operations in both building construction and engineering construction. The course describes how to properly construct in order to achieve quality and productivity objectives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering

CEE 2204 - CONSTRUCTION LAW AND RISK MGMNT

Minimum Credits: 3
Maximum Credits: 3
This course introduces the student to the legal and risk management issues in construction. The course covers the principles of contract law and various legal areas affecting construction such as environmental regulations, insurance, bonds, tort liability, dispute resolution, and professional services.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering

CEE 2205 - CONSTRCT FINANCE & COST CONTROL

Minimum Credits: 3
Maximum Credits: 3
This course introduces the student to the company level financial and accounting systems which are used in the construction industry, and to project control systems which are used to manage cost and time. The course includes such topics as financial accounting, cost accounting, financial statements, and variance analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: Global Studies

CEE 2206 - CONSTRCT & COST OF ELEC SUPPLY

Minimum Credits: 3
Maximum Credits: 3
This course teaches basic construction and cost estimating methodologies for single and three-phase electrical distribution systems that include wiring, power, and controls. The course uses commercial estimating systems and the national electrical code.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering

CEE 2207 - CONSTRCT & COST OF MECHL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course teaches the student how to plan, organize, and execute mechanical construction operations; and the methodologies for estimating their costs. The course covers mechanical systems such as water (supply and waste), HVAC, fire protection, and their controls.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

CEE 2213 - CONSTRUCTION SAFETY

Minimum Credits: 3
Maximum Credits: 3
Safety is an integral and essential element of the construction industry. This course will teach students the role all personnel play in establishing an effective safety culture in order to achieve a goal of reducing and eliminating worker injuries and illnesses. Industry standards established by OSHA and ANSI will be highlighted. Additionally, the financial impact that accidents have on a company will be taught.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2230 - BUILDING INFORMATION MODELING

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to introduce the students to building information modeling (BIM) and other new and evolving technologies which are revolutionizing the building and horizontal infrastructure construction industry. Students will learn how BIM and other innovative technologies are being adopted currently by progressive builders to streamline the construction process through enhanced coordination, visualization, logistical planning, cost estimation and analysis. They will also learn how these new tools are enabling (and in some instances requiring) new highly integrated processes that are redefining architecture, engineering, construction and operations (AECO) business relationships and delivery contracts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering
Course Attributes: MCSI - Sustainability Related

CEE 2321 - ELASTICITY, PLASTICITY AND FRACTURE MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This course provides first-year graduate students with the fundamentals regarding mathematical derivations, mechanical models and numerical analyses in elasticity, plasticity and fracture mechanics. It is aimed at laying the foundations for the students for their future study and research in advanced mechanical problems. The main topics of this course includes: 1) equilibrium and compatibility in elastic domains; 2) complex potential method for elasticity problems; 3) plasticity fundamentals; 4) linear elastic fracture mechanics; 5) stress intensity factors; 6) cohesive crack model and crack band model; 7) size effect and scaling; 8) probabilistic fracture mechanics; and 9) micromechanics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Swanson School of Engineering (PENGR)

CEE 2323 - PRACTICAL DATA SCIENCE AND MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course will introduce data science and machine learning concepts to engineering students and professionals with emphasis on practical engineering applications. Key approaches and techniques for working with applied data science and machine learning with many step-by-step engineering examples, illustrations, and exercises will be presented. The course will cover a range of machine learning methods for classification, clustering and regression including k-nearest neighbors, logistic regression, Naive Bayes, support vector machines, decision trees, neural networks, support vector machines, genetic programming, and deep learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2325 - INTRODUCTION TO GENERATIVE ARTIFICIAL INTELLIGENCE FOR CIVIL ENGINEERS

Minimum Credits: 3
Maximum Credits: 3
This course provides an in-depth exploration of large language models and their applications in the field of civil engineering. Large language models, such as GPT-3.5, have revolutionized various domains, and this class will equip undergraduate and graduate students

with the knowledge and skills to leverage these powerful tools for innovative solutions in civil engineering. From natural language understanding to data analysis and decision support, students will learn how to harness the potential of large language models to tackle real-world civil engineering challenges.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2333 - INTRODUCTION TO FINITE ELEMENTS

Minimum Credits: 3
Maximum Credits: 3
Introduction to the finite element method and its application to various problems of elastic elements and structures. Both physical and variational approaches are used.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2340 - DESIGN OF CONCRETE STRUCTURES

Minimum Credits: 3
Maximum Credits: 3
A course covering the behavior, strength, and design of reinforced concrete structures using the ACI design code. Fundamental topics related to the design of reinforced concrete beams, one-way slabs, short columns, and footings are treated. Two-way slabs, reinforced walls, and strut-and-tie modeling are introduced.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

CEE 2341 - DESIGN OF STEEL STRUCTURES

Minimum Credits: 3
Maximum Credits: 3
A course on the design of steel structures based on the load and resistance factor design (LRFD) philosophy. Fundamental topics related to the design of tension members, columns, beams, beam-columns, floor systems, plate girders and steel connections are treated. Issues in stability, fracture and fatigue are also introduced.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

CEE 2345 - DESIGN OF TIMBER STRUCTURES

Minimum Credits: 3
Maximum Credits: 3
An introductory course focusing on the design of light-frame timber and 'mass' (or 'heavy') timber structures. Material characterization and properties of wood are addressed including aspects of durability and long-term performance. Fundamental topics related to design of linear (beams and columns) and planar (plates, panels and floors) structural elements are covered. More advanced topics addressed include stability and design of connections. An introduction to fire performance of building structures is included. The course will be focused toward a student-driven design project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2347 - BRIDGE ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Introduce concepts of bridge engineering by providing the students with the necessary knowledge and skills to apply the AASHTO lRFD specifications for the analysis and design of highway bridge superstructure components.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2360 - DYNAMICS OF STRUCTURES

Minimum Credits: 3
Maximum Credits: 3
Fundamentals of free and forced vibration of one and multi degree of freedom structures, including damping. Matrix formulation of multi-degree of freedom structures. Analytical and numerical methods for determining response; deflection and stress evaluation including damping effects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2370 - NONDESTRUCTIVE EVALUATION

Minimum Credits: 3
Maximum Credits: 3
The course introduces students to the most common Nondestructive Evaluation (NDE) methods use in civil, industrial, and aerospace engineering to keep structures safe and to characterize materials properties such as strength and stress. The methods to be covered in class are (in alphabetical order): acoustic emission, eddy current, liquid penetrant testing, magnetic particle testing, microwave, thermography, and ultrasonic testing. The course will include laboratory demonstrations using YouTube videos that enable students to connect NDE methods to the current practice in the industry. Students from any engineering discipline from Swanson School are welcome to attend this class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CEE 2371 - STRUCTURAL HEALTH MONITORING

Minimum Credits: 3
Maximum Credits: 3
The course introduces Honors students to the modern paradigm of Structural Health Monitoring (SHM) as it applies to engineering infrastructures and systems with a specific focus on bridges. SHM refers to the implementation of 24/7 nondestructive evaluation (NDE) techniques to detect damage, characterize materials, or to determine non-invasively the static and dynamic response of a given structure to external load such traffic and wind. Typical SHM systems receive and elaborate data from sensors bonded or embedded to the infrastructure or material of interest to establish whether the structure is damaged or if it operates according to design specifications. SHM is a multidisciplinary field that embraces knowledge in areas that include but are not limited to sensors fabrication, signal processing, NDE, materials science, hardware design, and soft computing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2401 - OPEN CHANNEL HYDRAULICS

Minimum Credits: 3
Maximum Credits: 3
Basic theories and principles of open channel flows (including flows in rivers and streams). Methods of calculating uniform flow, gradually varied flow, rapidly varied flow, and unsteady flow. Design of open channels.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate Engineering Students

CEE 2410 - WATER RESOURCES ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course addresses fundamental and practical issues of water resources engineering. The increasing demand for sufficient water quantity and quality that is distributed in time and space forces engineers and policy makers to develop more comprehensive, complex, and ambitious plans for environmental and water systems. This course emphasizes understanding, formulating, and approaches of solving problems of water resources engineering. Quantitative overview of the water resources development, water resources problems, impacts of climate variability and global warming on water resources, and the fundamental principles and basic tools to solve these problems will be covered. Topics to be discussed also include introduction to basic concepts of hydrology, GIS (Geographic Information Systems) applications, theory of unit hydrograph, frequency analysis, flood routing through reservoirs and rivers, introduction to rainfall-runoff analyses, and watershed modeling.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate Engineering Students
Course Attributes: MCSI - Sustainability Related

CEE 2411 - CURRENT ISSUES AND CHALLENGES IN WATER RESOURCES

Minimum Credits: 3
Maximum Credits: 3
This course covers a wide range of topics related to current issues and challenges related to water resources, especially those associated with climate changes. Through this course, the students are expected to gain in-depth understanding of the fundamentals as well as the up-to-date advances. Students are required to study selected research articles and participate in guided discussions. Topics covered include floods, droughts, winter storms, accurate forests of precipitation and streamflow, urban hydrology and its sustainability. Contemporary and new frontiers in modeling and data processing are also part of the curriculum.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2500 - ENVRNMNTL ENGRG MICROBIOL

Minimum Credits: 3
Maximum Credits: 3
Biological fundamentals as applied to the description and evaluation of natural environments and environmental quality control systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: MCSI - Sustainability Related

CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3

Chemical fundamentals as applied to the description and evaluation of natural environments and environmental quality control systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: Global Studies, MCSI - Sustainability Related

CEE 2502 - PHYSICAL-CHEMICAL PRINCIPLES IN ENVIRONMENTAL ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Basic principles and applications of thermodynamics, reaction kinetics, equilibria, diffusion, and mass transfer.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: Global Studies

CEE 2505 - WATER TREATMENT AND DISTRIBUTION SYSTEMS DESIGN

Minimum Credits: 3
Maximum Credits: 3
Stepwise development and process design, equipment selection, economic evaluation, layout, and operating guidelines for water treatment, storage and distribution systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: MCSI - Sustainability Related

CEE 2513 - ENVIRONMENTAL IMPACT ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
Technical and procedural aspects of environmental impact analysis and assessment with emphasis on regulatory framework, characterization of impacts and their remediation, and the decision process when applied to engineering systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: Global Studies, MCSI - Sustainability Related

CEE 2515 - WATSTEWATER COLLECTWASTEWATER COLLECTION AND TREATMENT PLANT DESIGNION AND TREATMENT PLANT DESIGN

Minimum Credits: 3
Maximum Credits: 3
Stepwise development and process design, equipment selection, economic evaluation, layout, and operating guidelines for wastewater collection and treatment systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: Global Studies, MCSI - Sustainability Related

CEE 2522 - FATE AND TRANSPORT IN ENVIRONMENTAL ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
An introduction to the thermodynamic and kinetic drivers of chemical fate in the environment. Processes governing the diffusion, advection and transformation of chemicals in air, water and soil. Inter-media exchange, environmental degradation and uptake into biotic systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2531 - AIR POLLUTION AND CONTROL

Minimum Credits: 3
Maximum Credits: 3
This course covers terminology, scientific principles, control options, regulatory requirements, permitting procedures, testing/modeling techniques and current topics associated with air pollution and control. This course requires quantitative understanding and covers design considerations associated with air pollution and control. It also covers environmental issues and requires an appreciation of the non-technical aspects of air quality management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2605 - SUSTAINABLE MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Materials are the building block of the natural and built environment. You rely on and interact with materials every day, but have you ever stopped to consider, what is a material? What does it mean to design a material more sustainably? How can you make materials more sustainable and better performing? Answers to these questions, and more, are the foundation for the course. In this course you will learn about sustainable design frameworks (e.g., Green Chemistry, Green Engineering, Cradle-to-Cradle, Biomimicry, Circular Economy) and existing examples of their successful application in markets ranging from consumer electronics, clothing, and personal care products. In addition to these case studies, we will discuss material classes relevant to civil and environmental engineering. The course will be collaborative and highly participatory. In addition, a cornerstone of the class will be a material challenge project. You will work in groups applying what you learn in the course to uncover innovative solutions to currently unsustainable material practices.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS

Minimum Credits: 3
Maximum Credits: 3
Life cycle assessment (LCA) is a tool for evaluating the environmental impacts of a product or process by documenting energy and material flows from inception to ultimate disposal. This course teaches framework, methods, and tools that can be applied to decision making in the design, construction, operation, and maintenance of the built environment. Topics include the principles of life cycle assessment, case studies of applications of life cycle assessment, methods for life cycle inventory, and methods for life cycle impact assessment. The course aims to encourage systems thinking and to facilitate life cycle applications to graduate students' individual research topics. Students can expect to develop a project and paper applying LCA to their research topic. In most cases, students will produce a publishable journal article at the end of the semester.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Focused

CEE 2610 - ENGINEERING AND SUSTAINABLE DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course is intended as an introductory interdisciplinary engineering course. Topics include principles of sustainable design in engineering, manufacturing, infrastructure, communications, and community development; overview of environmental issues for engineers; design for the environment; models of environmental processes; introduction to the use of life cycle assessment; and case studies examining the relationship of green design and the field of engineering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Focused

CEE 2612 - DESIGN AND ANALYSIS OF EXPERIMENTS

Minimum Credits: 3
Maximum Credits: 3
Principles of designing experiments, analysis of variance techniques for hypothesis testing, simultaneous confidence intervals, robust design and Taguchi methods, block designs, factorial experiments, random effects and mixed models, split plot designs, analysis of covariance, response surface design
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CEE 2620 - ADVANCED GREEN BUILDING AND CONSTRUCTION

Minimum Credits: 3
Maximum Credits: 3
This course first provides an overview all of the major aspects of green building design and construction, including sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation, and design process. The course then focuses on energy modeling, indoor environmental quality monitoring, and post-occupancy evaluations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Focused

CEE 2630 - DESIGN FOR CIRCULAR ECONOMY

Minimum Credits: 3
Maximum Credits: 3
The current linear consumption model of raw material extraction, production, use, and disposal has dominated the global economy for hundreds of years. While an extremely wasteful approach to resource management, the linear model was tractable so long as it was employed by a small fraction of the global population, namely the developed world, so that both raw material acquisition and waste management remained economically viable. Today, we clearly see that this linear model has led to serious unintended global consequences. Circular economy (CE) offers promising solutions. CE principles are based on efficient use of resources and eliminating waste from product life cycles through clever design. Valuable material either moves in loops through the economy, or, if biologically derived, returns to the ecosystem to serve as nutrients; a truly circular economy thus keeps material in continuous use by design. The goal of this course is to provide students a thorough introduction to circular economy, along with integrating design. This course will provide students with skills and knowledge related to CE. Through experiential and project-based learning, the students will develop circular economy affinity groups that will tackle a pressing challenge including design for degradation solutions for ocean plastics and design for reuse of construction materials.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2700 - TRAFFIC MGMNT AND OPERATIONS

Minimum Credits: 3
Maximum Credits: 3
Introduction to traffic flow theory and characteristics. Highway capacity analysis. Basic traffic management and control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2710 - TRAFFIC CONTROL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
A range of traffic control systems including the analysis and design of traffic signals are discussed along with traffic signal systems. Other topics covered include data collection for traffic control systems, optimization software and models; traffic signal hardware design; traffic signal systems selection (adaptive traffic signal systems versus traditional systems) and design and implementation. Pre-requisite CEE 1703 for 1710 and CEE 2700 for 2710
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: CEE 2700; PROG: Swanson School of Engineering

CEE 2711 - ADVANCED TRANSPORTATION MANAGEMENT STRATEGIES

Minimum Credits: 3
Maximum Credits: 3
This is a management-oriented course that covers key aspects of how government transportation agencies operate their transportation systems. Focus is on the strategies that are used to improve public safety and mobility, including traffic incident management, traffic management, traveler information and pricing. Emphasis is also placed on processes, including planning, performance management and systems engineering, that agencies apply in advancing programs and projects. The course concludes with a look at the future, including the effects that automated vehicles and Smart City concepts will have on the future of transportation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CEE 2713 - DIGITALIZATION IN CIVIL ENGINEERING: FROM CAD TO VIRTUAL REALITY

Minimum Credits: 3
Maximum Credits: 3
Course Description: This course will introduce students to the fundamentals of technical drawing and the modern tools utilized in drafting, modeling, and 3-D visualization for Civil Engineering applications. Topics will include technical drawing and engineering graphics, Computer-Aided Design (CAD), Building Information Modeling (BIM) and modern Virtual Reality (VR) applications in Civil Engineering. More specifically, students will: 1. Gain fundamental knowledge in technical drawing and engineering graphics. 2. Become proficient in modern drafting and modeling software tools for Civil Engineering applications. 3. Gain an understanding of the required workflows for data exchange between 3-D modeling software and immersive Virtual Reality simulations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2714 - PAVEMENT DESIGN AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Concepts and principles in the structural design of pavements for highways and airfields including: traffic loads, climatic factors, soil and material characterization. Application of current pavement design practices and procedures. Economic evaluation of highway and airport pavements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering

CEE 2715 - PAVEMENT MAINTENANCE AND REHAB

Minimum Credits: 3
Maximum Credits: 3
Engineering concepts and information needed to maintain and rehabilitate pavements. Project evaluation, testing and analysis. Design of rigid and flexible overlays, and other methods of rehabilitation. Selection of rehabilitation alternatives. Analysis of the effects of maintenance activities on pavement performance. Initial and life cycle cost analysis of various rehabilitation alternatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

CEE 2716 - PAVEMENT CONSTRUCTION

Minimum Credits: 3
Maximum Credits: 3
This course teaches the students the theory and practice of constructing highway and airfield pavements and associated construction management responsibilities. The students will learn how pavements are constructed, including earthwork, base and subbase construction, and the paving of the concrete and asphalt surface layers. The course also covers the impact of construction quality on long-term pavement performance and modern methods utilized for construction quality control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CEE 2717 - COMPONENTS, PROPERTIES AND DESIGN OF PORTLAND CEMENT CONCRETE

Minimum Credits: 3
Maximum Credits: 3
Examines the influence of constituent materials (cements, aggregates and admixtures) on the properties of fresh and hardened concrete, mix design handling and placement of concrete; and behavior of concrete under various types of loading and environment; test methods, designing concrete mixes for specific applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

CEE 2720 - URBAN TRANSPORTATION PLANNING

Minimum Credits: 3
Maximum Credits: 3
All aspects of the transportation planning process including transportation planning and decision making, transportation modeling, demand and supply analysis, transportation studies, environmental issues and project implementation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CEE 2700; PROG: Swanson School of Engineering
Course Attributes: MCSI - Sustainability Related

CEE 2725 - PUBLIC TRANSPORTATION SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to give seniors and graduate students a basic background in the planning, operations and development of public transportation systems within the context of the overall transportation system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering (PENGR)

CEE 2730 - HIGHWAY ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Highway administration, classification, planning and programming. Geometric design of highways. Traffic characteristics and capacity analyses. Traffic operations and control. Highway design project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2750 - PROJECT DEVELOPMENT AND IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
Project development and implementation - 3 credits: this course provides overview of the process used in project programming and planning, design, construction and operation. The course will emphasize the process used for implementation of major projects with emphasis on construction management and how that task interfaces with other aspects of project development. Students will be involved in a team effort to conceptualize the project, plan alternatives, determine the environmental impact, examine design alternatives, prepare the project for construction documents, recommend award of the contract, manage the contract during construction and determine operational needs of the project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CEE 2800 - ENGINEERING GEOLOGY

Minimum Credits: 3
Maximum Credits: 3
Review of basic geologic principles with emphasis on the importance and influence of geology and geologic processes on engineering projects such as dam sites, foundations, tunnels, mine subsidence, landslides, highways, groundwater problems, and seismic studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering
Course Attributes: Global Studies

CEE 2801 - ADVANCED SOIL MECHANICS

Minimum Credits: 3
Maximum Credits: 3
Mathematical and graphical operations on stress and strain, seepage analysis and flow net, consolidation theory, upper and lower bound analysis, earth pressure theory, bearing capacity, and plasticity based soil models.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering

CEE 2802 - GEOTECHNICAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Fundamentals of the analytical and numerical methods in geotechnical engineering are explored. Emphasis will be placed upon implementation and verification of various formulations into basic programs. Seepage, stress distribution, settlement, consolidation, sheet piling wall, and beams on elastic foundations are some of the topics covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: Global Studies

CEE 2805 - EARTHQUAKE ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Earthquake hazard assessment, time domain and frequency domain analysis of multi-degrees of freedom systems, response spectrum, material nonlinearity, stochastic response and failure assessment, soil-structure interaction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2809 - HYDRAULIC FRACTURING MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This class will prepare students to wisely and critically design hydraulic fracturing treatments as well as make informed recommendations to employers, governments, and communities about the risks and benefits of hydraulic fracturing methods. Upon completion of this course, students will be equipped to use engineering formulae to estimate hydraulic fracture dimensions, evaluate strengths and weaknesses of various modeling approaches, characterize subsurface conditions from wellbore pressure analysis, make sound recommendations for monitoring, and compare and contrast approaches and risks for a range of application domains.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CEE 2814 - SLOPES & EARTH RETAINING STRUCT

Minimum Credits: 3
Maximum Credits: 3
Conventional methods and recent advances in slope stability analyses; classical and modern earth pressure theories; design of rigid and flexible retaining structures; earth dams, their design and stability.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering

CEE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

CEE 2996 - SPEC INVSTGTN FOR M.S. STUDENTS

Minimum Credits: 1
Maximum Credits: 9
A special project course in which students may broaden their knowledge by studying approved topics or problems in a specific field within the department under the guidance of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

CEE 2997 - RESEARCH, M.S.

Minimum Credits: 1
Maximum Credits: 15
Non-thesis option research project for the MS Degree under the guidance of a civil engineering faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

CEE 2999 - M.S. THESIS

Minimum Credits: 1
Maximum Credits: 15
Scheduled discussion periods with the student's advisor. Literature survey, selection of thesis topic, development of research methods and procedures, and preparation of thesis under the guidance of a civil engineering faculty member.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

CEE 3333 - ADVANCED FINITE ELEMENT METHODS

Minimum Credits: 3
Maximum Credits: 3
This second course in the finite element method focuses on the challenges and solution strategies for nonlinear boundary value problems in mechanics. Topics include nonlinear heat transfer as well as geometric and material nonlinearity in solid mechanics. In addition, an overview is presented of various transient analysis techniques (i.e. time integration) within the finite element method.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Civil & Environmental Engineer (PHD)

CEE 3414 - ADVANCED HYDROLOGY

Minimum Credits: 3
Maximum Credits: 3
Fundamental and advanced theories and processes of hydrology. Topics to cover include processes of water in the atmosphere, over land surface, and within soil; advanced representation of infiltration and evapotranspiration processes; partitions of water and energy budgets at the land surface; snow and snowmelt processes; applications of remote sensing (e.g., Satellite and radar), and flood and drought analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CEE 3501 - ENVRNMTL ENGRG PROCESSES 1

Minimum Credits: 3
Maximum Credits: 3
Theory and applications of physical and chemical principles to water and wastewater treatment and disposal. Mixing, equalization, coagulation, sedimentation, filtration, disinfection and solids handling.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering
Course Attributes: Global Studies

CEE 3502 - ENVRNMTL ENGRG PROCESSES 2

Minimum Credits: 3
Maximum Credits: 3
Theory and applications of aerobic, anoxic and anaerobic biological processes in environmental quality control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering or (PREQ: CEE 1503 or CET 1141; PROG: Undergraduate School of Engineering)
Course Attributes: Global Studies

CEE 3609 - ADVANCED TOPICS IN LIFE CYCLE ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
Life cycle assessment (LCA) is a tool for evaluating the environmental impacts of a product or process by documenting energy and material flows from inception to ultimate disposal. This course teaches framework, methods, and tools that can be applied to decision making in the design, construction, operation, and maintenance of the built environment. Topics include the principles of life cycle assessment, case studies of applications of life cycle assessment, methods for life cycle inventory, and methods for life cycle impact assessment. The course aims to encourage systems thinking and to facilitate life cycle applications to graduate students' individual research topics. Students can expect to develop a project and paper applying LCA to their research topic. In most cases, students will produce a publishable journal article at the end of the semester.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Related

CEE 3714 - ADVANCED PAVEMENT DESIGN & ANAL

Minimum Credits: 3
Maximum Credits: 3
Theoretical models for analysis of pavement systems. Design and analysis of pavements through the use of transfer functions relating pavement response to pavement performance. Evaluation of current pavement design practices and procedures. Economic evaluation of highway and airport pavements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering

CEE 3996 - SPECIAL INVSTGTN FOR PH.D. STDNT

Minimum Credits: 1
Maximum Credits: 6
A special project course in which advanced students may broaden their knowledge by studying approved topics or problems in a specific field within the department under the guidance of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

CEE 3997 - RESEARCH, PH.D

Minimum Credits: 1
Maximum Credits: 15
Directed research and study for the preparation of the Ph.D. Dissertation proposal.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

CEE 3999 - PH.D. DISSERTATION

Minimum Credits: 1
Maximum Credits: 15
Scheduled discussion periods with the student's advisor. Literature survey, selection of dissertation topic, development of research methods and procedures, and preparation of the dissertation, under the guidance of a civil engineering graduate faculty member.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Classics

CLASS 1050 - DIGITAL METHODS FOR HUMANISTIC RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Texts hide secrets from us humans that are manifestly obvious to computers: all we need to do is crack the code. This course teaches students with zero coding experience to use computers to reveal hidden insights from digitized texts. Students will learn to make those texts "speak" by transforming them into dynamic visuals and interactive websites: in this manner, Hamlet becomes a chart of gender-coded language; a history of Rome becomes a map of the empire's most frequently referenced battles; and much more. Over the course of the semester, students will apply digital methods to a research project of their own choosing. In addition to adding a valuable tool to their research repertoire, students will leave with coding and web design skills highly sought after in other career contexts.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

CLASS 2019 - GLOBAL ISSUES THROUGH CLASSICS 1

Minimum Credits: 1
Maximum Credits: 1
This course represents the first half of a two-semester graduate proseminar introducing students to global issues through ancient Greek and Roman sources in translation. The course proposes that global issues are not only transnational but in fact transhistorical: that is to say, the processes of connection and disruption, inequality, precarity, and violence, associated with the uneven flows of people and power through space and over time can be found operating around the ancient world as much as in the modern. Consequently, not only can ancient texts, sources, and ideas be used to enrich our understanding of today's global issues, but methods from Global Studies can also be usefully applied to probe these same processes in antiquity. Topics may include: poverty and inequality; war, peace, and diplomacy; citizenship and xenophobia; indigeneity and nationalism; migration and mobility; center versus periphery; terrorism; imperialism; conceptions of race and ethnicity; and the organization of knowledge and circulation of information. Students are expected to complete weekly readings of ancient texts, and to prepare materials for discussions of ancient and contemporary global issues.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLASS 2020 - GLOBAL ISSUES THROUGH CLASSICS 2

Minimum Credits: 2
Maximum Credits: 2
This course is the continuation of a two-semester graduate proseminar investigating contemporary global issues through ancient Greek and Roman sources in translation. The course proposes that global issues are not only transnational but in fact transhistorical: that is to say, the processes of connection and disruption, inequality, precarity, and violence, associated with the uneven flows of people and power through space and over time can be found operating around the ancient world as much as in the modern. Consequently, not only can ancient texts, sources, and ideas be used to enrich our understanding of today's global issues, but methods from Global Studies can also be usefully applied to probe these same processes in antiquity. Topics may include: poverty and inequality; war, peace, and diplomacy; citizenship and xenophobia; indigeneity and nationalism; migration and mobility; center versus periphery; terrorism; imperialism; conceptions of race and ethnicity; and the organization of knowledge and circulation of information. Students are expected to complete weekly readings of ancient texts, to prepare materials for discussions of ancient and contemporary global issues, and to develop an independent research project or paper.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLASS 2090 - TOPICS IN CLASSICS

Minimum Credits: 3
Maximum Credits: 3
Close study of selected topics in classical studies. Course may be repeated for credit provided material covered is different.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLASS 2140 - ANCIENT POETRY AND RECEPTION

Minimum Credits: 3
Maximum Credits: 3
Students will read, in translation, a selection of Greek and Roman poets and the reception of their works across varying genres, cultures and timeframes. Particular focus will be placed on the specific literary, cultural and historical contexts, those in which the authors wrote and those in which their works were received.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLASS 2301 - ANCIENT PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
This is a beginning to intermediate level graduate seminar in ancient philosophy, with emphasis on Plato and Aristotle, taken almost exclusively by students in the doctoral program, usually during their first or second year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLASS 2319 - FROM PHILO TO PHILOPONUS: AN INTRODUCTION TO THE HISTORY OF PHILOSOPHY IN LATE ANTIQUITY

Minimum Credits: 3
Maximum Credits: 3
This course is designed thematically and historically to expand the course offerings of the Departments of Classics and Philosophy. The history of philosophy in Late Antiquity is lamentably neglected by historians of ancient philosophy, even though the thinkers of this period made crucial and formative contributions to the development of Western philosophy, theology, and science. The aim of this course is to provide students with a clear sense of the cultural and social forces that shaped the doctrinal and philosophical debates and concerns of the first six centuries CE, and to familiarize them with the roots of what was to become medieval and Renaissance philosophy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLASS 2320 - CLASSICS, PHILOSOPHY, AND ANCIENT SCIENCE GREEK AND LATIN SEMINAR 1

Minimum Credits: 3
Maximum Credits: 3
Bringing together students and faculty members, the aim of this course is to read and discuss a variety of Ancient Greek and Latin authors in their original language. The format of the course is flexible. Each participant translates a portion of text and singles out topics for discussion, whether philological, philosophical or methodological in nature. All members are encouraged to interrupt and participate as the mood strikes. We attempt to cover authors both central and at the margins of the curriculum, depending on students' interest. The course alternates weekly between Greek and Latin authors.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

CLASS 2321 - CLASSICS, PHILOSOPHY, AND ANCIENT SCIENCE GREEK AND LATIN SEMINAR 2

Minimum Credits: 3
Maximum Credits: 3
Bringing together students and faculty members, the aim of this course is to read and discuss a variety of Ancient Greek and Latin authors in their original language. The format of the course is flexible. Each participant translates a portion of text and singles out topics for discussion, whether philological, philosophical or methodological in nature. All members are encouraged to interrupt and participate as the mood strikes. We attempt to cover authors both central and at the margins of the curriculum, depending on students' interest. The course alternates weekly between Greek and Latin authors.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

CLASS 2390 - TOPICS IN ANCIENT PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
Study of selected topics in the area of ancient philosophy. Course may be repeated for credit if the material covered is different.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

CLASS 2392 - ARISTOTLE'S CONCEPT OF NATURAL SCIENCE

Minimum Credits: 3
Maximum Credits: 3
Among theoretical forms of investigation and knowledge, Aristotle distinguishes mathematics, natural science and first philosophy (metaphysics). This seminar explores Aristotle's understanding of the aims, methods and the conceptual and explanatory structure of natural science, and the relationship between it and the other forms of theoretical inquiry.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

CLASS 2547 - ARISTOTLE'S PHILOSOPHY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This seminar explores Aristotle's views on the nature of science, such as explanation, causation, demonstration, and necessity. We will study a number of Aristotle's works, including the analytics and physics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLASS 2975 - TEACHING CLASSICAL LANGUAGES

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to methods, strategies, and best practices for teaching the languages and cultures of the ancient Mediterranean. In this course, students will build both theoretical knowledge and practical skills for the classroom, exploring different methodologies for teaching while also developing their own personal teaching philosophies. Students will create a variety of materials for use in the classroom and academic job market and develop classroom strategies to improve their effectiveness as educators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

CLASS 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Independent study on classical topics for graduate students.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

CLASS 2992 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Directed study on classical topics for students in the graduate program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

CLASS 2995 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Directed study on classics topics for students in the graduate program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Clinical Nurse Specialist

NURCNS 2161 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Students elect an area of interest and work with a specific faculty member to meet agreed upon objectives.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

NURCNS 2352 - FAMILY THEORY/THERAPY TECHNIQUES

Minimum Credits: 2
Maximum Credits: 2
This course examines models of community mental health and mental health nursing from a holistic nursing perspective with a focus on family mental health and family functioning. Theories and research about family dynamics and processes are examined as the student develops a conceptual framework to guide clinical practice. Clinical therapeutics focus on the use of interventions for maintaining functional and altering dysfunctional patterns of responses with family systems and in a selected clinically related management role in community mental health services.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURCNS 2352D - FAMILY THEORY/THERAPY TECHNIQUES

Minimum Credits: 2
Maximum Credits: 2
This course examines models of community mental health and mental health nursing from a holistic nursing perspective with a focus on family mental health and family functioning. Theories and research about family dynamics and processes are examined as the student develops a conceptual framework to guide clinical practice. Clinical therapeutics focus on the use of interventions for maintaining functional and altering dysfunctional patterns of responses with family systems and in a selected clinically related management role in community mental health services.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURCNS 2353 - FAMILY THERAPY ROLE SEMINAR AND CLINICAL PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This clinical practicum is taken concomitantly with NURCNS 2352 and includes clinical experiences as a family therapist. Experiential seminars are held. Knowledge gained from theory course is applied and synthesized into a conceptual framework for advanced nursing practice.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURCNS 2354 - INDIVIDUAL PSYCHOTHERAPY THEORY

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the theory relevant to individual psychotherapy. The emphasis is on preparing the student to provide appropriate models of psychotherapy within the managed care and private practice environments.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURCNS 2355; PROG: Graduate School of Nursing

NURCNS 2354D - INDIVIDUAL PSYCHOTHERAPY THEORY

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the theory relevant to individual psychotherapy. The emphasis is on preparing the student to provide appropriate models of psychotherapy within the managed care and private practice environments.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURCNS 2355; PROG: Graduate School of Nursing
Course Attributes: Distance Education

NURCNS 2355 - INDIVIDUAL PSYCHOTHERAPY PRACTCM

Minimum Credits: 1
Maximum Credits: 1
The goal of this practicum is to provide the student with an opportunity to gain skills in the practice of individual psychotherapy with patients across the life span and in different populations. The student will be expected to provide psychotherapy to patients through the beginning, middle, and end phases of treatment, utilizing concepts learned in NURCNS 2354 individual psychotherapy theory.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURCNS 2354

NURCNS 2361 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
An in-depth study in a particular area of interest by arrangement with a designated faculty member.
Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis

NURCNS 2850 - CNS ROLE IMPLEMENTATION

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide a framework for clinical nurse specialist (CNS) practice that is organized around the three spheres of influence (patient, nursing personnel, organization/network) that encompass consumers of CNS services. Students are introduced to unique competencies in each sphere of influence as operationalized in acute care. Emphasis will be placed on acquisition of skills needed to develop population-based programs of care; facilitate systems that promote innovative, cost-effective and comprehensive care; develop and implement evidence-based practice initiatives; and collaborate with health team members to improve health care delivery and patient outcomes. Using model cases and problems derived from their practice, students examine how leadership, consultation and collaboration skills can be used to solve problems for patients/populations, health team members, and organizations/systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURCNS 2851 - CNS CLINICAL PRACTICUM 1

Minimum Credits: 1
Maximum Credits: 5
This practicum is the first of two clinical practicums designed to provide experience in role development for the Clinical Nurse Specialist (CNS). Emphasis is placed on enhancing competencies within the three spheres of influence of the CNS (patient, nursing personnel, organization/network) and developing characteristics essential to CNS practice.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NUR 2850

NURCNS 2852 - CNS CLINICAL PRACTICUM 2

Minimum Credits: 1
Maximum Credits: 4
This practicum is designed to provide experience in role development for the clinical nurse specialist (CNS). Emphasis is placed on further refinement of characteristics essential to CNS practice and competencies
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURCNS 2850

NURCNS 2853 - CLINICAL EMPHASIS SPECIALTY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a comprehensive theoretical and practical foundation for advanced nursing care of adult-gerontology patients with dysfunctions/alterations in the selected area of clinical specialization. The course integrates the pathophysiology of dysfunctions/alterations in the selected area with appropriate diagnostic parameters and management strategies. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2004; PROG: NURS

NURCNS 3039 - DNP-CNS ROLE PRACTICUM

Minimum Credits: 1
Maximum Credits: 10
This course is designed to provide a culminating practicum experience for the DNP clinical nurse specialist (CNS). Students will focus on promoting evidence based practice as interdisciplinary team members and providing high quality, cost effective care in a dynamic health care environment. Emphasis is placed on further refinement of competencies within the three spheres of influence of the cans (patient, nursing personnel, and systems) and further development of characteristics essential to CNS practice at the doctoral level.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

Clinical Rehab and Mental Health Counseling

COUN 2714 - MEDICAL, PSYCHOSOCIAL, AND ASSISTIVE TECHNOLOGY CONSIDERATIONS IN DISABILITY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to allow counseling professionals to understand, interpret, and apply medical information relevant to the counseling relationship. Students examine major chronic illnesses and disabilities to obtain a theoretical and practical understanding of the implications of these conditions on all areas of functioning and participation, including psychosocial adaptation, interpersonal relationships, sexuality, education, employment, and independent living. Course content will explore individual response to disability, including the role of families, communities, other social networks , and the role of integrated behavioral healthcare in facilitating outcomes. Technology interventions for major functional areas will be discussed and demonstrated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2716 - MEDICAL & PSYCHOSOCIAL ASPECTS OF DISABILITY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to prepare counseling professionals to become skillful interpreters and users of medical information and terminology. Students examine major chronic illnesses and disabilities in order to obtain a practical and theoretical understanding of the implications of these conditions on all areas of functioning and participation, including interpersonal relationships, sexuality, education, employment, and independent living.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2716 - MEDICAL & PSYCHOSOCIAL ASPECTS OF DISABILITY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to prepare counseling professionals to become skillful interpreters and users of medical information and terminology. Students examine major chronic illnesses and disabilities in order to obtain a practical and theoretical understanding of the implications of these conditions on all areas of functioning and participation, including interpersonal relationships, sexuality, education, employment, and independent living.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COUN 2720 - FOUNDATIONS OF COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course is an investigation of the historical, philosophical, legislative, and clinical dimensions, scope, and practice of counseling. Through interactive discussions and practical exercises, students will understand the roles of counselors and the various settings and systems in which they work. The course also underscores the importance of developing a counselor identity, encouraging students to reflect on personal values, strengths, and areas for growth to become effective and authentic practitioners.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel

COUN 2721 - CULTURAL CONSIDERATIONS IN COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course is designed to examine the practice of multicultural counseling, emphasizing awareness, knowledge, and skills development. Through rigorous self-examination, students will explore their own cultural identities, biases, and belief systems. Topics covered include foundational theories and models in multicultural counseling, the intersections of identity and oppression, strategies for promoting social justice and advocacy within counseling contexts, recognition and mitigation of implicit bias, effective cross-cultural communication techniques, and understanding the pervasive impact of microaggressions and generational trauma. Throughout the course, an emphasis is placed on fostering cultural humility and its importance in developing connections with clients from diverse backgrounds. Evaluation of learning outcomes will be conducted through a blend of theoretical exploration, experiential learning opportunities, and critical analysis of historical and contemporary cultural events.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel

COUN 2723 - ASSISTIVE TECHNOLOGY TO PROMOTE MENTAL & PHYSICAL FUNCTIONING

Minimum Credits: 2
Maximum Credits: 2
This course will address aspects of assistive technology for use at home, in education and the workplace. Topics will include legislation, computer access, ergonomics, mobility, and adaptations for visual, auditory, motor, cognitive and mental health impairments. Field trips and guest speakers will provide unique experiences and insights.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2724 - CAREER COUNSELING & VOCATIONAL ISSUES

Minimum Credits: 3
Maximum Credits: 3
This course focuses on theory and practice of career and vocational counseling. This course reviews culturally responsive models of career development theories and career counseling practices. Students learn to incorporate theory into career-specific and mental health counseling practice. Students will learn to conceptualize the interrelationships among and between work, socioeconomic standing, wellness, disability, trauma, relationships, and other life roles and factors. The course also emphasizes vocational issues including job placement, client-readiness, job development, job modification, and workplace culture and attitudes. Content includes applied practice analyzing transferable skills, functional assessments, and work-related supports for achieving and maintaining meaningful employment.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2724 - CAREER COUNSELING & VOCATIONAL ISSUES

Minimum Credits: 3
Maximum Credits: 3
This course focuses on theory and practice of career and vocational counseling. Module 1 of this course focuses on models of theories of career development and career counseling, with cultural considerations taken into account. Students learn to incorporate theory into career counseling practice. Module 2 emphasizes vocational issues including job placement, pre-placement analysis, client-readiness, job development, job modification, and employer culture and attitudes. Module 2 content includes sources of occupational data, labor market analysis, job analysis, job seeking skills, and procedures for analyzing transferable work skills. Students learn various employment alternatives including competitive employment, supported employment, self-employment, etc.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COUN 2725 - FOUNDATIONS OF COUNSELOR ROLES & RESPONSIBILITIES

Minimum Credits: 1
Maximum Credits: 1
This course provides additional instructional material regarding counselor roles and responsibilities. Various practice settings and functions of counselors, as well as organizational structures, standards, and case management, will be highlighted.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2725 - FOUNDATIONS OF COUNSELOR ROLES & RESPONSIBILITIES

Minimum Credits: 1
Maximum Credits: 1
This course provides additional instructional material regarding counselor roles and responsibilities. Various practice settings and functions of counselors, as well as organizational structures, standards, and case management, will be highlighted.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COUN 2726 - SUBSTANCE ABUSE AND ADDICTIONS COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to substance abuse counseling. The expected student outcomes of the course include: develop understanding of substance use disorders; develop evidence-based addiction counseling competencies; and increase competence in providing substance abuse evaluation, education, and treatment services. Students are introduced to the theories of etiology and intervention for alcohol and substance use, abuse, and addiction. Students explore community resources proving substance use intervention.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2726 - SUBSTANCE ABUSE AND ADDICTIONS COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to substance abuse counseling. The expected student outcomes of the course include: develop understanding of substance use disorders; develop evidence-based addiction counseling competencies; and increase competence in providing substance abuse evaluation, education, and treatment services. Students are introduced to the theories of etiology and intervention for alcohol and substance use, abuse, and addiction. Students explore community resources proving substance use intervention.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COUN 2730 - CULTURAL CONSIDERATIONS IN COUNSELING

Minimum Credits: 2
Maximum Credits: 2
This course is designed to increase multicultural awareness, knowledge, and skills in the competencies necessary to effectively work with and relate to ethnically and culturally diverse clients. Students will examine their own culture, attitudes, beliefs and internalized messages. Knowledge and skills in the area of multicultural counseling will be explored and practiced. Application of these skills and knowledge will be evaluated through direct observation in the community. Students will learn about a variety of topics including theories and models of multicultural counseling, intersectionality, social justice and advocacy, implicit bias, cross-cultural communication, microaggressions and generational trauma. Cultural humility will be introduced as a process to help build authentic relationships with clients of different cultural and ethnic backgrounds. The course will also expose students to historic and current cultural events.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2731 - FOUNDATIONS OF REHABILITATION & MENTAL HEALTH COUNSELING

Minimum Credits: 3
Maximum Credits: 3
The course provides an overview of the professional practice of counseling. The content includes the origins of counseling and rehabilitation, the professions associated with rehabilitation and mental health counseling through the philosophy, legislative, and clinical history of the disciplines. The goal of studying history and foundations is to gain perspective on the nature and scope of counseling practice. Students are exposed to the requisite knowledge and skills for effective practice. Students understand need for, and develop skills for professional and sociopolitical advocacy for the counseling professions and service recipients. The course also provides fundamental knowledge about psychosocial aspects of disability, including models of disability and adjustment to disability.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2732 - HUMAN DEVELOPMENT ACROSS THE LIFESPAN

Minimum Credits: 3
Maximum Credits: 3
This course explores human development across the lifespan, by reviewing theories encompassing physical, cognitive, social, cultural, and emotional dimensions. From the prenatal period through aging and death, students will engage with the intricate processes and milestones of human growth and change. Clinical approaches tailored to each developmental stage will be examined, providing insight into effective interventions and therapeutic strategies. Students will acquire an understanding of the intersectionality between human development and cultural contexts to guide their case conceptualization and treatment approaches with clients of diverse identities and lived experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2733 - COUNSELING SKILLS & TECHNIQUES

Minimum Credits: 3
Maximum Credits: 3
This is an experiential course where students will learn advanced counseling skills and apply them into clinical practice. The class will consist of three themes, including: (1) listening skills, building trust and rapport, and multicultural competencies; (2) development and application of counseling skills; (3) clinical documentation and progress reports. Class time will be utilized for practicing counseling techniques and styles through class activities, demonstrations, and role-plays. This course requires students to conduct, video-record, and document ongoing counseling sessions with a simulated client. Students are expected to effectively conduct 50-minute goal-directed counseling sessions with a cross-theoretical approach by the end of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2734 - COUNSELING THEORIES AND TECHNIQUES

Minimum Credits: 3
Maximum Credits: 3
This course provides an in-depth overview of major counseling theories, principles, and techniques. Theories and techniques are explored with an emphasis on multicultural considerations. Emphasis is on both theory and practical applications of the various approaches. Students are encouraged to learn the theoretical principles of counseling theories and begin to integrate various theories to develop their personal understanding and approach to counseling. Instruction includes experiential learning, such as in-class role-plays.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel

COUN 2736 - CRISIS COUNSELING, RISK MANAGEMENT AND DISASTER PREPAREDNESS

Minimum Credits: 2
Maximum Credits: 2
The course provides guidelines and parameters for risk assessment and risk management of harm to self and/or others. Students will demonstrate proficiency in establishing risk assessment/management plans for clinical practice. Students examine research on crisis theory, resolution, and resilience. Students will learn the effects of crises, disasters, and other trauma-causing events on persons of all ages. The course examines diverse crisis situations and the assessment and treatment strategies used by counselors to assist individuals, groups, and organizations in managing and resolving crises. Students learn how people deal with crises, explore personal crisis experiences, and develop crisis intervention competency.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2737 - CLINICAL, DIAGNOSTIC AND FUNCTIONAL ASSESSMENT IN COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course is focused on the psychometric qualities, indications for use, administration and interpretation of various assessment procedures. Procedures include interview and mental status examination, psychological and neuropsychological testing, functional assessment, vocational testing and vocational evaluation, and specialized assessments such as EMA. Professional and ethical standards and the effect of culture and disability on assessment are included. Students learn to apply assessment findings to goal setting and intervention planning through a series of case studies that require interpretation of test data in the context of a client's life (as presented in the case study). Students are required to demonstrate proficiency in written and oral reporting and communicating assessment results to professionals and clients. The course includes a lab where student teams develop, norm administer and interpret naturalistic assessment tool.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel

COUN 2738 - DIAGNOSIS & TREATMENT OF COGNITIVE AND MENTAL HEALTH DISORDERS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on three inter-related areas: 1) using the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) to classify mental health and cognitive disorders, as well as differential diagnoses, 2) conducting semi-structured diagnostic interviews, and 3) identifying the practice standards for treating mental health and cognitive disorders across delivery modalities within the continuum of care, including psychopharmacology. Students learn about the diagnosis of cognitive, behavioral, and mental health disabilities through extensive review of the current edition of the Diagnostic and Statistical Manual and case studies. Students will then apply this knowledge about diagnostic criteria to clinical interviewing, practicing diagnostic interviews with the Structured Clinical Interview for DSM-5 Disorders (SCID-5-CV). Students will also learn about first-line treatments for cognitive, behavioral, and mental health disorders according to existing practice standards and guidelines. The influence of cultural factors in diagnosis and multicultural identity treatment are integrated into all aspects of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2739 - GROUP COUNSELING

Minimum Credits: 3
Maximum Credits: 3
In this course, students will learn the basic issues and key concepts of group process. Students will learn how to apply these concepts in working with a variety of groups. The following CACREP standards are addressed in this course: a) theoretical foundations of group counseling and group work, b) dynamics associated with group process and development, c) therapeutic factors and how they contribute to group effectiveness, d) characteristics and functions of effective group leaders, e) approaches to group formation, including recruiting, screening, and selecting members, f) types of groups and other considerations that affect conducting groups in varied settings, and g) ethical and culturally relevant strategies for designing and facilitating groups. Students will research a group intervention and develop an evidence-based group proposal. Participation in an experiential group for a minimum of 10 hours is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2740 - CLINICAL APPLICATIONS IN COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide students with basic skills needed for 1) clinical interviewing for intake, assessment, and case conceptualization purposes, 2) application of an evidence-based counseling intervention: Cognitive Behavior Therapy (CBT), and 3) an understanding of other contemporary cognitive and behavioral interventions. Throughout the semester, students will practice counseling skills in and outside of class. Practices outside of class will be recorded for self-, peer-, and instructor-evaluation. At the end of the semester, students will conduct a full CBT session with a standardized patient (SP). Student performance will be assessed to determine competency for entry-level practice and specific detail for remediation will be provided if needed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2741 - CASE CONCEPTUALIZATION & TREATMENT PLANNING

Minimum Credits: 3
Maximum Credits: 3
This course presents the process of synthesizing relevant client information including client history, interview, and assessment results, along with contextual information (environmental and demand information) in order to achieve accurate case conceptualization. Students learn and demonstrate proficiency in goal setting, treatment planning, case monitoring, and measurement-based care using individual, evolving client case studies. Students explore and develop a compendium of community resources.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2742 - LEGAL, ETHICAL & PROFESSIONAL ISSUES IN COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to legal, ethical, and professional issues pertaining to the practice of clinical mental health counseling. This course will offer an in depth focus on the relevant knowledge, awareness and skills necessary to practice safely and responsibly in counseling. Students will examine a variety of complex legal and ethical issues that confront clinical mental counselors as they work with clients and colleagues within difference counseling systems. Codes of ethics for clinical mental health counselors will be examined, as well as decision making models that will facilitate students informed decision making when faced with ethical and legal issues in the workplace. Clinical mental health counselor standards of practice will be examined.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2743 - FAMILY AND COUPLES COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course will introduce advanced graduate students to utilizing empirically supported approaches and skills-based strategies when conducting counseling with couples and families. Students will expand their clinical competencies in case conceptualization from interventions with individuals to dynamic systems, learn techniques for identifying and setting goals for treatment, rehearse introducing communication and problem-solving strategies in sessions, and demonstrate competency in conflict management, emotion regulation, and using directive approaches with clients in sessions. This course will expose students to the dynamics of contemporary family structures, living patterns and lifestyles, and the challenges experienced by counselors when working with couples and families in distress. The learning environment will be active and student-directed, relying more on students' participation in class discussions, and small group discussions, case-studies, and role-plays, and less on passive learning strategies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2744 - EVIDENCE BASED PRACTICE IN COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course prepares students to be competent counselors that utilize evidence-based practice in their clinical practice. Students will learn to (1) understand the rationale for using evidence-based practice, (2) use guidelines for determining acceptable evidence, (3) effectively locate free access ebp articles, and (4) create program evaluation plans. At the end of the course, students are required to make evidence-based practice recommendations for clinical case studies. Students also must effectively design a program evaluation protocol for a complex counseling intervention.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: HRS PLAN: Clinical Rehab & Mental Health Counseling (CRMHC-MS) or Rehabilitation Counseling (MSRC-SP)

COUN 2746 - COUNSELING PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
Students participate in a minimum of 100 hours of counseling practicum with at least 40 hours of direct clinical service. Students receive supervision from an assigned on-site clinical supervisor and clinical supervision from a designated faculty clinical mentor. Practicum students increase their awareness and understanding of the differences in values, beliefs, and behaviors of individuals from diverse populations.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2747 - CONCEPTUALIZATION, TREATMENT PLANNING, & CASE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course reflects a paradigm for integration of assessment data, diagnoses, and models of case conceptualization to establish client goals and formulate treatment plans. The course incorporates academic training, experiential learning, and feedback from both peers and instructor in the context of individual work, group projects and simulated treatment team meetings. Students learn and demonstrate proficiency in diagnostic and clinical formulation, contextual and cultural assessment, and goal setting followed by pragmatic construction of treatment plans that incorporate components of case management and caseload management. Course materials and assignments are based on case studies that require consideration of evidence-based practice and measurement-based care. It is expected that students will enhance clinical and diagnostic assessment and problem-solving skills, teamwork, and professional clinical competencies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2748 - EVIDENCE BASED PRACTICE AND RESEARCH METHODS IN COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course prepares students to be competent counselors who utilize evidence-based practice in their clinical practice. Students will learn to (1) understand the basic statistical and methodological concepts that underlie clinical research, (2) understanding ethical and cultural considerations in research, (3) understand the rationale for using evidence-based practice, (4) use guidelines for determining acceptable evidence, (5); (6) effectively communicate with clients regarding evidence-based practice, and (7) create program evaluation plans.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2749 - CLINICAL COUNSELING INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
Students participate in a minimum of 600 hours of counseling internship with at least 240 hours of direct clinical service. Students receive supervision from an assigned on-site clinical supervisor with requisite credentials, and clinical supervision from a faculty clinical mentor with the requisite credential and/or license. Internship students increase their awareness and understanding of the differences in values, beliefs, and behaviors of individuals from diverse populations. The internship reflects the comprehensive work experience of a mental health counselor. This course is the final preceptorship prior to the completion of the degree.

Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Clinical Mental Health Counsel

COUN 2751 - CLINICAL COUNSELING CAPSTONE EXAM

Minimum Credits: 1
Maximum Credits: 3
The clinical counseling capstone courses serve as the comprehensive examination. The courses focuses on student demonstration of knowledge and skills that reflect the competencies of the mental health counselor as defined by this program. Students will be assessed on their knowledge and skills accumulated through coursework and clinical experiences. The courses require students to synthesize and apply advanced concepts into clinical practice. The courses implement a case study approachto demonstrate their knowledge and skills. Students are expected to analyze and synthesize case materials for case conceptualization and then develop appropriate and realistic intervention plans. Students are expected to apply appropriate counseling techniques included in their intervention plan via role-play simulations. Successful completion of this comprehensive examination is needed for the student to demonstrate mastery of graduate study in mental health counseling.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2752 - SPECIAL TOPICS IN COUNSELING

Minimum Credits: 1
Maximum Credits: 1
A special topics course. Content will vary from term to term depending on instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2753 - SPECIAL TOPICS IN COUNSELING 1

Minimum Credits: 1
Maximum Credits: 1
A special topics course. Content will vary from term to term depending on instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2755 - CLINICAL COUNSELING MENTORSHIP

Minimum Credits: 1
Maximum Credits: 3
This course provides a structure for clinical oversight and guidance through structured student-advisor interaction over the course of the program's first year of study. The objective of the course is to facilitate the clinical application of knowledge and skills students have acquired from didactic coursework. This course involves mentoring and ongoing formal and informal evaluation to ensure that students achieve the required level of competency for clinical counseling practice.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2756 - CRISIS COUNSELING, RISK MANAGEMENT AND DISASTER PREPAREDNESS

Minimum Credits: 3
Maximum Credits: 3
Students review research on crisis theory, resolution, and resilience, and the impact of crises, disasters, and other traumatic events on persons across the lifespan. The course examines diverse crisis situations and the assessment and intervention strategies used by counselors to assist individuals, groups, and organizations in managing and resolving crises, including skill development for immediate responses to crises (Psychological First Aid) and skills for meeting needs of clients in the more extended aftermath (Skills for Psychological Recovery). Skills in prevention and response to community violence are also explored, including training in Counseling on Access to Lethal Means (CALM). Factors related to counselor resilience and burn-out assessment is also incorporated. The course reviews models for safety/risk assessment and management of harm to self and/or others; students demonstrate their competence in risk/safety assessment and in safety plan development via video recordings with simulated clients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COUN 2760 - CLINICAL COUNSELING CAPSTONE

Minimum Credits: 0
Maximum Credits: 3
The clinical counseling capstone courses serve as the comprehensive examination. The courses focus on student demonstration of knowledge and skills that reflect the competencies of the clinical rehabilitation and mental health counselor as defined by this program. Students will be assessed on their knowledge and skills accumulated through coursework and clinical experiences. The courses require students to synthesize and apply advanced concepts into clinical practice. The courses implement a case study approach. Students are providing real and/or simulated clients to demonstrate their knowledge and skills. Students are expected to analyze and synthesize case materials for case conceptualization and then develop appropriate and realistic intervention plans. Students are expected to apply appropriate counseling techniques included in their intervention plan via role-play simulations. The courses are delivered over two terms with the first course (Clinical Counseling Capstone) focusing on preparation and practice. If students do not demonstrate readiness for competency evaluation, remediation will be prescribed and deficiencies resolved prior to proceeding. The second course will serve as their competency evaluation (Clinical Counseling Capstone Exam). Successful completion of this comprehensive examination is needed for the student to demonstrate mastery of graduate study in clinical rehabilitation and mental health counseling.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2760 - CLINICAL COUNSELING CAPSTONE

Minimum Credits: 0
Maximum Credits: 3
The clinical counseling capstone courses serve as the comprehensive examination. The courses focus on student demonstration of knowledge and skills that reflect the competencies of the clinical rehabilitation and mental health counselor as defined by this program. Students will be assessed on their knowledge and skills accumulated through coursework and clinical experiences. The courses require students to synthesize and apply advanced concepts into clinical practice. The courses implement a case study approach. Students are providing real and/or simulated clients to demonstrate their knowledge and skills. Students are expected to analyze and synthesize case materials for case conceptualization and then develop appropriate and realistic intervention plans. Students are expected to apply appropriate counseling techniques included in their intervention plan via role-play simulations. The courses are delivered over two terms with the first course (Clinical Counseling Capstone) focusing on preparation and practice. If students do not demonstrate readiness for competency evaluation, remediation will be prescribed and deficiencies resolved prior to proceeding. The second course will serve as their competency evaluation (Clinical Counseling Capstone Exam). Successful completion of this comprehensive examination is needed for the student to demonstrate mastery of graduate study in clinical rehabilitation and mental health counseling.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

COUN 2761 - CLINICAL COUNSELING CAPSTONE EXAM

Minimum Credits: 0
Maximum Credits: 0
The clinical counseling capstone courses serves as the comprehensive examination. The courses focuses on student demonstration of knowledge and skills that reflect the competencies of the clinical rehabilitation and mental health counselor as defined by this program. Students will be assessed on their knowledge and skills accumulated through coursework and clinical experiences. The courses require students to synthesize and apply advanced concepts into clinical practice. The courses implement a case study approach. Students are providing real and/or simulated clients to demonstrate their knowledge and skills. Students are expected to analyze and synthesize case materials for case conceptualization and then develop appropriate and realistic intervention plans. Students are expected to apply appropriate counseling techniques included in their intervention plan via role-play simulations. The courses are delivered over two terms with the first course (Clinical Counseling Capstone) focusing on preparation and practice. If students do not demonstrate readiness for competency evaluation, remediation will be prescribed and deficiencies resolved prior to proceeding. The second course will serve as their competency evaluation (Clinical Counseling Capstone Exam). Successful completion of this comprehensive examination is needed for the student to demonstrate mastery of graduate study in clinical rehabilitation and mental health counseling.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2761 - CLINICAL COUNSELING CAPSTONE EXAM

Minimum Credits: 0
Maximum Credits: 0
The clinical counseling capstone courses serves as the comprehensive examination. The courses focuses on student demonstration of knowledge and skills that reflect the competencies of the clinical rehabilitation and mental health counselor as defined by this program. Students will be assessed on their knowledge and skills accumulated through coursework and clinical experiences. The courses require students to synthesize and apply advanced concepts into clinical practice. The courses implement a case study approach. Students are providing real and/or simulated clients to demonstrate their knowledge and skills. Students are expected to analyze and synthesize case materials for case conceptualization and then develop appropriate and realistic intervention plans. Students are expected to apply appropriate counseling techniques included in their intervention plan via role-play simulations. The courses are delivered over two terms with the first course (Clinical Counseling Capstone) focusing on preparation and practice. If students do not demonstrate readiness for competency evaluation, remediation will be prescribed and deficiencies resolved prior to proceeding. The second course will serve as their competency evaluation (Clinical Counseling Capstone Exam). Successful completion of this comprehensive examination is needed for the student to demonstrate mastery of graduate study in clinical rehabilitation and mental health counseling.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

COUN 2765 - CLINICAL COUNSELING MENTORSHIP

Minimum Credits: 0
Maximum Credits: 0
This course provides a structure for clinical oversight and guidance through structured student-advisor interaction over the course of the program's first year of study. The objective of the course is to facilitate the clinical application of knowledge and skills students have acquired from didactic coursework. This course involves mentoring and ongoing formal and informal evaluation to ensure that students achieve the required level of competency for clinical counseling practice.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Clinical Mental Health Counsel

COUN 2765 - CLINICAL COUNSELING MENTORSHIP

Minimum Credits: 0
Maximum Credits: 0
This course provides a structure for clinical oversight and guidance through structured student-advisor interaction over the course of the program's first year of study. The objective of the course is to facilitate the clinical application of knowledge and skills students have acquired from didactic coursework. This course involves mentoring and ongoing formal and informal evaluation to ensure that students achieve the required level of competency for clinical counseling practice.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

COUN 2766 - INTRODUCTION TO ASSESSMENT AND TREATMENT FOR CHILDREN AND ADOLESCENTS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on three inter-related areas: 1) using the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5TR) to classify mental health disorders in children and adolescents, as well as differential diagnoses, 2) employing a developmental perspective and a focus on the interaction of risk and protective factors in the child's multisystemic context (e.g., family, school, neighborhood), and 3) identifying evidence based interventions for treating mental health disorders in children and adolescents across delivery modalities within the continuum of care, including psychopharmacology. Readings will frequently be supplemented with audio or video clips of actual cases, and case studies for students to present and stimulate class discussions. Factors that influence the helping processes with children, including age, gender, and ethnic differences, and verbal and nonverbal behaviors, will be explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

COUN 2767 - TRAUMA AND GRIEF COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course introduces professional counseling students to the field of traumatic stress studies. The history of the field, prevalence of trauma exposure, and current trauma theory and practice will be reviewed. Consideration is given to responses to a variety of types of traumatic experiences including childhood trauma, race-based trauma, adult sexual assault, combat, domestic violence, homicide, witnessed violence, and others. Trauma responses will be explored in detail, as will societal, cultural, and historical influences on our understanding of the impact of trauma. Prominent treatment approaches will be presented. This course will also examine grief and loss, as well as the grieving process across the lifespan in a variety of cultural contexts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Clinical Mental Health Counsel (CMHC-MS)

Clinical Research

CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
The course provides instruction on the use of computerized methods for clinical research. Dataset manipulation, descriptive statistics, and the graphical presentation of data will be presented using a standard statistical package.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2010 - CLINICAL RESEARCH METHODS

Minimum Credits: 3
Maximum Credits: 3
Clinical research methods provides an overview of the basic research strategies, methods, and goals of clinical research. Topics include study design, data analysis and interpretation, and determination of appropriate methodologies to answer different research questions. Bias and confounding in observational research, the clinical value of diagnostic tests, appropriate use of cross-sectional, case control and cohort study designs, and various statistical modeling used in clinical research will be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2011 - ADVANCED OBSERVATIONAL EPIDEMIOLOGICAL METHODS

Minimum Credits: 1
Maximum Credits: 1
This course is designed to introduce students to advanced observational study design and analysis and to provide students with tools and resources to carry out independent research using observational study design. Lectures will focus on case-control, cohort, case-cohort, nested case-control, and case-crossover design and methods. We will discuss recent manuscripts and apply statistical concepts in hands-on computer sessions to aid in the learning of concepts covered in class. The following goals are proposed to teach investigators to: 1.Critically evaluate literature using case-control, cohort, case-cohort, nested case-control and case-crossover design. 2.Understand and address concepts of study design, bias, matching, stratification, propensity score matching, and inverse probability weighting. 3.Identify methods for handling missing data, rare outcomes and count data. 4.Understand modern techniques for addressing confounding, mediation, and effect modification. 5.Conduct and interpret results from appropriate statistics using Stata.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2021, CLRES 2022, CLRES 2023

CLRES 2020 - BIOSTATISTICS

Minimum Credits: 4
Maximum Credits: 4
This course focuses on basic concepts and statistical methods and their application to problems in the health and biomedical sciences. Topics include data description and summarization, basic probability theory, estimation, and hypothesis testing with emphasis on one- and two-sample comparisons involving continuous and categorical data. Linear regression and analysis of variance will be introduced. Students will develop their analytic skills through the analysis and discussion of large clinical studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: CLRES 2005; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2021 - REGRESSION AND ANOVA

Minimum Credits: 1
Maximum Credits: 1
The course is designed for medical researchers who are not biostatistics majors. Topics covered include multiple linear regression, regression diagnostics, ANOVA, analysis of covariance, confounding, mediation, moderation, and model selection. At the completion of the course, trainees should be able to understand the appropriate uses of ANOVA and linear regression, to assess their appropriateness and

adequacy, to analyze simple datasets taken from the fields of medicine and public health, and to summarize results from regression models via written communication.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2005 and 2020; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2022 - LOGISTIC REGRESSION

Minimum Credits: 1
Maximum Credits: 1
This introductory course in logistic regression modeling is intended for physicians in fellowship training programs and other researchers with a limited background in statistics. The course focuses on regression methods for binary data and on the basics of maximum likelihood inference. At the completion of the course, trainees should be able to understand how logistic regression can be used to address a variety of epidemiologic and clinical questions; to interpret models and assess their appropriateness and adequacy; to develop analytic skills through the analysis of datasets taken from the fields of medicine and public health; and to develop oral and written communication skills through the description of analytic strategies and the summarization and interpretation of results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2005 and 2020 and 2021; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2023 - SURVIVAL ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
This is an introductory course in regression modeling of time-to-event data. It is intended for physicians in fellowship training programs and other researchers with a limited background in statistics. The course focuses on descriptive methods for survival data, survival analysis, and issues pertaining to time-dependent covariates. At the completion of the course, trainees should be able to recognize when it is necessary to account for time in the analysis of yes/no outcomes and appropriately summarize time-to-event data; be able to interpret the survival analysis model and assess the appropriateness and adequacy of the model; be familiar with issues in the design, analysis, and interpretation of studies involving time-dependent covariates; be able to apply analytic skills to the analysis of datasets taken from the fields of medicine and public health; and be able to develop oral and written communication skills through the description of analytic strategies and the summarization and interpretation of results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: (CLRES 2005 and 2020 and 2021 and 2022) or (MEDEDU 2005 and 2020 and CLRES 2021 and 2022); PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2026 - ANALYSIS OF CORRELATED DATA

Minimum Credits: 1
Maximum Credits: 1
CLRES 2026 will provide information on statistical methods for analyzing data arising from multilevel or longitudinal studies. The first half of the course lectures will focus on models for continuous data, including mixed effects models, fixed effects models, and generalized estimating equations. The second half of lectures will extend to analysis in the generalized linear model setting (binary outcomes, count data, etc.) We will show students how to investigate data graphically and descriptively before beginning statistical modeling and will introduce students to topics on missing data, group trajectory modeling, and sample size estimation. We will use homework assignments and articles from multilevel and longitudinal studies to facilitate learning of concepts discussed in class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CLRES 2005 and CLRES 2020 and 2021 and 2022; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2035 - FUNDAMENTALS OF MACHINE LEARNING IN CLINICAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
In this introductory-level course we will cover the main concepts of statistical machine learning, including the theoretical aspect of generalization properties where a model is applied to unseen data, and the practical aspect of applying state-of-the-art models to static and dynamic problems in classification, regression or density estimation. Examples of real-life applications in health and biomedical sciences will be used to illustrate the interest in statistical machine learning. The course does not require advanced knowledge in mathematics or programming. All computations will be done in Stata. The lectures will focus on the essential elements of modern data analysis methods with minimum use of mathematical formulars. Real-life applications will be used to illustrate the interest of causal inference in clinical research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2021 and CLRES 2022

CLRES 2035 - FUNDAMENTALS OF MACHINE LEARNING IN CLINICAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
In this introductory-level course we will cover the main concepts of statistical machine learning, including the theoretical aspect of generalization properties where a model is applied to unseen data, and the practical aspect of applying state-of-the-art models to static and dynamic problems in classification, regression or density estimation. Examples of real-life applications in health and biomedical sciences will be used to illustrate the interest in statistical machine learning. The course does not require advanced knowledge in mathematics or programming. All computations will be done in Stata. The lectures will focus on the essential elements of modern data analysis methods with minimum use of mathematical formulars. Real-life applications will be used to illustrate the interest of causal inference in clinical research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2036 - INTRODUCTION TO CAUSAL INFERENCE

Minimum Credits: 1
Maximum Credits: 1
The course will present an introduction to the concepts and framework in causal inference. In the lectures, causal models will be depicted using directed acyclic graphs (DAG) and defined with nonparametric structural equation models (NPSEM) while target causal parameters will be defined using counterfactuals, principle stratification, and marginal structural models. We will also introduce propensity score modeling, g-computation estimators, and inverse probability weighted estimators. Students will gain practical experience implementing these estimators and learn how to interpret results through in-class discussions and Stata assignments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2036 - INTRODUCTION TO CAUSAL INFERENCE

Minimum Credits: 1
Maximum Credits: 1
The course will present an introduction to the concepts and framework in causal inference. In the lectures, causal models will be depicted using directed acyclic graphs (DAG) and defined with nonparametric structural equation models (NPSEM) while target causal parameters will be defined using counterfactuals, principle stratification, and marginal structural models. We will also introduce propensity score modeling, g-computation estimators, and inverse probability weighted estimators. Students will gain practical experience implementing

these estimators and learn how to interpret results through in-class discussions and Stata assignments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2037 - PRACTICAL MACHINE LEARNING: APPLICATIONS IN CLINICAL RESEARCH USING STATISTICAL PACKAGES

Minimum Credits: 1
Maximum Credits: 1
The aim of this course is to provide hands-on experience using statistical machine learning concepts and software to analyze real datasets. It is intended to be a partner course to CLRES 2035: Fundamentals of Machine Learning in Clinical Research, in order to provide an opportunity to further develop the skills and concepts explored there. We will first cover the basics of opening and exploring datasets in R and RStudio (both freeware). Then we will have one class dedicated to each of the topics covered in CLRES 2035. Students will either bring their own computers to class. The instructors will provide a set of instructions for the students to follow, usually involving R code, and the students and instructors will work through this code and discuss together. This includes actually running the code on students' designated machines, discussing the code's components, reviewing the output together, and interpretation. The course does not require advanced knowledge in mathematics or computer programming. All required concepts involving the execution of statistical software code will be learned as part of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2038

CLRES 2038 - R PROGRAMMING ESSENTIALS FOR DATA SCIENCE

Minimum Credits: 1
Maximum Credits: 1
This introductory course aims to provide students with a solid foundation in using R for data analysis and visualization in the context of data science. Students will gain hands-on experience with R programming, data manipulation, exploratory data analysis, and basic statistical techniques. The course will consist of a combination of lectures, interactive coding sessions, and practical exercises to ensure that students can apply their knowledge effectively. The focus will not be theoretical underpinnings of the analytical methods, but rather how to use R as a programming tool. No prior R programming experience is required, but experience in using other statistical packages may be helpful.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2040 - MEASUREMENT IN CLINICAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
The course focuses on properties of good measurement that are integral to the research process. Specific objectives are to analyze methods for testing psychometric properties (reliability and validity) of psychological instruments and physiological instruments; to evaluate the adequacy of selected scaling methodologies used in research; to apply knowledge of instrumentation to the description of a psychosocial instrument and a physiological instrument for a research proposal; and to synthesize course content with statistical criteria for scale evaluation and make decisions regarding scale revision. The domain sampling model is presented as the major theory of measurement error, with the parallel test model presented as a special case of the domain sampling model. The construct, criterion, and content validity of psychosocial instruments are explored, and methods for evaluating each of these relative to specific instruments are presented. A variety of scaling methodologies, as well as the principles involved in the design and formatting of questionnaires, will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2045 - SURVEY DESIGN AND DATA ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
Survey design and data analysis will provide information on the skills and resources needed to design and conduct survey and techniques of analyzing survey data. The skills include identifying and developing specific survey objectives, designing survey studies, sampling respondents, developing reliable and valid self-administered questionnaires, and administering surveys. The techniques of analyzing survey data include both classic methods such as factor analysis and advanced methods such as item response theory. A majority of lectures will focus on survey research, constructing surveys, response set, survey administration methods, questionnaire construction and programming surveys, sampling and power calculation, maximizing response rates, data coding and entry, reliability and validity, survey data analysis, factor analysis and item response theory. The students will be introduced to the internet based survey and the computerized adaptive testing to broaden their scope of the current survey design and collection. I will use manuscripts of survey data and protocols of completed studies to facilitate learning of concepts discussed in class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: CLRES 2040 or MEDEDU 2040; PLAN: Medical Education (ACM or MS) or Clinical Research (ACM or MS) or Clinical and Translational Sci (PHD)

CLRES 2048 - DATA VISUALIZATION AND COMMUNICATION

Minimum Credits: 1
Maximum Credits: 1
This course equips students with the skills to interpret, evaluate, and create effective data visualizations. By the end of this course, students will be able to clearly and accurately explain the key takeaways from graphs they did not create, while understanding the scope of conclusions that can be drawn from visual analyses. They will develop the ability to objectively and professionally critique visualizations, assess the strengths and weaknesses of design choices, and assess the integrity of a graph to the underlying data. Students will also learn to communicate key insights from their own statistical graphics through writing and presentations tailored to research audiences. They will practice incorporating appropriate statistical language and integrating statistical tests into graphics. In addition, the course emphasizes the creation of readable, accurate, and effective data visualizations using R software. Students will distinguish between data types, select appropriate graph formats and color schemes, label visuals clearly, and apply best practices to create publication-quality graphics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2050 - ETHICS & RESPONSIBLE CONDUCT OF RESEARCH (ONLINE)

Minimum Credits: 1
Maximum Credits: 1
It's far too easy to relegate egregious ethical violations to the past. We reassure ourselves these could never happen now. After all, we have IRBs and rules and regulations we have to follow when conducting research on human subjects and animals. IRBs, and those rules and regulations, like the Belmont Report and the Declaration of Helsinki, are important, helpful, and a good start, but researchers need more. Many of the problems researchers will face during their careers will not be black and white, and it's really important to learn to navigate through the shades of gray. In this fully online, asynchronous course, we will read important foundational texts and a work of fiction, and we'll engage with case studies. You'll interact with fellow course participants on discussion boards, and submit written answers to questions taken from the readings. This course presents an in-depth examination of ethical issues in the conduct of clinical research. Topics include issues related to privacy, confidentiality, protection of human and animal subjects, informed consent and the role of the IRB in ensuring the responsible conduct of research. NOTE: This course meets the NIH Responsible Conduct of Research requirement for 8 hours of Responsible Conduct of Research (RCR) training.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2071 - ADVANCED GRANT WRITING PART 1

Minimum Credits: 3
Maximum Credits: 3
The purpose of the integrated methods course is to build on the skills learned in the methodological core and provide a hands-on research experience. Trainees will learn the phases of the research process from conception to design and, ultimately, to implementation of the research. Through a combination of group sessions and independent work, trainees will use a research topic of their choice to develop their own research proposal in the form of an NIH grant application. The application will include sections on specific aims, background and significance, previous work, and methods. In addition, trainees will review and critique the work of their peers. Mentor must be identified prior to enrollment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2005, 2010, 2020 and 2040; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2072 - ADVANCED GRANT WRITING PART 2

Minimum Credits: 1
Maximum Credits: 1
The purpose of the integrated methods course is to build on the skills learned in the methodological core and provide a hands-on research experience. Trainees will learn the phases of the research process from conception to design and, ultimately, to implementation of the research. Through a combination of group sessions and independent work, trainees will use a research topic of their choice to develop their own research proposal in the form of an NIH grant application. The application will include sections on specific aims, background and significance, previous work, and methods. In addition, trainees will review and critique the work of their peers. Mentor must be identified prior to enrollment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: (CLRES 2005 and 2010 and 2020 and 2040 and 2071) or (MEDEDU 2005 and 2010 and 2020 and CLRES 2040 and 2071); PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2075 - SEMINAR FOR UNDERSTANDING PRINCIPLES AND PRACTICES OF RESEARCH TECHNIQUES (SUPPORT)

Minimum Credits: 0
Maximum Credits: 0
The SUPPORT Seminar is a mandatory twice-monthly series for medical students in the Clinical Scientist Training Program. The purpose of SUPPORT is to provide a forum for medical students to learn about careers in clinical investigation, to present their research in oral and written form, to explore case studies in the responsible conduct of research and the ethics and regulation of human subjects research, and to consecutively peer review colleagues' research products.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2076 - INTRODUCTION TO GRANT WRITING

Minimum Credits: 1
Maximum Credits: 1
Obtaining peer-reviewed grant support is one of the most critical determinants to academic and career success, yet the process is highly challenging. Through select readings and podcasts, the writing of a draft grant application to request funds from one of the many seed programs available to Pitt students and faculty, and class discussions led by a long-time NIH-funded clinical investigator, Introduction to

Grant Writing CLRES 2076 will provide CEED trainees, clinical fellows, post-doctoral students, and junior faculty without any prior grant writing experience with useful knowledge, insights, and skills in the grant writing process to improve their chances of later funding and subsequent career success. Please note that this course is NOT INTENDED for Master's Degree students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Medical Education (ACM or MS) or Clinical Research (ACM or MS) or Clinical and Translational Sci or Graduate Career Development (GCD-ND)

CLRES 2077 - STRATEGIC LEADERSHIP IN ACADEMIC MEDICINE

Minimum Credits: 1
Maximum Credits: 1
Health care professionals regularly occupy leadership roles in research, educational, and clinical arenas, and leadership opportunities abound in academic settings. Yet clinicians have been described as "accidental administrators," lacking training in skills necessary to be an effective to leader. Given the current challenges facing healthcare, increasing reliance on interdisciplinary teams to provide care, and greater emphasis on cost control and quality improvement, the need for clinicians to develop effective leadership skills is paramount. This course is designed for clinician-educators and researchers who want to understand the basics of leadership and management. Through selected readings, this course will develop participants' leadership skills across a variety of domains. Topics covered include understanding how academic medical centers function and how to set team culture, run a meeting, manage time, lead across difference, and create/maintain a five year plan. At the completion of the course, trainees will understanding of the basic principles of leadership and management in the context of academic medicine. *Please note in previous terms, this course was titled "Managing Your Career in Clinical & Translational Science" and "Strategic Leadership".
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2080 - MASTERS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 6
Trainees may register for this course with approval from the mentor and selected faculty of the Degree Granting Programs in Clinical Research Curriculum Committee. The course is designed for trainees who are prepared to undertake their thesis or substantive research project.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2085 - DIRECTED RESEARCH/INDEPENDENT STUDY IN CLINICAL RESEARCH

Minimum Credits: 1
Maximum Credits: 3
For Master of Science and Doctoral Certificate in Clinical and Translational Science students. An independent study project is designed by the student to pursue an area of study within clinical research that is not covered by the established curriculum. It cannot be used to replace required or core courses. The project is designed by the student and requires that an Institute for Clinical Research Education (ICRE) faculty member supervise the project. The student will complete the directed research independent study form, and the faculty preceptor and Director of Academic Programs must approve it. An independent study project may carry 1-3 graduate semester credits, assigned at the faculty member's discretion based on the project proposed. Doctoral CTS students may only register for a maximum of 2 credits.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2086 - CLINICAL RESEARCH TEACHING PRACTICUM

Minimum Credits: 0
Maximum Credits: 3
The objective of this teaching practicum is to provide students the opportunity to design and/or implement a curriculum. This practicum involves curriculum development and implementation (i.e instruction). Each year the course directors will assess whether substantive curriculum development/refinement is necessary prior to instruction.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2106 - ASKING AND ANSWERING QUESTIONS USING HEALTH CARE DATA

Minimum Credits: 1
Maximum Credits: 1
This course will allow students to explore the use of different data sources for clinical and health services research. Students will gain an understanding of different data sources, ranging from patient registries to large administrative datasets, and will compare the strengths and weaknesses of each type of data in answering different research questions. We will discuss the use of data with both identifiable and de-identified data, including related ethical issues. We will review at a broad level different considerations when analyzing diverse datasets. We will use case studies to facilitate the learning of concepts discussed in class. *Please note in previous terms, this course was titled "Patient Registries and Electronic Health Records in CER."
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2107 - COMPARATIVE EFFECTIVENESS RESEARCH AND PCOR

Minimum Credits: 2
Maximum Credits: 2
This course will define Comparative Effectiveness Research (CER) and Patient-centered Outcomes Research (PCOR) and highlight the history and current national efforts in promoting CER/PCOR for drugs, devices and other interventions. The curriculum will include topics on the conceptualization, outcome measurements, engagement of patients and stakeholders, study designs, and analysis methods used in CER/PCOR studies. The course is project based and students learn how to define their own CER/PCOR research question and design a research project to answer the question.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2108 - PATIENT REGISTRIES & ELECTRONIC HEALTH RECORDS IN CER

Minimum Credits: 1
Maximum Credits: 1
This course explores the role of research registries that include electronic health record data in comparative effectiveness research. Students will gain an understanding of different registry models, including establishing a registry, evaluating a registry, using registry data and the strengths and weaknesses of different registry models. We will discuss the use of registries with both identifiable and de-identified data. Ethical issues surrounding the use of these data sources for research will be discussed. We will use case studies to facilitate the learning of concepts discussed in class.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2120 - COST EFFCTVNS ANAL HLTH CARE

Minimum Credits: 1
Maximum Credits: 1
CLRES 2120 provides an introduction to the methods used in the economic analysis of health care programs. The course will discuss economic principles that serve as the foundation of cost-effectiveness analysis, will describe the various ratios and methodologies used in cost-effectiveness studies, will highlight the current controversies in cost-benefit analysis, and will explore issues regarding the appropriate use of cost-effectiveness in making medical decisions concerning patients and populations. Additional topics include concepts of perspective, utility analysis, discounting, and the definition of various costs and benefits.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2121 - CLINICAL DECISION ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
This course provides an introduction to the use of decision sciences in health care. In addition to developing a conceptual understanding of medical decision-making, the course will develop technical skills in decision analysis including the creation/evaluation of decision trees, the use of sensitivity analysis, and the incorporation of specific patient preferences through the use of utility analysis. The advantages and disadvantages of formal mathematical models for the analysis of clinical conditions will be presented. Examples from current medical literature will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2122 - COMPUTER METHODS IN DECISION AND COST-EFFECTIVENESS ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
This course expands upon topics introduced in CLRES 2120 (cost effectiveness analysis) and CLRES 2121 (clinical decision analysis) and provides additional guidelines for using decision sciences in larger, more complex applications. Topics include modeling clinical processes and systems; discrete event simulation; advanced sensitivity analysis and confidence limits; controversies surrounding the use of cost-effectiveness analyses; and multi-attribute utility theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2120 and 2121; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2123 - ADVANCED TOPICS IN DECISION AND COST-EFFECTIVE ANALYSIS IN HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3

This is an intermediate/advanced level course on using simulation models in health decision sciences and cost-effectiveness analyses. Decision and cost-effectiveness analyses have been used widely in healthcare to address important policy questions, such as cancer screening recommendations and efficient organ allocations among transplant patients. The emphasis of this course is on applications and methods that are particularly applicable to issues of medical decision making and public health. Students will learn how to choose a model that best fits their applications. They will learn how to construct, parameterize, and analyze complex decision models. In addition, the student will be introduced to state-of-the art methods in uncertainty analysis, value-of-information analysis, and calibration. Although advanced topics will be discussed, the focus will not be on programming and mathematical notations will be kept to a minimum. Proficiency with programming and linear algebra are helpful, but not required. Class sessions will be a combination of lecture format, case discussion, and computer labs with expectations of class participation. It is expected that all students will keep up with the required readings and homework assignments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CLRES 2124 - DIRECTED STUDY IN DECISION ANALYSIS AND COST EFFECTIVENESS ANALYSIS

Minimum Credits: 1
Maximum Credits: 3
There are no formal class meetings. Each student will meet independently with their chosen faculty members; develop a timeline and schedule of meetings and milestones for various components of the particular project, or topic review. It is expected that the trainee and faculty member will meet every one-two weeks during the duration of the course.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2120, 2121, and 2122; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2140 - BEST PRACTICE OF CLINICAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
CLRES 2140 covers the basic operations of conducting a health services research project, from developing realistic timelines and schedules to building tracking databases, training interviewers and data collectors, monitoring data collection and budgets, reporting, and closing out a study.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2141 - SCIENTIFIC WRITING AND PRESENTATION SKILLS (ONLINE)

Minimum Credits: 1
Maximum Credits: 1
Medical educators and researchers must be able to present their work clearly and effectively. However, important educational material and research data are sometimes obscured by poorly delivered presentations or poorly written manuscripts. The main objective of this fully online, asynchronous course is to help students develop excellent scientific writing and presentation skills. This objective will be achieved through a combination of videos, readings, individual assignments, and team projects in which students will practice specific skills. Students will craft an abstract, write a discussion section of a manuscript, practice methods of disseminating their science to the lay public, create a poster, construct a table or figure, and develop a PowerPoint presentation and record themselves delivering a 10-minute talk.
*Please note in previous terms, this course was titled "Medical Writing and Presentation Skills."
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2155 - MEDICAL PRODUCT IDEATION

Minimum Credits: 3
Maximum Credits: 3
A didactic class that explores the principles and use of "ethnography" as a tool to observe and document clinical activity in order to draft a clear statement of a clinical problem in need of solution and methods for concept generation to identify potential solutions. Students will be able to describe and use ethnographical techniques in identifying workplace problems and be able to describe and use concept generation methods to develop potential solutions. Topics covered: ethnography in the workplace; group brainstorming; brain-writing; affinitization; morphological analysis; basic human factors design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CLRES 2156 - MEDICAL PRODUCT DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
A didactic course that uses principles of system engineering, the stage-gate process for medical product development and engineering and business analysis principles to evaluate the commercial potential proposed medical devices to further develop feasible solutions to a clinical problem identified in BIOENG 2150. Students will demonstrate use of systems engineering techniques to prioritize a set of feasible device and/or system solutions and ability to use intellectual property (IP) tools to determine suitability for further development. Students will demonstrate use of course principles in development of a commercialization plan for a proposed medical product. Design controls required by fad and international bodies; systems engineering methodologies; intellectual property (IP) and IP search tools; brief market analysis; size by region, growth, competition, barriers to entry, sustainable advantage; reimbursement issues for proposed medical device/system; basic financial analysis ' students will construct spreadsheets typically presented to senior business management. This will include estimates of costs, margins, break-even analysis, NPV, hurdle rates, ROI, IRR; codes, standards, and regulatory processes (FDA, IEC & ISO, UL, ministry of health (Japan), NRC, BRH, notified bodies, obtaining broad indications for use); safety, reliability, product liability considerations, manufacturability considerations (DFM ' design for manufacture, workflows)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2155

CLRES 2170 - MAKING THE MOST OF MENTORING

Minimum Credits: 1
Maximum Credits: 1
We strongly believe that effective mentoring is the cornerstone of a successful academic career, whether it be in education, research, or clinical work. Good mentors are able to guide mentees as they attempt to navigate through the course of their careers. This course is designed to provide a basis for understanding the mentor-mentee relationship and to provide strategies for making the most out of the experience. Topics will include communication and negotiation, the use of mentoring contracts, providing and accepting feedback, evaluating the mentoring relationship, and solving problems and meeting challenges. Fellows, postdocs, other Institute for Clinical Research Education (ICRE) trainees, and junior faculty will discover useful ways to enhance the mentoring relationship and make it a rewarding experience both for the mentees and the mentors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2200 - INTRODUCTION TO RESEARCH DISPARITIES ON HEALTH CARE

Minimum Credits: 2
Maximum Credits: 2
This course will provide knowledge and skills to understand and apply the basic principles of healthcare disparities research. Students will be introduced to a variety of healthcare disparities that have been identified in the literature. They will learn about a 3-phase conceptual framework for advancing disparities research that involves detecting (phase 1), understanding (phase 2), and reducing/eliminating (phase 3) disparities. They will become familiar with methodological and conceptual issues that pertain to research designed to detect healthcare disparities, understand multi-level factors that contribute to disparities, and reduce or eliminate healthcare disparities. Students will use their knowledge and skills from the course to develop and present a research proposal focused on a healthcare disparities topic of their choice. The course will consist of didactic lectures, interactive discussions, and homework assignments to establish basic knowledge of research on disparities in health care. It will also include guest presentations by faculty with experience conducting research focused on disparities in health care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's, MS, Not Candidate for Degree), Clinical Research (CERT-Master's, MS, Not Candidate for Degree) , Clinical and Translational Sci (PHD)

CLRES 2214 - FOUNDATIONS OF IMPLEMENTATION SCIENCE PT 1 & 2

Minimum Credits: 2
Maximum Credits: 2
This two-part course presents a survey of the field of Implementation Science with a specific focus on improving health care. In the first part, we focus on terminology, theories, and frameworks. These basic concepts will provide the building blocks for learners to apply theories and frameworks to their own intervention development and implementation work. In this portion of the course, learners will be exposed to short presentations by Implementation Science researchers on campus, to provide an appreciation of real-life applications of the theories as they learn them. This part of the course will emphasize theory, the translational research continuum, and proposal development. The 2nd part will focus on presenting a survey of the field of implementation science with a specific focus on healthcare practice and innovation. In this second course, we will expand on the content covered in Part 1 but have a greater focus on applied implementation, with lectures on specific implementation science research methods and concepts, such as organizational and systems-level change strategies, community engagement, and hybrid trial designs. An emphasis on mixed (quantitative and qualitative) methods approaches will be featured throughout the course. Guest lecturers will present relevant examples from their own work of research programs in implementation science as well as real-world examples of implementation strategies in the healthcare setting. The course also provides practical guidance on grant writing and advice on how to get implementation science grant applications funded.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2215 - FUNDAMENTALS OF IMPLEMENTATION SCIENCE FOR HEALTHCARE PRACTICE AND INNOVATION PART I

Minimum Credits: 1
Maximum Credits: 1
This two-part course presents a survey of the field of Implementation Science with a specific focus on improving health care. In the first part, we focus on terminology, theories, and frameworks. These basic concepts will provide the building blocks for learners to apply theories and frameworks to their own intervention development and implementation work. In this portion of the course, learners will be exposed to short presentations by Implementation Science researchers on campus, to provide an appreciation of real-life applications of the theories as they learn them. This part of the course will emphasize theory, the translational research continuum, and proposal development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2215 - FUNDAMENTALS OF IMPLEMENTATION SCIENCE FOR HEALTHCARE PRACTICE AND INNOVATION PART I

Minimum Credits: 1
Maximum Credits: 1
This two-part course presents a survey of the field of Implementation Science with a specific focus on improving health care. In the first part, we focus on terminology, theories, and frameworks. These basic concepts will provide the building blocks for learners to apply theories and frameworks to their own intervention development and implementation work. In this portion of the course, learners will be exposed to short presentations by Implementation Science researchers on campus, to provide an appreciation of real-life applications of the theories as they learn them. This part of the course will emphasize theory, the translational research continuum, and proposal development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2216 - FUNDAMENTALS OF IMPLEMENTATION SCIENCE: BEDSIDES TO HEALTH SYSTEMS PART II

Minimum Credits: 1
Maximum Credits: 1
This is the 2nd installment of a two-part course presenting a survey of the field of implementation science with a specific focus on healthcare practice and innovation. In this second course, we will expand on the content covered in Part 1 but have a greater focus on applied implementation, with lectures on specific implementation science research methods and concepts, such as organizational and systems-level change strategies, community engagement, and hybrid trial designs. An emphasis on mixed (quantitative and qualitative) methods approaches will be featured throughout the course. Guest lecturers will present relevant examples from their own work of research programs in implementation science as well as real-world examples of implementation strategies in the healthcare setting. The course also provides practical guidance on grant writing and advice on how to get implementation science grant applications funded. COURSE GOALS 1. Understand implementation study design. 2. Apply knowledge to evaluate and design implementation science studies in each student's area of interest. 3. In-class guidance with writing an implementation science focused grant application.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2216 - FUNDAMENTALS OF IMPLEMENTATION SCIENCE: BEDSIDES TO HEALTH SYSTEMS PART II

Minimum Credits: 1
Maximum Credits: 1
This is the 2nd installment of a two-part course presenting a survey of the field of implementation science with a specific focus on healthcare practice and innovation. In this second course, we will expand on the content covered in Part 1 but have a greater focus on applied implementation, with lectures on specific implementation science research methods and concepts, such as organizational and systems-level change strategies, community engagement, and hybrid trial designs. An emphasis on mixed (quantitative and qualitative) methods approaches will be featured throughout the course. Guest lecturers will present relevant examples from their own work of research programs in implementation science as well as real-world examples of implementation strategies in the healthcare setting. The course also provides practical guidance on grant writing and advice on how to get implementation science grant applications funded. COURSE GOALS 1. Understand implementation study design. 2. Apply knowledge to evaluate and design implementation science studies in each student's area of interest. 3. In-class guidance with writing an implementation science focused grant application.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2217 - ADVANCED TOPICS IN IMPLEMENTATION SCIENCE

Minimum Credits: 1
Maximum Credits: 1
This is the 3rd course in the Implementation Science track and requires completion of CLRES 2215 and 2216 - Foundations of Implementation Sciences: Bedsides to Health Systems Parts I and II. The purpose of this third course is to provide an interactive experience for students to learn and apply foundational theories underlying the pragmatic methods, outcomes, and strategies employed in implementation research and practice across diverse health disciplines. Specifically, the course will engage students in the fundamental

theoretical concepts, constructs, models, and frameworks essential for translating research into practice through a flipped classroom environment that emphasizes student teach-backs of course readings, interactive discussions, and group-based application of content through a case-study that will provide an opportunity for groups to assess a research-to-practice gap and develop a theory-based implementation intervention and evaluation plan based on effective individual- and organizational-change concepts. Guest lectures and brief didactic presentations by course instructors will provide real world examples of how theories are employed in medical and public health practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2220 - APPLYING QUALITY IMPROVEMENT METHODS IN THE CLINICAL CONTEXT

Minimum Credits: 1
Maximum Credits: 1
Over the course of eight 2hr sessions, we aim to build knowledge of basic quality improvement (QI) concepts and apply QI methods to the clinical setting, to facilitate an integration of the front-line perspective into translating research into practice. More specifically, this includes problem definition and contextual inquiry concepts and tools, including process mapping, value stream modeling, selection of measures, Pareto analysis, understanding of variability of quality measures, and design of sustainable interventions. This content will be interwoven with concepts of healthcare workplace culture, leadership, and health system science, such as Just Culture and human factors engineering, which in turn facilitate stakeholder engagement in the improvement process and lead to successful and sustainable interventions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2220 - APPLYING QUALITY IMPROVEMENT METHODS IN THE CLINICAL CONTEXT

Minimum Credits: 1
Maximum Credits: 1
Over the course of eight 2hr sessions, we aim to build knowledge of basic quality improvement (QI) concepts and apply QI methods to the clinical setting, to facilitate an integration of the front-line perspective into translating research into practice. More specifically, this includes problem definition and contextual inquiry concepts and tools, including process mapping, value stream modeling, selection of measures, Pareto analysis, understanding of variability of quality measures, and design of sustainable interventions. This content will be interwoven with concepts of healthcare workplace culture, leadership, and health system science, such as Just Culture and human factors engineering, which in turn facilitate stakeholder engagement in the improvement process and lead to successful and sustainable interventions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2300 - INTRODUCTION TO SYSTEMIC REVIEWS AND META ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
The course is an overview of the concepts necessary for performing systematic reviews and meta-analyses, covered in sufficient detail to enable students to conduct their own reviews and analyses after completion of the course. Students will learn about the individual steps involved in conducting systematic reviews and meta-analyses, including developing a focused research question, assembling a team to perform the study, designing a study protocol, defining inclusion and exclusion criteria, identifying relevant literature databases (including Cochrane databases and Medline), developing literature search strategies, performing the literature search, creating a data abstraction form, handling data abstraction and management, and using statistical methods for meta-analysis. We will discuss important topics such as criteria for meta-analysis, exploration of heterogeneity, choice of a meta-analytic method, study quality assessment, sensitivity and subgroup analysis, evaluation of potential sources of bias, presentation of results, and application of review results. Each class will have both a didactic component and a hands-on component that allows students to immediately apply the concepts introduced during the session. Students will use concepts learned in this course to evaluate and update a published systematic review and meta-analysis.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (CLRES 2005 or MEDEDU 2005) and (CLRES 2020 or MEDEDU 2020); PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2320 - CLINICAL TRIALS PRACTICUM

Minimum Credits: 2
Maximum Credits: 3
The purpose of the clinical trials practicum is for trainees (fellows and junior faculty) who are (or want to be) involved with a clinical trial to obtain course credit for their research experience. Each trainee is required to work with an experienced clinical researcher (investigator) who formally agrees to provide the trainee mentorship. The investigator must be planning a clinical trial, conducting a clinical trial, or have conducted a clinical trial. Trainees are expected to become part of the research team and learn how studies or trials are actually designed, implemented, managed, and analyzed. Trainees are expected to provide an outline of readings relevant for the practicum objectives and at the end of the practicum provide summaries of their experiences and reading materials. They may also receive credit by taking a specific question and analyzing a dataset from the trial. They can write up their findings for possible publication under the supervision of the investigators and are expected to provide a written summary of their involvement that is validated by their mentors at the end of the experience. Please see the link below for the NIH's definition of clinical trials: http://grants.nih.gov/grants/peer/tree_glossary.pdf. (Prerequisites: CLRES 2800, CLRES 2810, and CLRES 2820 or instructor permission)
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: CLRES 2800 and 2810 and 2820; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2400 - QUALITATIVE RESEARCH METHODS I : THEORY & DESIGN

Minimum Credits: 1
Maximum Credits: 1
What are the study designs, data collection methods, analytical approaches, and theoretical frameworks used by qualitative researchers? How should the quality and rigor of qualitative research be assessed? In this course, we will analyze a range of qualitative studies and discuss principles that should guide the selection of qualitative research strategies (e.g., sampling, data collection methods, analytical approaches, theoretical models). By the end of the course, you will be equipped to review a qualitative manuscript, respond to reviewer comments, and work effectively with qualitative methodologists. This course provides necessary background for students new to qualitative research and prepares students for Qualitative Research Methods II (CLRES 2401), which offers hands-on practice using qualitative methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2401 - QUALITATIVE RESEARCH METHODS II: APPLICATIONS

Minimum Credits: 1
Maximum Credits: 1
In this course, you will develop and hone the skills of a qualitative researcher. You will practice designing qualitative and mixed methods research studies, creating interview guides and focus group protocols, applying different data collection methodologies, developing a codebook, and conducting thematic analysis. Finally, you will write a thorough and compelling methodology section for a grant or manuscript. The focus throughout the course will be applying the tools of qualitative research and reflecting on your experience. Prerequisite: Qualitative Research Methods I: Theory and Design (or equivalent).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2400

CLRES 2401 - QUALITATIVE RESEARCH METHODS II: APPLICATIONS

Minimum Credits: 1
Maximum Credits: 1
In this course, you will develop and hone the skills of a qualitative researcher. You will practice designing qualitative and mixed methods research studies, creating interview guides and focus group protocols, applying different data collection methodologies, developing a codebook, and conducting thematic analysis. Finally, you will write a thorough and compelling methodology section for a grant or manuscript. The focus throughout the course will be applying the tools of qualitative research and reflecting on your experience. Prerequisite: Qualitative Research Methods I: Theory and Design (or equivalent).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2430 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course is organized around themes central to the conceptualization and implementation of community-based participatory research and practice (CBPRP). The goal of this course is to familiarize students with community-based participatory research and practice. Students will become conversant in seminal community-based participatory research and practice literature. Discussion, interactive learning exercises, and examples of current research will be used to provide an understanding of cbpr and the associated strengths and limitations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education(ACM) or Medical Education(MS) or Clinical Research(ACM) or Clinical Research(MS) or Clinical and Translational Sci(PHD)

CLRES 2431 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE

Minimum Credits: 1
Maximum Credits: 1
This course provides an introduction to concepts and skills in knowledge translation (a coordinated, collaborative approach to ensure that research findings are utilized by key stakeholders) and to the role of research in changing policy and practice at local, regional, and national levels. This module will build on concepts in community-partnered research introduced in module a of this three-part sequence in community based participatory research. This skills-based module will introduce learners to theoretical concepts in knowledge translation (KT), dissemination and implementation science, and apply these concepts to practical exercises to translate research findings for relevance to other key stakeholders, including community partners, program developers, and policy makers. One session will be devoted specifically to skills building in legislative and media advocacy. The goal of this course is to familiarize learners with the critically important steps involved in transLating research findings for relevance to stakeholders beyond academia. Discussion, interactive learning exercises, and examples of research dissemination and implementation science will be used to provide a foundation in KT as an aspect of community-partnered research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education(ACM) or Medical Education(MS) or Clinical Research(ACM) or Clinical Research(MS) or Clinical and Translational Sci(PHD)

CLRES 2432 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD

Minimum Credits: 1
Maximum Credits: 1
This course provides hand-on training in the participatory research method known as concept mapping (CM). Cm gives community members and other stakeholders a unique chance to have their own words communicate ideas and concepts. Research participants contribute directly in the processing of this information as it directly relates to their community and intervention needs. The goal of the course is to familiarize students with example applications of the research method and to provide training related to concept mapping data

collection and analysis. Discussion, interactive learning exercises, and examples of current research will be used to provide an understanding of CBPR and the associated strengths and limitations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education(ACM) or Medical Education(MS) or Clinical Research(ACM) or Clinical Research(MS) or Clinical and Translational Sci(PHD)

CLRES 2600 - SOCIAL NETWORKS & HEALTH

Minimum Credits: 1
Maximum Credits: 1
This course is an introduction to the theory, methods, and procedures of network analysis with emphasis on applications to health and social behavior. The goal of the course is to provide a working knowledge of concepts and methods used to describe and analyze social networks so that professionals and researchers can understand the results and implications of this body of research. The course also provides the training necessary for scholars to conduct network analysis in their own research and practice careers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CLRES 2601 - PRINCIPLES AND PRACTICES OF PALLIATIVE CARE PART 1

Minimum Credits: 1
Maximum Credits: 1
The broad objectives of this course are to provide trainees with an overview of the basic and clinical sciences underlying the professional care of dying patients, and to introduce them to the primary reference sources in the field of palliative medicine. The course will be taught in a small-group, discussion format, with faculty drawn from content-experts throughout the medical center. Discussions will combine analysis of the evidence base for a wide range of palliative care interventions with clinical case discussions. Cases will be drawn from the literature, faculty experience, and current clinical activities of the trainees themselves.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2602 - PRINCIPLES AND PRACTICES OF PALLIATIVE CARE PART 2

Minimum Credits: 1
Maximum Credits: 1
The broad objectives of this course are to provide trainees with an overview of the basic and clinical sciences underlying the professional care of dying patients, and to introduce them to the primary reference sources in the field of palliative medicine. The course will be taught in a small-group, discussion format, with faculty drawn from content-experts throughout the medical center. Discussions will combine analysis of the evidence base for a wide range of palliative care interventions with clinical case discussions. Cases will be drawn from the literature, faculty experience, and current clinical activities of the trainees themselves.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2605 - COMPUTER METHODS FOR SOCIAL NETWORKS

Minimum Credits: 1
Maximum Credits: 1
This course provides hands-on training in social network analysis using 3 different software packages: UCINet, R, and Gephi. It is intended

for those students who are interested in conducting their own social network studies using the latest available software. It is a time-intensive lab and project course. Topics to be covered include: -How to use UCINet to conduct intermediate and advanced SNA -How to use R to use custom SNA packages -How to use Gephi to conduct basic SNA and generate descriptive network graphs This course consists of in-class examples using SNA software, designing a network analysis plan in consideration of software features, and a final project. Assignments are designed to build components of a full network study, using specific analytic features from available software, visualizing network(s), and culminating in the final project. Individual projects will use data that can be provided or is collected by the student themselves.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CLRES 2600

CLRES 2605 - COMPUTER METHODS FOR SOCIAL NETWORKS

Minimum Credits: 1
Maximum Credits: 1
This course provides hands-on training in social network analysis using 3 different software packages: UCINet, R, and Gephi. It is intended for those students who are interested in conducting their own social network studies using the latest available software. It is a time-intensive lab and project course. Topics to be covered include: -How to use UCINet to conduct intermediate and advanced SNA -How to use R to use custom SNA packages -How to use Gephi to conduct basic SNA and generate descriptive network graphs This course consists of in-class examples using SNA software, designing a network analysis plan in consideration of software features, and a final project. Assignments are designed to build components of a full network study, using specific analytic features from available software, visualizing network(s), and culminating in the final project. Individual projects will use data that can be provided or is collected by the student themselves.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2610 - RESEARCH METHODS IN PALLATIVE CARE

Minimum Credits: 1
Maximum Credits: 1
This special methods course will provide the critical bridge between the more general research skills and the particular challenges of doing patient-oriented research in palliative care. It consists of the following components: discussion of the use of specific research methods and their strengths and limitations in palliative care and review OIF landmark research articles in palliative care and a critical appraisal of the methodologies. The course is taught in a graduate seminar fashion with an emphasis on discussion and critical analysis. Sessions are often co-moderated by a palliative care physician and a researcher with the particular methodological expertise under discussion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2700 - FUNDAMENTALS OF BENCH RESEARCH

Minimum Credits: 2
Maximum Credits: 2
The course is designed to teach fellows in training and future clinician scientists the core principles of scientific investigation. The course is organized such that fellows can learn the theory behind most of the common research approaches as well as new and innovative approaches of current scientific endeavors. In addition, participants acquire laboratory technical skills via a "learning by doing" approach in a two-week period.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2725 - TRANSLATIONAL RESEARCH PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
The major objective of the Translational Research Practicum is to obtain individualized laboratory-based training and acquire proficiency in scientific methodology, experimental design, data presentation, and analysis tailored to achieve pre-defined goals within the scope of the student's thesis work. The Translational Research Practicum must define a translatable component originating from the laboratory training (i.e., application of laboratory-based methodologies/techniques, gain proficiency with pre-clinical studies) with the ultimate goal of addressing questions pertaining to human studies. This work is usually conducted within the research mentor's laboratory.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2729 - IDEA 2 IMPACT

Minimum Credits: 1
Maximum Credits: 1
This practical course guides academic researchers step by step through the experience of developing an entrepreneurial idea. It is designed for early-career scientists (e.g., MDs, PhDs, fellows, medical students, faculty, post docs) who are new to entrepreneurship and commercialization, but interested in translating research into practical applications. Each week, participants will focus on one discrete stage of the translational process as they identify a problem, analyze stakeholders, define a solution, describe its benefits, research the competition, articulate differentiators, and create an action plan. The course will be taught in a hybrid format, with self-paced, online modules to provide participants with key concepts and information, and class meetings where they present specific deliverables, receive feedback from colleagues, and engage in focused discussion. On the last day of class, participants will present their fully formed idea to an invited audience.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

CLRES 2730 - FROM BENCHTOP TO BEDSIDE

Minimum Credits: 3
Maximum Credits: 3
This 12-week course, commonly known as B2B, is offered by the Innovation Institute, which encourages and supports innovation and entrepreneurship across campus to all faculty, staff and students. More information on B2B can be found on the Innovation Institute website. B2B is designed to give research scientists, clinicians, graduate students, and other interested parties the basic information necessary to assess the business potential of basic science research discoveries. The B2B course will help scientists develop additional focused information, including proof of concept and validation experiments, that increase the value of the technology and reduce the investment risk. B2B will also provide insight into how intellectual property and other differentiators can create a barrier to entry for the competition. The course will cover the fundamentals of investment from the private sector to help finance the climb over regulatory hurdles and meet critical developmental milestones. The course is designed to give graduate students, research scientists, faculty and clinicians the basic information necessary to assess the commercial potential of basic science discoveries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2731 - FROM BENCHTOP TO BEDSIDE (B2B)

Minimum Credits: 2
Maximum Credits: 2
This 12-week course, commonly known as B2B, is offered by the Innovation Institute, which encourages and supports innovation and entrepreneurship across campus to all faculty, staff and students. More information on B2B can be found on the Innovation Institute website. B2B is designed to give research scientists, clinicians, graduate students, and other interested parties the basic information necessary to assess the business potential of basic science research discoveries. The B2B course will help scientists develop additional focused information, including proof of concept and validation experiments, that increase the value of the technology and reduce the investment risk. B2B will also provide insight into how intellectual property and other differentiators can create a barrier to entry for the competition. The course will cover the fundamentals of investment from the private sector to help finance the climb over regulatory hurdles and meet critical developmental milestones. The course is designed to give graduate students, research scientists, faculty and clinicians the basic information necessary to assess the commercial potential of basic science discoveries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2731 - FROM BENCHTOP TO BEDSIDE (B2B)

Minimum Credits: 2
Maximum Credits: 2
This 12-week course, commonly known as B2B, is offered by the Innovation Institute, which encourages and supports innovation and entrepreneurship across campus to all faculty, staff and students. More information on B2B can be found on the Innovation Institute website. B2B is designed to give research scientists, clinicians, graduate students, and other interested parties the basic information necessary to assess the business potential of basic science research discoveries. The B2B course will help scientists develop additional focused information, including proof of concept and validation experiments, that increase the value of the technology and reduce the investment risk. B2B will also provide insight into how intellectual property and other differentiators can create a barrier to entry for the competition. The course will cover the fundamentals of investment from the private sector to help finance the climb over regulatory hurdles and meet critical developmental milestones. The course is designed to give graduate students, research scientists, faculty and clinicians the basic information necessary to assess the commercial potential of basic science discoveries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2750 - SEMINAR IN HEALTH SYSTEMS LEADERSHIP

Minimum Credits: 1
Maximum Credits: 1
This course will consist of a series of cased-based examinations of specific managerial and leadership problems and decisions that have faced local health systems leaders in Western Pennsylvania. Health care reimbursement, licensing and accreditation, and measuring health care quality has become both more complicated and more important as pressures to reduce expenses and improve quality increase. Simultaneously, there has been a steady increase in the number of clinicians who have assumed managerial positions, such as medical directors of clinical units, directors of quality measurement and improvement programs, utilization review and many others, as well as the appearance of clinicians in the "C-suite" of many hospitals and health care organizations. Utilizing adjunct faculty who are currently (or very recently have been) executive leaders in health systems, this course will examine a series of collaborations, problems, conflicts and solutions that developed between health system administrators and clinical leadership in health care organizations in the Western PA area. The mechanics of the course will be a series of cases, based on an actual recent issue in health care management in which the senior adjunct faculty member was involved. Students (individually or in groups) will evaluate the case, prepare a response, and make a short presentation of their "solution" to the problem to the health system executive and clinical leader involved in that case. An interactive discussion will follow.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2800 - FUNDAMENTALS IN CLINICAL TRIALS

Minimum Credits: 1
Maximum Credits: 1
Fundamentals in clinical trials course will provide information on the first three phases (phases i-iii) of drug development and fundamental components of randomized clinical trials. A majority of lectures will focus on aspects of phase iii parallel group designs with discussions on topics including developing research questions and defining endpoints, recruitment, randomization, blinding, data management and quality, monitoring, study closeout, and presentation/interpretation of results. The student will be introduced to the good clinical practice guidelines and the principles of planning and implementing clinical research protocols including: ethical issues and regulatory imperatives designed to protect human subjects in clinical research, adverse event reporting, protocol/proposal development, and publications. We will use manuscripts on clinical trials and protocols of completed studies to facilitate learning of concepts discussed in class. It is highly recommended that you have taken ANOVA and logistic regression courses before taking this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (CLRES 2005 and CLRES 2020) or (MEDEDU 2005 and MEDEDU 2020) and CLRES 2021 and CLRES 2022; PLAN: Medical Education (ACM, MS), Clinical Research (ACM, MS), or Clinical Translational Science (PHD)

CLRES 2810 - STATISTICAL METHODS AND ISSUES IN CLINICAL TRIALS

Minimum Credits: 1
Maximum Credits: 1
The course will provide in-depth information about conducting randomization, planning sample size, analyzing clinical trials (including phase I, II, and III designs), and reporting and interpreting results of studies. We will use manuscripts on clinical trials and protocols of completed studies to facilitate learning of concepts discussed in class. We highly recommend that students take analysis of variance (ANOVA) and logistic regression courses before taking this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: [CLRES 2005 and CLRES 2020 and CLRES 2800] or [MEDEDU 2005 and MEDEDU 2020 and CLRES 2800; PLAN: Medical Education (ACM, MS), Clinical Research (ACM, MS), or Clinical Translational Science (PHD)

CLRES 2820 - SPECIAL TOPICS IN CLINICAL TRIALS

Minimum Credits: 1
Maximum Credits: 1
The special topics course will provide information on the different types of clinical trials beyond the phase III superiority parallel group design. We will use manuscripts on special types of clinical trials to facilitate learning of concepts discussed in class. We highly recommend that students take analysis of variance (ANOVA) and logistic regression courses before taking this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: [CLRES 2005 and CLRES 2020 and CLRES 2800 and CLRES 2810] or [MEDEDU 2005 and MEDEDU 2020 and CLRES 2800 and CLRES 2810]; PLAN: Med Education (ACM, MS), Clinical Research (ACM, MS), or Clin Translational Sci (PHD)

CLRES 2981 - EPIDEMIOLOGY OF AGING-METHODS

Minimum Credits: 2
Maximum Credits: 2
This course will introduce the methodological aspects of epidemiologic research in the field of aging and to critically evaluate research in older adults. The course will focus on: demography, study design, sampling, recruitment, retention, measurement of key variables and special populations. Students will write a critical review of a published article and comment on proposed future directions for epidemiologic studies addressing these questions in older populations. Throughout the course, a Problem Solving Learning Method will be applied by prompting the students to solve pragmatic issues. Examples include: How to measure a specific outcome? What type of chronic health conditions may be related to the research question? How to operationalize specific measures of interest (e.g.: how to create a composite score for co-morbidity assessment?). The course has been formulated to provide the students with the building blocks of the

epidemiological study of aging. By the end of the course, the students will be able to critically evaluate various components of a study to further address the research questions in aging populations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CLRES 3010 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
Independent Study provides an opportunity for the student to pursue/research a subject in more depth and in a more independent manner than would be possible in a traditional course. Students completing an Independent Study must identify a sponsor faculty member who will closely work with the student in meeting defined learning objectives and goals
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 3020 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific project in any area of interest in clinical and translational science.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Clinical and Translational Sci

CLRES 3040 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
Dissertation research credits towards Ph.D. in clinical and translational science.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Clinical and Translational Sci

CLRES 3780 - HUMAN FACTORS OF AGING

Minimum Credits: 3
Maximum Credits: 3
Research often leads to ideas and findings that can be developed into new medical devices or interventions. One limiting step in the development of these new ideas into action is the incorporation of the human factors components in the design. This is particularly true for devices/interventions meant to be used by older adults. This course provides an introductory understanding of how human factors is used in medical device design with a focus on older adults. The target audience for this course is broad, encompassing anyone that wants to learn how to design, test and evaluate medical devices or interventions used by older adults. This includes investigators (faculty, scientists, post-docs), engineers, and clinicians. The course will be at the graduate level, but general in scope. No pre-requisites are required. The course introduces the concept of human factors as applied to medical devices and interventions. Special emphasis will be on the specific issues associated with older adults. Characteristics of older adults relevant to usability of devices and capabilities in interventions are developed in detail, with numerous examples (successful and unsuccessful) provided. The course considers FDA approval requirements and evaluation methods for specific populations (in this case older adults). Topics relevant to design include within the course include: i. Principles of ethnography and anthropometry ii. Characteristics of older adult users considered in design (e.g. functional abilities, sensory/perception changes with age, cognition, diversity in the older population, cultural and ethnic interactions with age) iii. Ergonomics and aging (strength

changes across the body with age, mobility and dexterity in design for older adults) iv. Aging and cognitive change (e.g. Alzheimer's disease and dementia) v. Human factors design principles such as user interface design, visual displays, training and instructions, and environmental considerations. vi. Usability testing methods to improve design (task analysis, formative evaluation methods, summative methods, subject choices) vii Regulatory requirements, such as FDA and EU human factors requirements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 3780 - HUMAN FACTORS OF AGING

Minimum Credits: 3
Maximum Credits: 3
Research often leads to ideas and findings that can be developed into new medical devices or interventions. One limiting step in the development of these new ideas into action is the incorporation of the human factors components in the design. This is particularly true for devices/interventions meant to be used by older adults. This course provides an introductory understanding of how human factors is used in medical device design with a focus on older adults. The target audience for this course is broad, encompassing anyone that wants to learn how to design, test and evaluate medical devices or interventions used by older adults. This includes investigators (faculty, scientists, post-docs), engineers, and clinicians. The course will be at the graduate level, but general in scope. No pre-requisites are required. The course introduces the concept of human factors as applied to medical devices and interventions. Special emphasis will be on the specific issues associated with older adults. Characteristics of older adults relevant to usability of devices and capabilities in interventions are developed in detail, with numerous examples (successful and unsuccessful) provided. The course considers FDA approval requirements and evaluation methods for specific populations (in this case older adults). Topics relevant to design include within the course include: i. Principles of ethnography and anthropometry ii. Characteristics of older adult users considered in design (e.g. functional abilities, sensory/perception changes with age, cognition, diversity in the older population, cultural and ethnic interactions with age) iii. Ergonomics and aging (strength changes across the body with age, mobility and dexterity in design for older adults) iv. Aging and cognitive change (e.g. Alzheimer's disease and dementia) v. Human factors design principles such as user interface design, visual displays, training and instructions, and environmental considerations. vi. Usability testing methods to improve design (task analysis, formative evaluation methods, summative methods, subject choices) vii Regulatory requirements, such as FDA and EU human factors requirements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Comm Science and Disorders

CSD 2000 - RESEARCH & THESIS MASTER'S DEGR

Minimum Credits: 1
Maximum Credits: 6
Students may elect to become master of science candidates. A thesis is required for the MS. Degree. During the planning, execution, writing, and defense of the thesis, the student may register for thesis credits under the supervision of thesis committee chair person.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and course CSD 2064 must be passed with a grade C or higher.

CSD 2010 - AUDIOLOGY CLINIC 1 - MEDICAL

Minimum Credits: 1
Maximum Credits: 1
University supervised clinical practice experience in hearing screening and amplification for health care communication. Experience will be obtained within an interprofessional medical setting.
Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

CSD 2011 - AUDIOLOGY CLINIC 1 - BASIC EVALUATION

Minimum Credits: 1
Maximum Credits: 1
University supervised clinical practice experience in basic audiologic battery and specialized tests. Experience will be obtained within an outpatient setting with patients experiencing auditory and non-auditory symptoms.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

CSD 2012 - AUD SCREENING AND PREVENTION PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
University supervised clinical practice experience in hearing screening and basic audiologic battery tests. Experience will be obtained from within an outpatient setting with patients experiencing auditory and non-auditory symptoms and from local preschools.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

CSD 2018 - CLINICAL SERVICE DELIVERY

Minimum Credits: 1
Maximum Credits: 1
This required course is designed to enhance the skill and knowledge base of service delivery within medical and clinical speech language pathology settings. Topics include, but are not limited to, reimbursement in medical and clinical settings, medical terminology, and team-based clinical service delivery.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2020 - AUDIOLOGICAL ASSMNT SLP STUDENTS

Minimum Credits: 1
Maximum Credits: 1
Students will learn basic audiologic assessment techniques, interpretation of test findings and investigate the impact of hearing loss on communication.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2021 - CLINICAL PROCEDURES LAB 1-1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2022 - CLINICAL PROCEDURES LAB 2-2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2028 - AUTISM

Minimum Credits: 1
Maximum Credits: 1
This course focuses on evidence-based assessment and intervention strategies for individuals with autism spectrum disorder (ASD). Major emphasis will be placed on the diagnostic criteria for ASD and core communication (speech and language) and behavioral characteristics of individuals with ASD. Guidelines for the assessment and intervention of communication across the lifespan will be addressed with focus on functional assessments, meaningful intervention, and transactional supports to provide effective learning and multi-disciplinary teaming that includes the family.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD) and Course CSD 2064 must be passed with a grade C or higher.

CSD 2029 - IMPLANTABLES IN CLINICAL PRACTICE

Minimum Credits: 1
Maximum Credits: 1
This course will provide students with hands on opportunities to select, fit, map/program, and assess implantable devices in a lab setting. Cases will be used to promote critical thinking related to decisions related to test selection, signal procession selection, feature selection, mapping and programming, counseling, and auditory training. Students will be able to identify appropriate candidates for implantable technology and have a basic understanding of the components of selection, fitting, and delivering these technologies in a patient-centered manner.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2029 - IMPLANTABLES IN CLINICAL PRACTICE

Minimum Credits: 1
Maximum Credits: 1
This course will provide students with hands on opportunities to select, fit, map/program, and assess implantable devices in a lab setting. Cases will be used to promote critical thinking related to decisions related to test selection, signal procession selection, feature selection, mapping and programming, counseling, and auditory training. Students will be able to identify appropriate candidates for implantable technology and have a basic understanding of the components of selection, fitting, and delivering these technologies in a patient-centered manner.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2030 - CLINIC SKILLS SIMULATION LAB 1

Minimum Credits: 1
Maximum Credits: 1
This course provides students with a simulated environment to practice beginning clinical skills in speech-language pathology. Clinical skills simulations support students to demonstrate and integrate clinical and professional skills.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

CSD 2031 - CLINIC SKILLS SIMULATION LAB 2

Minimum Credits: 1
Maximum Credits: 1
This course provides students with a simulated environment to practice beginning clinical skills in speech-language pathology. Clinical skills simulations support students to demonstrate and integrate clinical and professional skills.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

CSD 2036 - EVALUATION AND TREATMENT OF TINNITUS AND SOUND INTOLERANCE

Minimum Credits: 1
Maximum Credits: 1
This course will provide the evidence-based standard of practice in the evaluation of tinnitus and sound intolerance conditions including hyperacusis and misophonia. Treatment approaches for these conditions will be presented in light of current research and clinical protocols will be presented to prepare students for clinical activity.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

CSD 2039 - MOTOR SPEECH DISORDERS

Minimum Credits: 3
Maximum Credits: 3
This course will provide the student with an understanding of the nature of dysarthria and apraxia of speech. Material will include anatomy and pathophysiology, common neurologic diseases, structure and function of the speech production mechanism, instrumental assessment, diagnosis and prognosis, and development of treatment goals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and course CSD 2064 must be passed with a C grade or higher.

CSD 2040 - AUDIOLOGICAL ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
Basic orientation to audiology for speech pathology majors. Introduction to audiological concepts and audiometry including pure-tone audiometry, speech audiometry, impedance and hearing screening.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2041 - MANAGEMENT OF HEARING LOSS

Minimum Credits: 3
Maximum Credits: 3
Audiologists and Speech-Language Pathologists provide therapeutic, consultative, and referral services for adults with hearing loss. This course provides students with the foundation and technical skills to offer these services. Specifically, the areas of hearing assistance technology, evidence based auditory rehabilitation and related legislation will be covered, in the context of patient and family centered care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2042 - AUDIOLOGICAL ASSESSMENT LAB

Minimum Credits: 1
Maximum Credits: 1
Lab for Audiological Assessment.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2043 - FUNDAMENTALS OF SPEECH-LANGUAGE PATHOLOGY FOR AUDIOLOGISTS

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to provide audiology students with an understanding of the nature of speech, language, cognition and swallowing disorders across the lifespan. Students will acquire a basic understanding of the diagnosis and treatment of these disorders by speech-language pathologists, and the role of audiologists in early identification and referral. Students also will develop the resources and skills necessary to more effectively evaluate and adapt their communication strategies during audiological assessment, treatment and counseling, in order to ensure the highest quality of service delivery for patients and their families.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2044 - DIFFERENTIAL DIAGNOSIS

Minimum Credits: 4
Maximum Credits: 4
Introduction to immittance audiometry, traditional special tests for diagnosing cochlear and retrocochlear site of lesion, non-organic hearing loss, and evaluation of central auditory disorders.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2045 - PHYSIOLOGICAL ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
Study of auditory evoked potentials with emphasis on the auditory brainstem responses (ABR). Use of ABR in audio logic and neurologic diagnosis.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2046 - PEDIATRIC EVALUATION

Minimum Credits: 3
Maximum Credits: 3
The mission of this course is to familiarize students with factors associated with heavy loss in infants and children as well as the application of audiology diagnostic procedures with this population.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2047 - AMPLIFICATION 1

Minimum Credits: 3
Maximum Credits: 3
This course provides an initial look at hearing aid evaluation, selection, validation, and orientation. Students will discuss historic as well as current topics in hearing aid selection and validation techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2051 - CLINICAL PROCEDURES LAB 1-2

Minimum Credits: 1
Maximum Credits: 1
Laboratory experience covering clinical procedures addressed in concurrent academic classes. Students will be given the opportunity for hands-on practice across the breadth of clinical audiology procedures.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2052 - CLINICAL PROCEDURES LAB 2-3

Minimum Credits: 1
Maximum Credits: 1
Laboratory experience covering clinical procedures addresses in concurrent academic classes. Students will be given the opportunity for hands-on practice across the breadth of clinical audiology procedures.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2053 - CLINICAL PROCEDURES LAB 2-1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2055 - PEDIATRIC AUDIOLOGIC REHABILITATION

Minimum Credits: 3
Maximum Credits: 3
This course is for students interested in the treatment of infants and children with hearing loss. The course focuses on the speech, language, and auditory characteristics of infants and children with hearing loss, their rehabilitative needs, and the effectiveness of various types of treatment approaches.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: students with a subplan MACSLP-SP to enroll only with a C or better in CSD 2064 OR students with a subplan of MACAUD-SP WITHOUT the CSD 2064 pre-req.

CSD 2056 - AUDIOLOGY CLINIC 1

Minimum Credits: 1
Maximum Credits: 6
University supervised observational and clinical practicum experience in diagnostic and rehabilitative aspects of audiology. Experience will be obtained within the speech and hearing clinic network of the department of communication disorders.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2057 - AUDIOLOGY CLINIC 2

Minimum Credits: 1
Maximum Credits: 6
Supervised observational and clinical practicum experience in diagnostic and rehabilitative aspects of audiology. Experience may be obtained within the university speech and hearing clinic network or in community clinic facilities associated with the department.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Communication Science and Disorders MA, Communication Science and Disorders MS, Audiology

CSD 2059 - AUDIOLOGY PRACTICUM NETWORK - SLP

Minimum Credits: 1
Maximum Credits: 6
University supervised observational and clinical practicum experience in diagnostic and rehabilitative aspects of audiology. Experience will be obtained within the speech and hearing clinic network of the department of communication disorders.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2060 - PROSEMINAR - MA

Minimum Credits: 0
Maximum Credits: 0
Variable content. Speakers from the communication department, other areas of the university and the general professional community present issues of concern to speech pathologists and audiologists.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2062 - INTRODUCTION TO CLINICIAN-CLIENT COMMUNICATIONS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Audiology (AUD) or Speech-Language Pathology (CSD) or SBPLAN: Audiology (Comm Science and Disorders-MA, or MS) or Speech-Language Pathology (Comm Science and Disorders-MA or MS)

CSD 2063 - DEVELOPING CLINICIAN-CLIENT COMMUNICATIONS

Minimum Credits: 1
Maximum Credits: 1
This course builds upon CSD 2062 and is designed to develop the graduate student's knowledge and skills in clinician-client communications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2064 - INTRO CLINICAL DECISION-MAKING

Minimum Credits: 3
Maximum Credits: 3
This course prepares students for their first clinical practicum, by orienting them to the principles and procedures underlying assessment, remediation and documentation activities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2065 - CLINIC PRACTICUM 1 FOUNDATIONS IN ASSESSMENT AND TREATMENT IN SPEECH LANGUAGE PATHOLOGY

Minimum Credits: 1
Maximum Credits: 4
This course provides students with the opportunity to build basic clinical skills in speech-language pathology through clinical experiences in community settings. Students learn about diagnostic and therapeutic clinical processes as they relate to persons of various ages and disorder types.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2066 - CLINIC PRACTICUM 2 SPEECH LANGUAGE PATHOLOGY IN HEALTHCARE

Minimum Credits: 1
Maximum Credits: 9
This course provides students with the opportunity to practice advanced clinical skills in speech-language pathology through clinical experiences in healthcare settings. Students develop clinical reasoning for diagnostic and therapeutic clinical processes as they relate to persons of various ages and disorder types in healthcare settings.
Academic Career: Graduate
Course Component: Practicum

Grade Component: Grad HSU Basis
Course Requirements: PREQ: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD) and Course CSD 2064 must be passed with a C grade or higher.

CSD 2067 - CLINIC PRACTICUM 2 SPEECH LANGUAGE PATHOLOGY IN EDUCATION

Minimum Credits: 1
Maximum Credits: 6
This course provides students with the opportunity to practice advanced clinical skills in speech-language pathology through clinical experiences in educational settings. Students develop clinical reasoning for diagnostic and therapeutic clinical processes as they relate to persons of various ages and disorder types in education settings.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD) and Course CSD 2064 must be passed with a C grade or higher.

CSD 2068 - SPEECH PRACTICUM NETWORK - AUD

Minimum Credits: 1
Maximum Credits: 3
Student clinicians assess clients presented with various communication disorders, under supervision of certified speech-language pathologists in the University speech and hearing clinic.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2069 - SLP SUMMATIVE ASSESSMENT PROJECT

Minimum Credits: 1
Maximum Credits: 1
Successful completion of this course is a fundamental component of the MA-SLP degree program. The purpose of the experience is to ensure that graduates are able to accurately review a clinical case and evaluate the relevant literature that supports their clinical decisions. This course will help you successfully fulfill the requirements by giving you the opportunity to prepare your case study and analysis, practice giving a succinct and clear oral presentation, and thoughtful and accurate responses to questions that demonstrate both your knowledge and critical thinking.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PREQ: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD) and Course CSD 2064 must be passed with a grade "C" or higher

CSD 2070 - SPEECH SOUND DISORDERS

Minimum Credits: 3
Maximum Credits: 3
Students learn the principles and procedures needed to identify, evaluate and remediate articulation and phonological disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2071 - CHILD LANGUAGE DISORDERS 1

Minimum Credits: 3
Maximum Credits: 3
This course will advance students' knowledge of models of normal and impaired language development. Students will learn to evaluate the underlying bases, the merits, the limitations of, and the empirical support for various approaches to the evaluation and management of childhood language disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2072 - STUTTERING

Minimum Credits: 3
Maximum Credits: 3
An introduction survey of basic information about stuttering. Course content includes theories of stuttering, diagnostic and measurement procedures, and treatment approaches for stuttering across the lifespan.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only. Course CSD 2064 must be passed with a C grade or higher.

CSD 2073 - VOICE DISORDERS

Minimum Credits: 3
Maximum Credits: 3
This course covers information regarding the nature and causes of common pathologies affecting voice, voice measurement, and treatment approaches for voice disorders. Traditional as well as non-traditional approaches are emphasized. The course uses a problem-based learning methodology, in which students are required to adopt critical thinking in solving clinical problems based on material covered in the course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and course CSD 2064 must be passed with a C grade or higher

CSD 2076 - DYSPHAGIA

Minimum Credits: 3
Maximum Credits: 3
Principles and practices necessary to provide counseling, evaluation and treatment to clients with alaryngeal speech and/or swallowing disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2077 - AUGMENTATIVE COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
Serving the needs of nonspeaking individuals by augmenting their residual communication skills or by providing alternate systems of communication is the focus of this course. Considered in the course are the history of augmentative communication, the evaluation and assessment of nonspeakers, the fitting of nonspeakers with augmentative communication devices, the training of nonspeakers who have been fitted with devices, and the team approach to meeting the needs of nonspeakers. Implementation is by lecture, discussion, and

demonstration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and course CSD 2064 must be passed with a C grade or higher.

CSD 2078 - PHYSICS, PHYSIOLOGY AND PSYCHOLOGY OF SOUND

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2079 - PEDIATRIC FEEDING AND SWALLOWING

Minimum Credits: 1
Maximum Credits: 1
This course will explore development of the aerodigestive tract from the embryonic and fetal stages of gestation to full-term and childhood, with emphasis on the development of and interactions between the aerodigestive (respiratory and digestive) systems and swallowing function. Other topics include: typical neonatal and pediatric oropharyngeal swallowing and feeding function during postnatal growth and development, comparisons and contrasts between neonatal and pediatric swallowing anatomy and physiology and those of adults, the range and natural histories of medical, surgical, and developmental conditions leading to feeding and swallowing disorders in children, factors leading to delayed or disordered feeding in children, clinical and instrumental assessment of swallowing and feeding in children, and management/treatment of pediatric feeding disorders. The interdisciplinary nature of managing pediatric feeding disorders will be explored along with the role of parent/caregiver counseling/education and parental/caregiver involvement in management and treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2080 - CLEFT PALATE AND CRANIOFACIAL DISORDERS

Minimum Credits: 2
Maximum Credits: 2
An overview of communication problems associated with palatal clefting and interdisciplinary treatment including embryology, anatomy, classification, neonatal problems, hearing, surgery, speech, and social, mental, and emotional development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2080 - CLEFT PALATE AND CRANIOFACIAL DISORDERS

Minimum Credits: 2
Maximum Credits: 2
An overview of communication problems associated with palatal clefting and interdisciplinary treatment including embryology, anatomy, classification, neonatal problems, hearing, surgery, speech, and social, mental, and emotional development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2081 - RESEARCH STRATEGIES AND TACTICS

Minimum Credits: 3
Maximum Credits: 3
This course will advance students' knowledge of scientific approaches to the study of communicative processes and disorders. Students will learn a variety of strategies that guide scientific inquiry, and will examine tactics for implementing those strategies. This course will teach students skills needed to be wise consumers and potential producers of research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: students with a subplan MACSLP-SP to enroll only with a C or better in CSD 2064 OR students with a subplan of MACAUD-SP WITHOUT the CSD 2064 pre-req.

CSD 2082 - PROFESSIONAL ISSUES 1

Minimum Credits: 1
Maximum Credits: 1
Students address practical and current issues necessary for ethical and informed professional services in the field of speech-language pathology and audiology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2083 - PROFESSIONAL ISSUES 2

Minimum Credits: 1
Maximum Credits: 1
Students address practical and current professional issues, including interprofessional practice and intercultural competence, in preparation for employment and professional practice in the field of speech-language pathology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and course CSD 2064 must be passed with a C grade or higher.

CSD 2084 - SCIENCE OF IMPLANTABLES

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the underlying physiology and psychoacoustics that contribute to the development and implementation of electrical and bone conducted stimulation as an input to the hearing system. A historical perspective will inform current research and clinical application in this area. Students will leave this course able to compare and contrast current signal processing strategies used in implantable devices. In addition, students will be able to critically evaluate future signal processing strategies in a patient-center manner based on the the underlying knowledge provided through this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2084 - SCIENCE OF IMPLANTABLES

Minimum Credits: 2
Maximum Credits: 2

This course will focus on the underlying physiology and psychoacoustics that contribute to the development and implementation of electrical and bone conducted stimulation as an input to the hearing system. A historical perspective will inform current research and clinical application in this area. Students will leave this course able to compare and contrast current signal processing strategies used in implantable devices. In addition, students will be able to critically evaluate future signal processing strategies in a patient-center manner based on the the underlying knowledge provided through this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2085 - AUD SCREENING AND PREVENTION PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
Supervised clinical practicum experience in screening and prevention in audiology and speech-language pathology.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2085 - AUD SCREENING AND PREVENTION PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
Supervised clinical practicum experience in screening and prevention in audiology and speech-language pathology.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

CSD 2086 - SLP SCREENING AND PREVENTION PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
Supervised clinical practicum experience in screening and prevention in audiology and speech-language pathology.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

CSD 2086 - SLP SCREENING AND PREVENTION SKILLS LAB

Minimum Credits: 1
Maximum Credits: 1
Skills lab providing students knowledge and experiential activities related to screening and prevention in audiology and speech-language pathology.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2087 - HEARING CONSERVATION AND RESTORATION

Minimum Credits: 2
Maximum Credits: 2
Trauma to the ear from sound and ototoxic agents can be preventable. This course will focus on 1) understanding mechanisms that damage the inner ear 2) selection and implementation of hearing protection methods including physical hearing protection and pharmaceuticals, 3)

implementing national guidelines for hearing protection and overseeing medical-based ototoxic monitoring programs, 4) exploring the emerging area of hearing restoration post trauma.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

CSD 2090 - CHILDREN WITH DISABILITIES: CLIN 1

Minimum Credits: 2
Maximum Credits: 2
Course provides an interdisciplinary clinical training experience to graduate students from nursing, medicine, public health, psychology, social work, education, early intervention, nutrition, physical therapy, speech/language pathology, occupational therapy, and audiology. Students have the opportunity to learn about the impact of disabilities on children, families, schools, communities, and society thru clinical activities as part of the university, community leaders for individuals with disabilities (UCLID) center's leadership training program.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

CSD 2091 - CHILDREN W/DISABILITIES: CLIN 2

Minimum Credits: 2
Maximum Credits: 2
Course provides an interdisciplinary clinical training experience to graduate students from nursing, medicine, public health, psychology, social work, education, early intervention, nutrition, physical therapy, speech/language pathology, occupational therapy, and audiology. Students have the opportunity to learn about the impact of disabilities on children, families, schools, communities, and society thru clinical activities as part of the university, community leaders for individuals with disabilities (UCLID) center's leadership training program.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

CSD 2092 - MATERNAL AND CHILD HEALTH LEADERSHIP 1

Minimum Credits: 2
Maximum Credits: 2
This interdisciplinary leadership course addresses specific knowledge, skills, personal characteristics, and values necessary for maternal and child health (MCH) leadership. There is a primary focus on the members of the interdisciplinary team who work with children with disabilities and their families. Skills that enhance effective teamwork to provide evidence-based, family- and patient-centered care are addressed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

CSD 2093 - MATERNAL AND CHILD HEALTH LEADERSHIP 2

Minimum Credits: 2
Maximum Credits: 2
This interdisciplinary leadership course addresses specific knowledge, skills, personal characteristics, and values necessary for maternal and child health (MCH) leadership. There is a primary focus on leadership development and styles through examination of public policy, advocacy, ethics, and social determinants of health across systems of care with diverse populations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

CSD 2101 - DATA AND STATISTICAL LITERACY

Minimum Credits: 3
Maximum Credits: 3
This course is designed for health professionals who will make use of statistical methods in research projects or in interpreting literature. The course provides an overview of methods for understanding data, including visualization approaches, descriptive statistics, and statistical modeling and inference. Methods will be motivated by real-world data, and students will gain hands-on experience using the free, open-source R statistical programming environment. The course will focus on practical application and conceptual understanding of statistical approaches. The foundation achieved through this training will assist students as they conduct their own research and/or engage in evidence-based practice in their clinical careers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2102 - STATISTICAL METHODS CLINICAL RESEARCH 2

Minimum Credits: 3
Maximum Credits: 3
This is the second of a two-course series for students in the health professions who will make use of statistical methods in research projects or when interpreting literature. Topics covered include one and two-way analysis of variance, analysis of covariance, correlation, simple linear regression, multiple regression, and logistical regression, regression diagnostics, confounding and effect modification and model selection. Students will develop analytic skills through the use of clinical datasets where they will learn to analyze data and explain their findings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: CSD 2101; PROG: SHRS

CSD 2103 - PROFESSIONAL WRITING FOR AUDIOLOGISTS

Minimum Credits: 1
Maximum Credits: 1
Audiologists are called upon to produce a variety of professional writing including, for example, clinical notes/reports, letters to professionals and funding agencies to advocate for patients, and summaries of evaluations of listening spaces. Audiologists should be competent in producing concise manuscripts suitable for publication and effective presentations for professional audiences. This course will provide guided practice in producing the myriad of professional writing expected from an Audiologist using a case-based approach.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2103 - PROFESSIONAL WRITING FOR AUDIOLOGISTS

Minimum Credits: 1
Maximum Credits: 1
Audiologists are called upon to produce a variety of professional writing including, for example, clinical notes/reports, letters to professionals and funding agencies to advocate for patients, and summaries of evaluations of listening spaces. Audiologists should be competent in producing concise manuscripts suitable for publication and effective presentations for professional audiences. This course will provide guided practice in producing the myriad of professional writing expected from an Audiologist using a case-based approach.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2110 - NEUROSCIENCE OF COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2120 - PRINCIPLES OF AUDIOLOGY FOR SPEECH-LANGUAGE PATHOLOGISTS

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to provide Speech-Language Pathology students with a foundation for understanding the impact of hearing loss on speech, language, cognition and swallowing. Students will develop the knowledge and skills necessary for preventing hearing loss, screening and appropriately referring for hearing loss, interpreting and providing counseling of audiologic reports, conducting listening checks and trouble-shooting hearing technology, and appropriately adapting clinical procedures and home environments for patients with hearing loss, as defined within the Scope of Practice for SLPs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and Course CSD 2064 must be passed with a grade C or higher.

CSD 2121 - AURAL REHAB ACROSS THE LIFESPAN

Minimum Credits: 3
Maximum Credits: 3
This course will provide graduate students in Speech-Language Pathology (SLP) a foundation for understanding the impact of hearing loss on speech, language, and cognition. As defined within the American Speech-Language-Hearing Association Scope of Practice for SLP, students will develop the knowledge and skills necessary to prevent hearing loss; screen and appropriately refer for hearing loss; interpret audiologic reports and provide counseling regarding hearing loss; conduct listening checks of and troubleshoot hearing instruments; adapt procedures and environments for clients who have hearing loss. They also will acquire a basic knowledge of the diagnosis and treatment of communication disorders in infants, children, and adults with hearing loss in relation to the role of the speech-language pathologist.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2130 - NEUROGENIC LANGUAGE AND COGNITIVE COMMUNICATION DISORDERS 1

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and Course CSD 2064 must be passed with a C grade or higher.

CSD 2162 - COUNSELING STRATEGIES FOR AUD AND SLP

Minimum Credits: 2
Maximum Credits: 2
This course will provide an introduction to counseling for individuals with communication, balance and swallowing disorders and their families, consistent with the defined Scopes of Practice for Audiology and Speech-Language Pathology. Student will develop essential counseling skills, acquire knowledge of key approaches and frameworks, and learn best practices for referral and coordination of care with mental health professionals.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: students with a subplan MACSLP-SP to enroll only with a C or better in CSD 2064 OR students with a subplan of MACAUD-SP WITHOUT the CSD 2064 pre-req.

CSD 2230 - NEUROGENIC LANGUAGE AND COGNITIVE COMMUNICATION DISORDERS 2

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and Course CSD 2064 must be passed with a C grade or higher.

CSD 2250 - CHILD LANGUAGE DISORDERS 2

Minimum Credits: 3
Maximum Credits: 3
This course concerns advanced topics in the etiology, diagnosis, and remediation of developmental and acquired language disorders in children.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and course CSD 2064 must be passed with a C grade or higher.

CSD 2251 - VESTIBULAR ASSESSMENT AND REHABILATATION

Minimum Credits: 3
Maximum Credits: 3
Evaluation of the functioning of the vestibular system and its associated neural pathways. Special attention is given to differentiation of peripheral and central vestibular disorders.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2252 - ADVANCED PHYSIOLOGICAL ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
Lectures and discussions on advanced topics in auditory evoked potentials including auditory brainstem response, middle latency and late evoked potentials.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2451 - AUDIOLOGY MASTERS COMPREHENSIVE

Minimum Credits: 1
Maximum Credits: 1
AUDIOLOGY MASTERS COMPREHENSIVE

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2454 - AMPLIFICATION 2

Minimum Credits: 3
Maximum Credits: 3
This course allows for in depth discussion of topics related to hearing aid evaluation, fitting, and selection and signal processing. This course takes a seminar format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2456 - SPEECH PERCEPTION ACROSS THE LIFESPAN

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on the development and potential decline of speech perception across the life span. The relationships between speech perception and audition, vision, speech production, cognitive function, language, and literacy will be explored for typically developing and aging populations. The implications of hearing loss and auditory therapies and technologies on speech perception will be explored, as well as common clinical tests of speech perception.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2479 - SEMINAR IN SPEECH-LANGUAGE PATHOLOGY

Minimum Credits: 1
Maximum Credits: 3
Content varies across the spectrum of speech and language disorders. Each term has a special and specific focus. Students view the literature and present and discuss specific topics of interest.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Speech-Language Pathology (CSD) or SBPLAN: Speech-Language Pathology (Comm Science and Disorders-MA) or Speech-Language Pathology (Comm Science and Disorders-MS)

CSD 2500 - MEDICAL SPEECH-LANGUAGE PATHOLOGY 3

Minimum Credits: 1
Maximum Credits: 1
The course is designed to enhance the skill and knowledge base of medical speech language pathology. Topics include, but are not limited to, pathophysiology of neurogenic communication and swallowing disorders, tracheotomy management, neurological assessment and advanced applied neuroscience, pediatric feeding assessment and management, structure and function of respiratory and digestive systems, and medical ethics. Active participant learning is essential and performance is judged based on regular participation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: School of Health and Rehabilitation Sciences students only and course CSD 2064 must be passed with a grade C or higher.

CSD 2507 - PROFESSIONAL WRITING 3

Minimum Credits: 1
Maximum Credits: 1
This course will be composed of two 1-credit didactic classes on the art of succinct professional writing. The nature of "the readership" will be examined and how writing style must be modified to suit a specific audience. Assessment will be based on the production of several items including a scientific abstract for conference peer review, an administrative work such as an evidence based business plan for specific service development, and an information leaflet for careers (lay language use). Some of these may require submission to an outside body if appropriate. The third credit in this series will be a scholarly work in which the student will be mentored by a departmental faculty member on the development of a specific project. . It is a requirement that this scholarly component be submitted to an outside institution for peer review. Class waivers will be considered on an individual basis, provided the student can demonstrate writing skills consistent with the outcomes of this course.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2508 - RESEARCH AND CLINICAL FORUM

Minimum Credits: 0
Maximum Credits: 0
This component encourages residents (and clinical fellows) to attend clinical and research meetings offered by CSD/Pitt/UPMC/VA etc. to gain experience of the various aspects of clinical and research fields relevant to the discipline of communication science and disorders. (Residents and clinical fellows) will attend 4 documented events per semester from the full range of activities available throughout the University of Pittsburgh and its associated medical center's extensive network of institutional and regional clinical, research, and scientific educational offerings.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2513 - NON SLP CLINICAL ROTATIONS

Minimum Credits: 1
Maximum Credits: 7
This course provides the csc.d student with the opportunity to develop theoretical and clinical knowledge and skills through observation, discussion, and participation with other health professionals via the completion of three 10-week half-time clinical rotations. These experiences may include such disciplines as physical medicine and rehabilitation, neurology, and other related clinical services.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis
Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2514 - EDUCATIONAL SERVICE DELIVERY

Minimum Credits: 1
Maximum Credits: 1
This course is designed to enhance the skill and knowledge base of speech language pathology services provided in an educational setting. Content focuses on current educational topics and issues encountered in school-based settings that may impact professional decision-making and service delivery. Topics include, but are not limited to, educational terminology, federal and state laws and legal mandates, educational reform initiatives, designing specialized services aligned with educational curriculum and standards, service delivery models, and intervention considerations.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2520 - MENTORED CLINICAL INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
The focus of these internship assignments is to further develop, refine and enhance the CScD student's knowledge, skills and abilities as they pertain to the assessment and management of communication and swallowing disorders in the context of their weekly caseload. Mentoring will be facilitated through weekly interactions with designated faculty members.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis
Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2521 - CLINICAL EDUCATION 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2522 - CLINICAL EDUCATION 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2523 - CLINICAL EDUCATION 3

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2525 - INTEGRATED CASES 1

Minimum Credits: 1
Maximum Credits: 1
This required course will use a case-based learning format to explore cases with a variety of diagnoses and characteristics encountered across settings in the field of speech-language pathology. Cases will involve various speech, language, communication, hearing, and swallowing diagnoses across the age range. The course will focus on clinical decision making and integration of content from other courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2526 - INTEGRATED CASES 2

Minimum Credits: 1
Maximum Credits: 1
This optional course will use a case-based learning format will be used to explore cases with a variety of diagnosis and characteristics encountered across settings in the field of speech-language pathology. Cases will involve various speech, language, communication, hearing, and swallowing diagnoses across the age range. This course will build on content from Integrated Cases 1 include integration of recently learned content in courses from Summer 1.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2572 - COMPREHENSIVE EXAMS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2600 - INTER-PROFESSIONAL ROTATION

Minimum Credits: 1
Maximum Credits: 1
This course includes a clinical rotation where students accompany physicians engaged in clinical examination, diagnosis, and treatment of otology/vestibular patients. Students meet with medical residents in otology conferences and grand rounds. This course exposes students to basic ear anatomy and surgical procedures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2601 - SUPERVISION

Minimum Credits: 1
Maximum Credits: 1
Students will explore activities associated with supervising students through readings and examples presented in class. This course provides future professionals with tools to be effective audiology supervisors. Material is presented in a manner to convince students that supervising future practitioners is a professional responsibility.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2602 - EDUCATIONAL AUDIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course takes a lifespan approach to educational audiology. Laws, working within the educational environment and with other educators, developmental needs, room acoustics, and technology will be explored in this course.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2604 - PRINCIPLES OF CLINCAL INSTRUCTION AND PEER TEACHING

Minimum Credits: 1
Maximum Credits: 1
Students will explore activities associated with supervising students through readings and examples presented in class. This course provides future professionals with tools to be effective audiology supervisors. Material is presented in a manner to convince students that supervising future practitioners is a professional responsibility.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2652 - ADVANCED CLINICAL SEMINAR 3-1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2654 - PRACTICE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Students will investigate the professional, legal, and ethical issues related to practice management. In-depth exposure and critical discussion will be focused on professional issues that impact licensure, occupational codes, and reimbursement. Students will understand CMS and other government agencies that impact how they manage their audio logy practices. Billing as it relates to CPT codes, ICD-9 CM codes, third party payment, etc. will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Audiology (AUDIO-AUD; MACAUD-SP; MSCAUD-SP) or Comm Science and Disorders (PHD)

CSD 2655 - ADVANCED CLINICAL SEMINAR 4-1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2656 - ADV AUDLGY CLN PRACTICE-NETWORK

Minimum Credits: 1
Maximum Credits: 4
Third year audiology students engage in advanced clinical practicum under the supervision of university faculty. Practicum activities target the development of independence in higher level clinical skills such as clinical decision making, diagnostic and treatment planning, case management, and professional oral and written communication skills.
Academic Career: Graduate
Course Component: Practicum

Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2657 - ADVANCED CLINICAL SEMINAR 3-3

Minimum Credits: 1
Maximum Credits: 1
This course provides advanced students with a forum for discussion of advanced clinical topics through case-based learning.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2658 - ADVANCED CLINICAL SEMINAR 4-3

Minimum Credits: 1
Maximum Credits: 1
This course provides advanced students with a forum for discussion of advanced clinical topics through case-based learning. Participants will access the course via the chat function on course web.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2659 - AUDIOLOGY EXTERNSHIP

Minimum Credits: 1
Maximum Credits: 9
Consists of full-time supervised work at sites offering di agnostic and rehabilitative audiology within and outside the Pittsburgh region. Students are expected to gain at lEast 2000 hours of clinical activity through the internship.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2660 - ADVANCED CLINICAL SEMINAR 4-2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2661 - ADVANCED CLINICAL SEMINAR 3-2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Under the direct supervision of a faculty member, the student carries out specific research (library or experimental) pertinent to the student's and/or faculty member's interests.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2970 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
Student is supervised in gaining experience in various aspects of university classroom instruction, including preparation of materials, lecturing and discussion, test construction and evaluation and student evaluation.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2971 - RESEARCH PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
This variable credit experience provides opportunities for students to be involved in research studies under the supervision of faculty members.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2972 - EXAMINATION

Minimum Credits: 1
Maximum Credits: 3
Examination credit registration gives official registration status to a student who will be taking an examination but who may not be registered for any other courses.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2973 - PRACTICUM IN CLINIC SUPERVISION

Minimum Credits: 1
Maximum Credits: 3
This course provides advanced graduate students with the opportunity to obtain experience supervising first year masters students. The advanced students, in turn, will work in consultation with the director or the assistant director of the university speech-language and hearing clinic.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Comm Science and Disorders (CSD-MA; CSD-MS; CSD-PhD; SLPATH-CSD)

CSD 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Independent study credits are taken without supervision by students who propose projects that complement their academic goals, and projects whose substance is not covered in the division's regular course offerings.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 3000 - DISSERTATION RESEARCH PHD DEGREE

Minimum Credits: 1
Maximum Credits: 9
Students will formulate, design, propose, carry out, analyze, interpret, and write up an approved research project, under the direction of a dissertation committee, and in particular the chairperson.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 3048 - INTRODUCTION TO PHD STUDIES

Minimum Credits: 3
Maximum Credits: 3
The seminar will focus on professional concerns such as the scientific method, research design and evaluation, effective scientific writing and presentation, funding sources, and the grant writing process. Among the options for a final product are a research proposal, or a publishable paper.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 3049 - PH.D. SEMINAR IN AUDIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Audiology Ph.D. students will participate in this seminar series.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 3050 - TRANSLATION CHALLENGES IN CSD

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the challenges of translating basic research findings in model systems to studies in humans (T0-T1) in communication science and disorders. The seminar covers various focus areas including hearing, speech, and voice.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

CSD 3060 - PHD PROSEMINAR

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Comm Science and Disorders (PHD) or Speech-Language Pathology (CSD) or Audiology (AUD)

CSD 3061 - RESEARCH ROUND TABLE (RRT)

Minimum Credits: 1
Maximum Credits: 1
This seminar provides graduate students the opportunity to interact with world-class researchers in the field of communication science and disorders.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

CSD 3479 - RESEARCH SEMINAR IN SPEECH AND LANGUAGE PATHOLOGY

Minimum Credits: 3
Maximum Credits: 3
Content varies across the spectrum of research issues in speech and language disorders. Each term has a special and specific focus. Students will review research literature and present and discuss specific topics of interest.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Comm Science and Disorders (PHD) or Audiology (AUD) or Speech-Language Pathology (CSD)

CSD 3480 - TRANSLATION CHALLENGES IN CSD (T2-T4 RESEARCH)

Minimum Credits: 3
Maximum Credits: 3
This seminar explores research challenges related translating research to humans, practice and communities. The seminar covers various focus areas including hearing, speech and voice.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

CSD 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Students will explore theoretical or applied questions related to their area of interest by analyzing relevant literature under the direction of an appropriate faculty advisor.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Comm Science and Disorders (PHD) or Audiology (AUD) or Speech-Language Pathology (CSD)

CSD 3971 - RESEARCH PRACTICUM FOR PHD STUDENTS

Minimum Credits: 1
Maximum Credits: 9
A prerequisite to CSD 3000; doctoral students are involved in research projects under the super vision of faculty members.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PLAN: Comm Science and Disorders (PHD) or Audiology (AUD) or Speech-Language Pathology (CSD)

Communication: Rhet & Comm

COMMRC 2000 - THESIS FOR MASTERS DEGREE

Minimum Credits: 1
Maximum Credits: 6
After successful completion of the master's level comprehensive examinations, students may elect to write a master's thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

COMMRC 2014 - ARGUMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course interrogates argument as a product, process, and method of inquiry, using a variety of theoretical approaches as points of departure, including pragma-dialectics, speech act theory, controversy studies, informal logic, visual communication, and forensics, as well as critical perspectives such as invitational rhetoric and feminist argumentation theory.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2201 - RHETORICAL CRITICISM

Minimum Credits: 3
Maximum Credits: 3
This course is focused on the history and practice of rhetorical criticism in America during the twentieth century. The student writes several in-depth criticisms of a significant message designed to influence belief and action.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2212 - VISUAL RHETORIC

Minimum Credits: 3
Maximum Credits: 3
This seminar concentrates on scholarship concerning visual rhetoric and its various synonyms, primarily produced in the United States during the last few decades. Through classroom exercises, readings, and writings, graduate students will become familiar with various practices of message analysis and evaluation pertaining to pictorial persuasion. Seminar participants prepare and present original research concerning visual rhetoric, including the formulation of research questions, developing an appropriate literature review, and, ultimately, inventing sustained argumentation for a thesis concerning the rhetoric of pictorial works.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2215 - RHETORIC AND HUMAN RIGHTS

Minimum Credits: 3
Maximum Credits: 3
This graduate course focuses on key concepts which are useful for describing, analyzing, and interpreting significant public texts and symbols concerning human rights controversies domestically and internationally. The central objective is to strengthen the seminar participants' awareness of qualitative techniques for interpretive and critical studies of public advocacy about human rights. It concentrates on 20th-century controversies within the US concerning "hate" or bias crimes. Considerations of race, sexuality, gender, sex, and economic class will be interwoven throughout the materials and discussions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2218 - CONTEMPORARY RHETORICAL THEORY

Minimum Credits: 3
Maximum Credits: 3
Study of selected theorists from roughly the last fifty years who explicitly thematize rhetoric or whose work helps to shape the intellectual landscape for thinking about rhetoric. Key theorists would include Kenneth Burke, Chaim Perelman, Michael McGee, Celeste Condit, Michel Foucault, Martha Nussbaum, Michael Billing, Richard Weaver, Jeanne Fahnestock, Thomas Farrell, Lloyd Bitzer, and Stephen Toulmin. Specific content will vary. Short response papers and one longer research paper required.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2220 - READINGS IN CRITICAL THEORY

Minimum Credits: 3
Maximum Credits: 3
Readings in critical theory concerns contemporary discourses about ideology, rhetoric, cultural institutions, power/ knowledge, desire and the subject. Each year a different area or topic is chosen.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2230 - COMMUNICATION RESEARCH 1

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to introduce rhetoric and communication students to empirical research methods. Examined will be historical and philosophical contexts, observation, hypothesis formulation, hypothesis testing (research methods), and the rationales underlying statistical tests.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2296 - APPROACHES TO COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
Introduction to graduate study in communication. Required for all new graduate students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2297 - RESEARCH FORUM

Minimum Credits: 1
Maximum Credits: 1
Each week different faculty members discuss their research agendas and how they place their work in scholarly fields.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

COMMRC 2298 - RESEARCH COLLOQUIUM

Minimum Credits: 0
Maximum Credits: 0
The research colloquium provides a forum in which graduate students, faculty, and invited lecturers present research in progress.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: No Grade Required

COMMRC 2299 - RESEARCH COLLOQUIUM SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The research colloquium provides a forum in which graduate students, faculty, and invited lecturers present research in progress with a Seminar component. Please see section course description.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2299 - WRITING WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
The research colloquium provides a forum in which graduate students, faculty, and invited lecturers present research in progress with a Seminar component. Please see section course description.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

COMMRC 2902 - DIRECTED STUDY FOR MA STUDENTS

Minimum Credits: 3
Maximum Credits: 3
This course, for individual instruction under a research faculty member, must be within an identifiable area of study in the fields of rhetoric and/or communication. Topics vary. May be taken only once. Open only to students yet to take ma comprehensive examinations.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

COMMRC 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Independent study is taken without supervision by students who propose projects that complement their academic goals, and projects whose substance is not covered in the division's regular course offerings. Topics vary.

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

COMMRC 3000 - DISSERTATION RESEARCH PHD DEGREE

Minimum Credits: 1
Maximum Credits: 12
The student will propose and design a research project and then carry out that project through research and writing. The project must be approved by a dissertation committee and executed under the direction of the chair of the committee.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

COMMRC 3001 - PROSPECTUS RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Under individual guidance of a designated research faculty member, students design, propose, and execute a research and writing project related to their prospective dissertation topic. May be used for prospectus preparation.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

COMMRC 3002 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Under individual guidance of a designated research faculty member, students design, propose, and execute a major professional development activity (e.g., Article, conference paper, or grant proposal) or related set of them, not necessarily related to their dissertation topic.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

COMMRC 3306 - SEM IN RHETORIC AND CULTURE

Minimum Credits: 3
Maximum Credits: 3
This course examines the role rhetoric plays in the formation of culture, reading some interdisciplinary texts (rhetorical, philosophical, historical, literary) which represent the intellectual elite of a specific time period. These texts will furnish us with an occasion to inquire into the ways in which intellectuals mobilize rhetoric to perpetuate or transform existing socio-political formations: the kinds of cultural self-understanding shaping their dis course and the kinds of spaces their discourse opens to their audiences. Topics vary.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 3314 - SEMINAR IN PUBLIC ARGUMENT

Minimum Credits: 3
Maximum Credits: 3
This is an advanced course dealing with specialized topics in the employment of argument in the public sphere. Textual analysis will serve as the primary mode of analysis for dis cussing the way policy issues are considered in the public realm.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 3316 - SEMINAR ON RHETORIC OF SOCIAL MOVEMENTS

Minimum Credits: 3
Maximum Credits: 3
Social movements have been perennial subjects of rhetorical inquiry. What are social movements? How and why do movements form, grow, and dissipate? Can approaches to rhetorical inquiry traditionally reserved for the analysis of lone speakers and single texts shed useful light on the process through which movements attempt to persuade various audiences? This seminar considers the manner in which early social movement scholars in the field of rhetoric grappled with these and other controversial questions. After developing working knowledge of the rhetorical tradition of social movement scholarship, students will engage other theoretical viewpoints from fields such as sociology and political science to illuminate aspects of movement activity that may be less apparent from within the rhetorical horizon. Consideration of specific case studies will anchor such explorations, and the pedagogical approach guiding such study will privilege direct engagement with movement actors. The goals of the course are to provide students with a grasp on the tradition of social movement inquiry in the field of rhetoric, familiarize them with fruitful interdisciplinary perspectives on movement study, and stimulate reflexive awareness of their own status as agents in the field of social action.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 3317 - SEMINAR IN RHETORICAL THEORY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 3326 - SEMINAR IN MEDIA STUDIES

Minimum Credits: 3
Maximum Credits: 3
This seminar is designed to familiarize students with some of the core issues being debated within contemporary media studies. A number of theoretical perspectives will be incorporated, and topics will vary.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

COMMRC 3384 - TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
This course focuses on principles and methods for teaching public speaking. It covers such matters as syllabus design; diversity and inclusion in the classroom; lecture preparation and presentation; small and larger group discussions; speech assignments, evaluation and feedback; general classroom management; and techniques for referring troubled students to counseling; and surveys the instructional team approach to teaching large lecture courses and recitations.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

COMMRC 3902 - DIRECTED STUDY FOR PHD STUDENTS

Minimum Credits: 3
Maximum Credits: 3
This course, for individual instruction under a research faculty member, must be within an identifiable area of study in the fields of rhetoric and/or communication. Topics vary. May be taken only twice. Open only to students yet to defend their Ph.D. comprehensive examinations.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Community Dentistry

CDENT 2113 - DENTAL RESEARCH METHODOLOGY 1

Minimum Credits: 2
Maximum Credits: 2
The focus of this course will be applied and, as such, students will be required to employ statistical software packages for the analysis of dentally relevant data files. Students will be encouraged to develop, collect, encode and analyze their own data sets. Particular emphasis will be placed on analysis of variance techniques involving repeated measures and factorial designs. The interpretation of computer printouts will be paramount. A very brief introduction to the concept of multivariate analysis will also be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

CDENT 2114 - DENTAL RESEARCH METHODOLOGY 2

Minimum Credits: 2
Maximum Credits: 2
Course familiarizes students with concepts and methods of research design and measurement in dental medicine. Various systems employed for classifying types of research are presented, including biological and behavioral science approaches. Particular emphasis will be placed on proper design of clinical trials, research paradigms, scientific writing, and methods that can be employed to control for sources of extraneous variance. As a result, students will understand how clinical research becomes a foundation for clincal practice, be able to critically review dental research literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

CDENT 2183 - SCIENTIFIC WRITING

Minimum Credits: 1
Maximum Credits: 1
The component parts of the research paper will be presented and the differences between writing for the thesis or dissertation and a journal manuscript will be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CDENT 2900 - INDEPENDENT STUDY

Minimum Credits: 2
Maximum Credits: 2
This course will provide the opportunity for dental residents to pursue the independent study of topics of interest in Dental Public Health.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

CDENT 5174 - STUDENT COMMUNITY OUTREACH PROGRAM AND EDUCATION 1: COMMUNITY OUTREACH

Minimum Credits: 1.5
Maximum Credits: 1.5
Mission statement: To increase the workforce of dental professionals who treat underserved and at-risk patients by creating a learning environment in the School of Dental Medicine where students are able to expand their personal and professional insights and gain experience by working in a variety of cultural and community settings. The SCOPE program is designed to help cultivate health care professionals who are caring, socially responsible and capable of behaving as patient advocates in all practice environments. The SCOPE service-learning model helps to enable 1) development of relationships and interactions with others, 2) the defining of community, and 3) the maintenance of a balance between personal and professional life. It also aims at developing student cultural competence, communication skills, and enabling a sense of "giving back" to the community as a crucial part of professional development. Course goals include the following: creating an atmosphere of community-minded oral-health professionals; creating more empathic, personally committed dentists; and improving the willingness of students to treat underserved and at-risk patients.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

CDENT 5241 - PRINCIPLES AND PRACTICE OF DENTAL PUBLIC HEALTH

Minimum Credits: 1
Maximum Credits: 1
The course will familiarize students to the subject and specialty of Dental Public Health. Dental Public Health will be reviewed and discussed in relation to general public health, prevention, the community, access to care, and the profession of dentistry.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

CDENT 5272 - STUDENT COMMUNITY OUTREACH PROGRAM AND EDUCATION (SCOPE) 1: COMMUNITY OUTREACH

Minimum Credits: 3
Maximum Credits: 3
Mission statement: To increase the workforce of dental professionals who treat underserved and at[1]risk patients by creating a learning environment in the School of Dental Medicine where students are able to expand their personal and professional insights and gain experience by working in a variety of cultural and community settings. The SCOPE program is designed to help cultivate health care professionals who are caring, socially responsible and capable of behaving as patient advocates in all practice environments. The SCOPE service-learning model helps to enable 1) development of relationships and interactions with others,2) the defining of community, and 3) the maintenance of a balance between personal and professional life. It also aims at developing student cultural competence, communication skills, and enabling a sense of ¿giving back¿ to the community as a crucial part of professional development. Course goals include the following: creating an atmosphere of community-minded oral-health professionals; creating more empathic, personally committed dentists; and improving the willingness of students to treat underserved and at-risk patients. The mission and goals also reflect the fostering and development of some of the fifteen core skills identified by Community-Campus Partnerships for Health. These skills are considered minimally necessary for health professionals to effectively meet the needs of the public and include the following*: caring for the community¿s health; promoting healthy lifestyles; participating in racially and culturally diverse society; understanding the role of the physical environment; involving patients and families in the decision-making process; continuing to learn; improving the health care system; and developing cultural competence.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

CDENT 5274 - SCOPE 2: COMMUNITY OUTREACH

Minimum Credits: 1.5
Maximum Credits: 1.5
The course is a continuation of activities started in SCOPE 1 of the first year. Mission statement: To increase the workforce of dental professionals who treat underserved and at-risk patients by creating a learning environment in the School of Dental Medicine where students expand their personal and professional insights and gain experience by working in a variety of cultural and community settings. The SCOPE program is designed to help cultivate health care professionals who are caring, socially responsible and capable of behaving as patient advocates in all practice environments. The SCOPE service-learning model helps to enable 1) development of relationships and interactions with others, 2) the defining of community, and 3) the maintenance of a balance between personal and professional life. It also aims at developing student cultural competence, communication skills, and enabling a sense of "giving back" to the community as a crucial part of professional development. Course goals include the following: creating an atmosphere of community-minded oral-health professionals; creating more empathic, personally committed dentists; and improving the willingness of students to treat underserved and at-risk patients. The mission and goals also reflect the fostering and development of some of the fifteen core skills identified by Community-Campus Partnerships for Health. These skills are considered minimally necessary for health professionals to effectively meet the needs of the public and include the following*: caring for the community's health; promoting healthy lifestyles; participating in racially and culturally diverse society; understanding the role of the physical environment; involving patients and families in the decision-making process; continuing to learn; improving the health care system; and developing cultural competence.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

CDENT 5312 - PRINCIPLES AND PRACTICE OF DENTAL PUBLIC HEALTH

Minimum Credits: 1
Maximum Credits: 1
The course will familiarize students to the subject and specialty of Dental Public Health. Dental Public Health will be reviewed and discussed in relation to general public health, prevention, the community, access to care, and the profession of dentistry.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

CDENT 5372 - ETHICS AND BEHAVIORAL DENTISTRY

Minimum Credits: 2
Maximum Credits: 2
In this course, we will provide students with the communication and behavioral skills and the foundation in ethical principles needed to become successful clinicians. Communication and interpersonal skills, more than technical expertise, result in the most satisfied patients. In addition, students who acquire these interpersonal and behavioral skills have easier dentist-patient interactions and are able to provide care ethically. There is an ethical component in all patient care; until you have been exposed to it, it is easy to be unaware. In this course, we provide evidence-based, behavioral solutions to a range of common oral health problems and tools to analyze the ethical dimensions of patient care. We incorporate hands-on practice to build skills in these areas and emphasize their application. We designed this upper-level course to be taken in conjunction with clinical practice, which provides you opportunities to practice with your patients the behavioral and ethical reasoning skills discussed in class. The course consists of readings and videos, lectures, practice with standardized patients, assignments, small group discussion sessions, and class discussion. Because class sessions are discussion-based, if we are remote, we expect that you will keep your camera on during the class period. Our overall goals are to 1) increase your awareness of the behavioral and ethical components of oral health care; and 2) strengthen the behavioral and ethical reasoning skills you use to provide oral health care.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5411 - STUDENT COMMUNITY OUTREACH PROGRAM AND EDUCATION (SCOPE) 2 (FALL)

Minimum Credits: 1.5
Maximum Credits: 1.5
Mission statement: To increase the workforce of dental professionals who treat under-served and at-risk patients by creating a learning

environment in the School of Dental Medicine where students are able to expand their personal and professional insights and gain experience by working in a variety of cultural and community settings. SCOPE 2 is an experiential process whereby students are able to shape and develop their clinical skills by providing clinical dentistry to patients in Federally Qualified Health Centers (FQHCs) and non-profit clinics throughout western Pennsylvania and parts of Ohio. The selected extramural clinics provide opportunities to work with patients in under-served communities, where both professional and personal growth are enabled, along with the development of other culturally competent skills.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

CDENT 5440 - STUDENT COMMUNITY OUTREACH AND EDUCATION PROGRAM (SCOPE) 2

Minimum Credits: 3
Maximum Credits: 3
Mission statement: To increase the workforce of dental professionals who treat underserved and at[1]risk patients by creating a learning environment in the School of Dental Medicine where students are able to expand their personal and professional insights and gain experience by working in a variety of cultural and community settings. SCOPE 2 is an experiential process whereby students are able to shape and develop their clinical skills by providing clinical dentistry to patients in Federally Qualified Health Centers (FQHCs) and non-profit clinics throughout Pennsylvania and parts of the tristate area (Ohio and West Virginia). The selected extramural clinics provide opportunities to work with patients in underserved communities, where both professional and personal growth are enabled, along with the development of other culturally competent skills, At the SCOPE sites, students deliver patient care in a role that takes on most responsibilities of a general dentist, including restorative procedures, treatment planning, preventive treatment, and routine surgical extractions. Continued development of professionalism and a sense of community service are enabled and emphasized.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: ABCF

CDENT 5441 - STUDENT COMMUNITY OUTREACH PROGRAM AND EDUCATION (SCOPE) 2 (SPRING)

Minimum Credits: 1.5
Maximum Credits: 1.5
Mission statement: To increase the workforce of dental professionals who treat under-served and at-risk patients by creating a learning environment in the School of Dental Medicine where students are able to expand their personal and professional insights and gain experience by working in a variety of cultural and community settings. SCOPE 2 is an experiential process whereby students are able to shape and develop their clinical skills by providing clinical dentistry to patients in Federally Qualified Health Centers (FQHCs) and non-profit clinics throughout western Pennsylvania and parts of Ohio. The selected extramural clinics provide opportunities to work with patients in under-served communities, where both professional and personal growth are enabled, along with the development of other culturally competent skills.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

CDENT 5810 - MEDICAL INTERPROFESSIONAL GERIATRICS

Minimum Credits: 1
Maximum Credits: 1
The course builds on dental students' understanding of older patients and development of interprofessional team skills necessary for patient care.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5810 - MEDICAL INTERPROFESSIONAL GERIATRICS

Minimum Credits: 1
Maximum Credits: 1
The course builds on dental students' understanding of older patients and development of interprofessional team skills necessary for patient care.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5811 - HEALTH LAW CLINIC IPE SELECTIVE

Minimum Credits: 1
Maximum Credits: 1
The overall goal of this selective is to provide students with an interesting and relevant interprofessional experience that explores the legal aspects of health care. Nursing, medical and law students, and now dental students, read and discuss the impact of law, ethics, and policy on social determinants of health and design a project to address an identified area of concern. This course is designed to reinforce dental students' knowledge of social determinants of health, relevant dental law, and professional ethics. The interprofessional experience will help students further develop their professional identity as a member of the interprofessional health care team. Students may also realize their professional responsibilities in regards to development of health care policy and implications on addressing population-level oral health disparities.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

CDENT 5811 - HEALTH LAW CLINIC IPE SELECTIVE

Minimum Credits: 1.5
Maximum Credits: 1.5
The overall goal of this selective is to provide students with an interesting and relevant interprofessional experience that explores the legal aspects of health care. Nursing, medical and law students, and now dental students, read and discuss the impact of law, ethics, and policy on social determinants of health and design a project to address an identified area of concern. This course is designed to reinforce dental students' knowledge of social determinants of health, relevant dental law, and professional ethics. The interprofessional experience will help students further develop their professional identity as a member of the interprofessional health care team. Students may also realize their professional responsibilities in regards to development of health care policy and implications on addressing population-level oral health disparities.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

CDENT 5812 - THE INTERPROFESSIONAL NEPHROLOGY TEAM

Minimum Credits: 1
Maximum Credits: 1
The goals of this course are for 1) dental students to participate in an interprofessional health care team and 2) gain an increased understanding of kidney diseases and treatments, along with their impact on oral health and patient care in a dental setting.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5812 - THE INTERPROFESSIONAL NEPHROLOGY TEAM

Minimum Credits: 1
Maximum Credits: 1
The goals of this course are for 1) dental students to participate in an interprofessional health care team and 2) gain an increased understanding of kidney diseases and treatments, along with their impact on oral health and patient care in a dental setting.
Academic Career: Dental Medicine

Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This independent externship is for a senior dental student who seeks a dental school approved rotation which is individually prescribed to address a particular interest the student wants to pursue within dentistry. The program which is often tailored to one aspect of dentistry allows enrichment to the student's education which none of our established programs in school or externships provide.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

CDENT 5910 - LITERATURE AND FILM TO UNDERSTAND PATIENT-PRACTITIONER EXPERIENCES

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

CDENT 5916 - CONTEMPORARY ISSUES IN DENTAL PUBLIC HEALTH

Minimum Credits: 2
Maximum Credits: 2
This course is for students wishing to expand their knowledge of the current issues in dental public health. Students will be given directed reading assignments and will search the literature for information on current and controversial topics in dentistry so that group discussions, debates and presentations may successfully be done in class. Topics covered may include: new oral health care delivery and management models, prevention and primary care systems, and dental health services research. Emphasis on evidence-based methodology is highlighted.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

CDENT 5930 - OVERVIEW AND PRACTICE OF DENTAL PUBLIC HEALTH

Minimum Credits: 1
Maximum Credits: 1
This selective course will be available for second, third, and fourth year students. The course material will cover common primary preventive interventions and its incorporation at a community level such as fluoridation, school-based programs, health promotion, sealant programs, health policy initiatives, etc. It will also include discussion on an interdiscliplinary approach to community level preventive practices. Finally, the course will also discuss the role of dental public health outside traditional dental practice - such as in federal and national health organizations, as well as underserved areas.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5930 - OVERVIEW AND PRACTICE OF DENTAL PUBLIC HEALTH

Minimum Credits: 1
Maximum Credits: 1
This selective course will be available for second, third, and fourth year students. The course material will cover common primary

preventive interventions and its incorporation at a community level such as fluoridation, school-based programs, health promotion, sealant programs, health policy initiatives, etc. It will also include discussion on an interdiscliplinary approach to community level preventive practices. Finally, the course will also discuss the role of dental public health outside traditional dental practice - such as in federal and national health organizations, as well as underserved areas.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5931 - DENTAL PUBLIC HEALTH POLICY AND ADVOCACY

Minimum Credits: 1
Maximum Credits: 1
In this selective course, students will have an opportunity to expand on concepts discussed in the second year public health course. Specifically, students will have an opportunity to discuss current oral health policy issues, including opportunities for advocacy.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5931 - DENTAL PUBLIC HEALTH POLICY AND ADVOCACY

Minimum Credits: 1
Maximum Credits: 1
In this selective course, students will have an opportunity to expand on concepts discussed in the second year public health course. Specifically, students will have an opportunity to discuss current oral health policy issues, including opportunities for advocacy.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5932 - INTERSECTION OF PUBLIC HEALTH AND CAREER GOALS

Minimum Credits: 0
Maximum Credits: 0
To help facilitate the student's ability to assess personal career goals and public health advocacy positions while concentrating on the oral health needs of the community in which they choose to establish their dental practice. Importantly, the student will be able to reflect on appropriate solutions relative to the specific community needs and prepare them for their role as a health care provider. Also, through participation in this program, the student will further recognize the multi-/inter-disciplinary nature of public health policies within the community and the need to establish partnerships with other health care providers.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5942 - IMPROVISATION FOR CLINICIANS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

CDENT 5973 - BIOSTATISTICS, HUMAN GENETICS, AND PUBLIC HEALTH FOR ORAL HEALTH PRACTITIONERS

Minimum Credits: 0
Maximum Credits: 0

This course will reinforce biostatistical, epidemiological, and public health principles and provide tools for proper analysis of research and journal manuscripts. Students will learn to better apply fundamental biostatistical principles used to critically evaluate evidence in medical/dental decision-making. Within the genetic epidemiology section of the course, there will be an emphasis on balancing genetic and familial studies with traditional epidemiology, biostatistical information, and public health outcomes. Content will also address the importance of ethically increasing diversity in genetic epi studies to achieve more equitable outcomes.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

Community Org and Soc Admin

SWCOSA 2040 - GRANT PROPOSAL WRITING

Minimum Credits: 3
Maximum Credits: 3
Provides students with some insight into the operation of several primary sources of funds for social welfare programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWCOSA 2052 - SOCIAL ENTREPRENEURSHIP

Minimum Credits: 3
Maximum Credits: 3
Social Entrepreneurship is an elective course in the Community Organization and Social Action (COSA) specialization. Social entrepreneurship infuses models of sustainable business and management practice in social work education and practice. This course is designed to immerse students in the fundamental theoretical and applied social enterprise development process and to equip students with the mindset, tools and techniques to apply the tools of business to address pressing social problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

SWCOSA 2054 - LEADERSHIP

Minimum Credits: 3
Maximum Credits: 3
This course examines theories about leadership and provides students with feedback on their own leadership styles. Leadership skills are defined and applied. Teams, as one context for demonstrating leadership, are explored in depth and methods for recognizing and managing group dynamics are introduced. The course combines theory with practical application. It is highly participative and students are expected to join in a wide range of exercises and simulations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: SWCOSA 2084 or 2088 (MIN GRADE 'B-' for Listed Courses)

SWCOSA 2084 - HUMAN SERVICE ORGANIZATION MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course seeks to train professionals to develop, manage, and lead community and human service organizations that address human service needs and revitalize communities. This course will address the social work leadership and management competencies as defined by the Network of Social Work Management, which include: (1) social and public policy context; (2) advocacy; (3) public/community relations and marketing; (4) governance, (5) planning; (6) program development and management; (7) financial development and

management; (8) program and organizational evaluation; (9) human resource management and (10) staff development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWBEH 2063 and SWWEL 2081 and SWGEN 2098

SWCOSA 2086 - MANAGING FINANCIAL AND HUMAN RESOURCES

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of the knowledge, values, and skills for human service management and leadership roles. The course reviews a macro framework for systems as well as organizational theories key to social administration, organizational management, and leadership as they apply in a nonprofit agency. It prepares students to develop, manage, and lead organizations that address community human service needs, advocate for community change, and revitalize communities. Social work values provide a critical framework for leadership and mission in human service organizations, and the class will draw upon the NASW Code of Ethics among others as they guide macro systems and organizations. This course explores critical issues in personal, professional, and organizational contexts, especially the nonprofit context historically associated with the human services arena.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: SWBEH 2063 and SWWEL 2081 and SWGEN 2098

SWCOSA 2087 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 3
Given the changing nature of social work practice, the MSW program occasionally offers courses in new and/or unique content areas. When offered, this course is designed to provide skill and knowledge content not covered in other community organization and social administration skill courses
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWCOSA 2088 - COMMUNITY ORGANIZING AND PLANNING

Minimum Credits: 3
Maximum Credits: 3
This course seeks to train professionals to develop, manage and lead community service organizations that address human service needs and revitalize communities. This course will provide a framework of systems, power, and inter-organizational network theories, and will define communities in terms of issues, identity and place. Social work values of social and economic justice, participation, democratic practices, social inclusion, empowerment and capacity building will serve as a foundation for this course. This course will explore models of community organizing, including: locality development, social planning and social action, as well as transformative, participatory, feminist, community building and power-based models. Students will examine consensus, campaign, and contests strategies and tactics relative to these models and the techniques for recruiting and mobilizing citizens and constituencies to address social issues and build on local assets. In addition, students will learn: 1) frameworks and tools for assessment, analysis and planning; 2) development of human, social, and economic capital; 3) community capacity building for leadership, organizational, and partnership development; 4) settings of community practice, including unions, environmental, community and faith-based organizations, community development corporations, collaborations and coalitions, enabling and intermediary organizations, and policy and social action groups; 5) roles and skills in community organizing; 6) concepts and issues related to urban communities, including racism, poverty, neighborhood/commercial revitalization, workforce development, housing, and crime. Students will produce a major field project to demonstrate community assessment, analysis and action planning competencies and frameworks learned in class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081
Course Attributes: MCSI - Sustainability Related

SWCOSA 2090 - WORKING WITH GROUP AND INTERGROUP RELATIONS: FACILITATION/NEGOTIATION/MEDIATION

Minimum Credits: 3
Maximum Credits: 3
Organizers and administrators must be able to work with a range of group processes and interpersonal relationships in community and organizational practice. This course focuses on enhancing student knowledge and skills of group dynamics and processes, as well as the individual relationship management that can be challenging for macro practice. It will also provide a social work values and ethical context for practicing these skills. Three over-arching skill areas will comprise the knowledge and practice base of this modular course: 1) facilitation of task group processes of all types and sizes, 2) negotiating and bargaining, 3) mediation, including conflict mediation and resolution.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWGEN 2034 and SWBEH 2063

SWCOSA 2096 - COMMUNITY PLANNING AND DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course will introduce the student to a community participation approach to local economic development carried out by a nonprofit organization. It would focus on the practical steps for putting together nonprofit housing developments and commercial and industrial business enterprises under participation conditions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081
Course Attributes: MCSI - Sustainability Related

SWCOSA 2097 - DIRECTED STUDY - COSA

Minimum Credits: 1
Maximum Credits: 3
This course is designed for those students who are interested in exploring a specific administration and/or policy issue of their choice. The course is appropriate for students with a new and developing interest area or for the student prepared to do advanced work. The course assumes the student's capacity for independent work under the guidance of a faculty member with extensive knowledge and experience in the subject area.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

SWCOSA 2099 - FIELD WORK

Minimum Credits: 1
Maximum Credits: 8
The field practicum emphasizes the integration and application of social work values, knowledge and skills in practice settings. Placements are in community service delivery systems and are individualized to combine the student's choice of concentration area, certification program and specialized skill interest.
Academic Career: Graduate
Course Component: Practicum

Grade Component: Grad SN Basis
Course Requirements: PREQ: SWGEN 2099; SBPLAN: COSA (Social Work-MSW)

Computational Biomedicine and Biotechnology

COBB 2010 - FOUNDATIONS OF COMPUTATIONAL BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the essential concepts, tools and techniques of modern computational biology, with real-world examples. It covers mathematical concepts, such as linear algebra, differential equations, and statistics, that are central to modeling biological systems. Students will learn the basic theory behind widely-used techniques like automated clustering, parameter estimation, sampling, and numerical integration. Project-based assignments in R and Python center around real-world computational biology problems from genomics, structural biology, and systems modeling. Prerequisites: Although there are no official prerequisites, it is highly recommended that students wishing to enroll in this course have an understanding of differential calculus and at least one semester of programming. This course is open to graduate students and upper-level undergraduates.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COBB 2020 - SYSTEMS BIOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to genomic data and basic analytical principles pertaining them. Students will learn about high-throughput sequencing methods and applications, genomic variation, transcriptomics and epigenomic data. At the end of the course, the students will be able to analyze efficiently these types of data sets using existing algorithms or algorithms they will develop.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COBB 2021 - INTRODUCTION TO GENOMICS

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to genomic data and basic analytical principles pertaining them. Students will learn about high-throughput sequencing methods and applications, genomic variation, transcriptomics and epigenomic data. At the end of the course, the students will be able to analyze efficiently these types of data sets using existing algorithms or algorithms they will develop.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COBB 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to a selection of popular python packages used in bioinformatics and computational and systems biology. Students will be graded on programming assignments. Each assignment will explore a different sub-discipline of computational biology and introduce students to a new python package. Optional recitations will be available for students with programming and will assist in the development of basic programming skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COBB 2030 - COMPUTATIONAL STRUCTURAL BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
Topics covered include: applying computational and statistical methods to the analysis of DNA and protein structures representing protein, DNA and RNA structure; homology modeling and protein structure prediction; theoretical description of basic interactions, along with computational methods to estimate them; statistical mechanical theory of molecules; molecular dynamics and other sampling methods; modeling protein flexibility, from side chains to loops to slow modes; reaction paths and basics of path sampling; protein-protein and protein-small molecule docking; supramolecular assembly; introduction to Quantitative Structure Activity Relationship (QSAR) in drug design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COBB 2035 - MODERN METHODS IN STRUCTURE-BASED DRUG DISCOVERY

Minimum Credits: 4
Maximum Credits: 4
This course introduces students to the modern computational approaches and governing physical and chemical principles that underpin structure-based drug discovery. The course explores how biomolecular structure and dynamics inform the rational design of therapeutics and how machine learning can be harnessed to improve drug discovery. Topics include molecular interactions, statistical mechanics and thermodynamics, molecular simulations, coarse-grained and enhanced sampling techniques, free energy calculations, protein structure prediction, protein design, molecular docking, and virtual screening. Students will engage with methods for structure-based drug discovery in hands-on assignments and recitations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COBB 2041 - CELLULAR AND SYSTEMS MODELING

Minimum Credits: 4
Maximum Credits: 4
A graduate-level introduction into mathematical modeling and analysis of biological systems on the cellular and other levels. This condensed and broad course conveys the unity of the modeling methodology in biology. It spans a range of perspectives derived from the different disciplines from which this new area of research originated: biology, mathematics, engineering, and computer science. The systems covered include quantitative physiology, quantitative cell biology, biological networks, dynamic systems, cell mechanics, and systems modeling of critical illness. The quantitative physiology topics to be covered include hemodynamics, musculoskeletal systems, endocrinology, neuroendocrinology, gastrointestinal/renal, transport phenomena, and pathophysiological conditions. Quantitative cell biology topics surveyed are mathematical models of the cytoskeleton dynamics, intracellular transport, cell locomotion, spatially-distributed models of cell signaling, approaches to whole-cell modeling, and role of modeling in cell-biological research. Models of cellular mechanics will also be addressed. Mathematics of dynamic systems is presented in application to enzyme reactions, bistability in cellular signaling, programmed cell death, and the mechanisms behind the circadian and cell-division rhythms. Biological network theory is presented as it applies to metabolism, protein interactions, regulation of gene expression, and reverse engineering of the biological systems. Theoretical aspects of application of systems modeling to clinical research are also presented on an example of quantitative systems approach to inflammation, sepsis, and trauma. In addition, the course will survey computational methods and models that are broadly useful across the various system types examined. These will include random walk models, master equations, and continuous and discrete models of chemistry within the cell. Finally, the course will include a presentation of general discrete and continuous models broadly useful in cell and systems modeling as well as computational methods for optimization and parameter tuning on such models. Across the entire range of topics, the universality of the systems modeling methodology and its role in biomedical research are emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

COBB 2055 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
This course addresses aspects of skills essential for establishing and maintaining a career in computational biomedicine and biotechnology. Topics covered include preparation of a CV and resume, interview skills, research ethics, mentoring, and communicating with managers and team members
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COBB 2060 - MACHINE LEARNING FOR BIOMEDICAL APPLICATIONS

Minimum Credits: 4
Maximum Credits: 4
High-throughput techniques are revolutionizing biomedical research. From whole genome sequencing, to RNA-Seq transcriptome profiling, to high-throughput mass spectrometry for protein profiling, to high-throughput biochemical screening, to flow cytometry for cell profiling, to high-content screening, to literature analysis and electronic medical records, from molecule to patient, modern techniques generate vast quantities of data. In order to be effective, biomedical researchers require the appropriate computational tools to correctly interpret and utilize this data. As machine learning is the science of finding and applying patterns in data, it is an essential tool for turning data into knowledge and actionable insights and has been rising in prominence in biomedical research. This course will focus on the practical aspects of effectively applying state-of-the-art machine learning methods to biomedically relevant datasets. Topics covered include mathematical foundations, practical coding skills, classical machine learning, deep learning, and generative modeling.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COBB 2066 - SCALABLE MACHINE LEARNING FOR BIG DATA BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
Machine learning(ML) has become an integral part of computational thinking in the era of big data biology. This course will focus on understanding the statistical structure of largescale biological data sets using ML algorithms. We will cover the basics of ML and study their scalable versions for implementation on a distributed computing framework. We will pursue distributed ML algorithms for: matrix factorization, convex optimization, dimensionality reduction, clustering, classification, graph analytics and deep learning, among others. The course will be project driven (3 to 4 mini projects) with source material from genomic sciences, structural biology, drug discovery, systems modeling and biological imaging. There will be one final project, along with a presentation. Students will be expected to design, implement and test their ML solutions in Apache Spark.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

COBB 2070 - COMPUTATIONAL GENOMICS

Minimum Credits: 3
Maximum Credits: 3
Dramatic advances in experimental technology and computational analysis are fundamentally transforming the basic nature and goal of biological research. The emergence of new frontiers in biology, such as evolutionary genomics and systems biology is demanding new methodologies that can confront quantitative issues of substantial computational and mathematical sophistication. This course introduces classical approaches and the latest methodological advances in the context of the following biological problems: 1) Computational genomics, focusing on gene finding, motifs detection and sequence evolution. 2) Analysis of high throughput biological data, such as gene expression data, focusing on issues ranging from data acquisition to pattern recognition and classification. 3) Molecular and regulatory evolution, focusing on phylogenetic inference and regulatory network evolution, and 4) Systems biology, concerning how to combine sequence, expression and other biological data sources to infer the structure and function of different systems in the cell. From the computational side this course focuses on modern machine learning methodologies for computational problems in molecular biology and genetics, including probabilistic modeling, inference and learning algorithms, pattern recognition, data integration, time series analysis, active learning, etc.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

COBB 2080 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 7
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in computational biology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

COBB 2085 - COBB INTERNSHIP

Minimum Credits: 1
Maximum Credits: 4
To gain experience in the professional application of computational biology, students are required to participate in a 2-to 3-month internship at a company of their choice. Acceptable internship sites include industrial labs, biotech/pharma companies, and governmental organizations. It is the student's responsibility to contact the company and secure the internship. Students wishing to perform the internship in a semester other than summer may petition the Executive Committee for an exception, but must still complete all required coursework. Students who are unable to secure internships may be permitted to substitute additional Independent Study research credit to fulfill the internship requirement, upon approval by the Executive Committee.Upon completion of the internship, each student will submit a written report summarizing the experience and the skills acquired. Students will additionally make an oral presentation to share their experience with others. Supervisors at the internship sites will be asked to provide a written evaluation of the students' performance.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

COBB 2100 - CURRENT TOPICS IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Students in this course will attend weekly seminars by internationally recognized researchers, and they will provide critical analyses of the talks.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

COBB 2110 - COBB FACULTY SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students in this course will attend weekly seminars by CoBB Faculty. The goal of the course is to introduce our students to our faculty's research through weekly faculty talks.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

COBB 2150 - COMPUTATIONAL DRUG DISCOVERY

Minimum Credits: 4
Maximum Credits: 4
This course introduces students to the essential methods of computational drug discovery, from structural analysis of small molecules, to

molecular dynamics simulations, to systems pharmacology. Students will learn to use software for accessing, viewing, and comparing small molecule structures. They will gain experience with molecular dynamics simulations, small molecule docking, virtual screening and pharmacophore modeling. Students will additionally learn how pathway inference and reaction network modeling are use in quantitative systems pharmacology (QSP). Basic programming proficiency (e.g., in Python) is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Computational Biology

CMPBIO 2010 - SEMINAR IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Seminar series of the joint Pitt-CMU Ph.D. program in computational biology. Nationally and internationally recognized researchers in the field of computational biology present scientific findings. Students meet informally with each speaker to discuss key areas of computational biology, including: computational structural biology, computational genomics, cellular and systems modeling, bio image informatics, and computational neurobiology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

CMPBIO 2015 - COMPUTATIONAL IMAGING FOR SPATIAL SYSTEMS BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
The recent explosion of next-generation, high-content, high-throughput spatial imaging technologies for intact tissues measuring protein expressions, DNA and RNA probes for investigating systems biology challenges has attracted the interest of NIH and other international agencies in funding precision medicine efforts, including Human Tumor Atlas Network (HTAN), Immuno-Oncology Translation Network (IOTN), Human BioMolecular Atlas Program (HuBMAP), Human Cell Atlas (HCA) and Human Protein Atlas (HPA). In this course, we will study these spatial imaging technologies in greater depth, from low-resolution, spatially barcoded approaches for spatial transcriptomics to high-resolution in situ approaches for imaging proteins, DNA and RNA (CODEX, MIBI, IMC-CyTOF, Seq-FISH, MERFISH) expressions. We will focus on several key aspects of these technologies requiring evaluation and benchmarking in the context of spatial approaches: validation of reagents; comparison to gold-standard methods; comparison between related techniques; and relation to analyses on dissociated cells. We will discuss the technologies in terms of: tissue preparation and reagent validation, imaging development and optimization, and computational inference to allow for high-resolution systems biology analysis of large tissues sections. We will include experimental hands-on lectures using in-house hyperplexed immunofluorescence imaging apparatus. Prerequisites: No biological background is expected. The assignments will cover the necessary biology. Experience in programming and some software engineering is preferred. Knowledge of probability, statistics, linear algebra and algorithms will be useful. Prior introduction to machine learning and imaging is a bonus. Strong interest in cancer imaging informatics is a plus. The class is open to senior year undergraduates and graduate students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMPBIO 2020 - GENE EXPRSN REGLN DATA ALGRTHM

Minimum Credits: 3
Maximum Credits: 3
This course is a graduate level course designed primarily for those students who want to learn about the computational methods and tools that are used in the analysis of promoter regions and transcription regulation data. Students with a biological background and knowledge of introductory level statistics can participate as well as students of quantitative background. The course will primarily focus on the methods that are used for the identification of transcription factor binding sites in the promoter regions of the genes. Both sequence-based and structure-based methods will be discussed. Various technologies for data collection will also be presented, including DNA arrays, SELEX,

CHIP, and their derivatives.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPBIO 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to a selection of popular python packages used in bioinformatics and computational and systems biology. Students will be graded on programming assignments. Each assignment will explore a different sub-discipline of computational biology and introduce students to a new python package. There will be two 1.5 hour lectures a week which will often include an in-class practical exercise. There are weekly programming assignments and a final project and presentation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMPBIO 2027 - BIOIMAGING, ANALYSIS AND SPATIAL BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to micron, nanometer, and sub-nanometer scale imaging-based approaches in experimental, computational and systems biology. Emphasis will be placed on understanding the fundamentals of image formation, processing, and analysis of brightfield, phase-contrast, highly multiplexed, super-resolution, live-cell, cryo-EM, and computational imaging, along with imaging-based spatial transcriptomic methods. Applications of these methods in studying biological phenomena in space and time will also be discussed. Python will be the programming language in which image processing, machine learning, and system biology methods introduced in the course will be implemented. Students are expected to know Python basics. It is also expected that students have a basic understanding of linear algebra and calculus.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPBIO 2030 - INTRODUCTION TO COMPUTATIONAL STRUCTURAL BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course will introduce students to computational structural biology, primarily relying on physical and chemical principles, as well as associated computational approaches. The course is a core class for both (a) the joint program in computational biology and (b) the molecular biophysics program. The course will cover biomolecular structure, statistical mechanical phenomenon in biophysics, simulation of biomolecular behavior, and key applications of computations in the field of structural biology. Specific topics: probability theory, statistical mechanics and thermodynamics, simulation methods, electrostatic phenomena, biochemical kinetics, binding, coarse-grained modeling, computations for structure determination, drug design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPBIO 2041 - CELLULAR AND SYSTEMS MODELING

Minimum Credits: 4
Maximum Credits: 4
A graduate-level introduction into mathematical modeling and analysis of biological systems on the cellular and other levels. This condensed and broad course conveys the unity of the modeling methodology in biology. It spans a range of perspectives derived from the different disciplines from which this new area of research originated: biology, mathematics, engineering, and computer science. The systems covered include quantitative physiology, quantitative cell biology, biological networks, dynamic systems, cell mechanics, and systems modeling of critical illness. The quantitative physiology topics to be covered include hemodynamics, musculoskeletal systems,

endocrinology, neuroendocrinology, gastrointestinal/renal, transport phenomena, and pathophysiological conditions. Quantitative cell biology topics surveyed are mathematical models of the cytoskeleton dynamics, intracellular transport, cell locomotion, spatially-distributed models of cell signaling, approaches to whole-cell modeling, and role of modeling in cell-biological research. Models of cellular mechanics will also be addressed. Mathematics of dynamic systems is presented in application to enzyme reactions, bistability in cellular signaling, programmed cell death, and the mechanisms behind the circadian and cell-division rhythms. Biological network theory is presented as it applies to metabolism, protein interactions, regulation of gene expression, and reverse engineering of the biological systems. Theoretical aspects of application of systems modeling to clinical research are also presented on an example of quantitative systems approach to inflammation, sepsis, and trauma. In addition, the course will survey computational methods and models that are broadly useful across the various system types examined. These will include random walk models, master equations, and continuous and discrete models of chemistry within the cell. Finally, the course will include a presentation of general discrete and continuous models broadly useful in cell and systems modeling as well as computational methods for optimization and parameter tuning on such models. Across the entire range of topics, the universality of the systems modeling methodology and its role in biomedical research are emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMPBIO 2041 - CELLULAR AND SYSTEMS MODELING

Minimum Credits: 4
Maximum Credits: 4
A graduate-level introduction into mathematical modeling and analysis of biological systems on the cellular and other levels. This condensed and broad course conveys the unity of the modeling methodology in biology. It spans a range of perspectives derived from the different disciplines from which this new area of research originated: biology, mathematics, engineering, and computer science. The systems covered include quantitative physiology, quantitative cell biology, biological networks, dynamic systems, cell mechanics, and systems modeling of critical illness. The quantitative physiology topics to be covered include hemodynamics, musculoskeletal systems, endocrinology, neuroendocrinology, gastrointestinal/renal, transport phenomena, and pathophysiological conditions. Quantitative cell biology topics surveyed are mathematical models of the cytoskeleton dynamics, intracellular transport, cell locomotion, spatially-distributed models of cell signaling, approaches to whole-cell modeling, and role of modeling in cell-biological research. Models of cellular mechanics will also be addressed. Mathematics of dynamic systems is presented in application to enzyme reactions, bistability in cellular signaling, programmed cell death, and the mechanisms behind the circadian and cell-division rhythms. Biological network theory is presented as it applies to metabolism, protein interactions, regulation of gene expression, and reverse engineering of the biological systems. Theoretical aspects of application of systems modeling to clinical research are also presented on an example of quantitative systems approach to inflammation, sepsis, and trauma. In addition, the course will survey computational methods and models that are broadly useful across the various system types examined. These will include random walk models, master equations, and continuous and discrete models of chemistry within the cell. Finally, the course will include a presentation of general discrete and continuous models broadly useful in cell and systems modeling as well as computational methods for optimization and parameter tuning on such models. Across the entire range of topics, the universality of the systems modeling methodology and its role in biomedical research are emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMPBIO 2045 - SPECIAL TOPICS IN COMPUTATIONAL BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course will focus on advanced methods for modeling and reasoning about the dynamics of biological systems. Emphasis will be placed on emerging techniques that complement those based on differential equations and machine learning. Examples include: rule-based modeling, process algebras, hybrid systems, as well as applications of model checking and type theory. Students will be asked to present and provide written summaries of recent papers, and to complete a course project of their own design.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CMPBIO 2050 - LABORATORY METHODS FOR COMPUTATIONAL BIOLOGY

Minimum Credits: 2
Maximum Credits: 2
Computational biologists frequently focus on analyzing and modeling large amounts of biological data, often from high-throughput assays or diverse sources. It is therefore critical that students training in computational biology be familiar with the paradigms and methods of experimentation and measurement that lead to the production of these data. This one-semester laboratory course gives students a deeper appreciation of the principles and challenges of biological experimentation. Students learn a range of topics, including experimental design, structural biology, next generation sequencing, genomics, proteomics, bio imaging, and high-content screening. Class sessions are primarily devoted to designing and performing experiments in the lab using the above techniques. Students are required to keep a detailed laboratory notebook of their experiments and summarize their resulting data in written abstracts and oral presentations given in class-hosted lab meetings. With an emphasis on the basics of experimentation and broad views of multiple cutting-edge and high-throughput techniques, this course is appropriate for students who have never taken a traditional undergraduate biology lab course, as well as those who have and are looking for introductory training in more advanced approaches. Touches upon a range of topics, including structural biology, genomics, proteomics, and bio imaging a different laboratory method is covered each week, in the lab of a host faculty member who uses that method. The theory and practical aspects of each method are covered during a lecture session prior to each lab session. Students are required to submit a short lab report each week, summarizing the goals of the experiment, the critical steps and sources of error, and the analysis of the resulting data. With an emphasis on instrumentation and high-throughput data collection, this course is appropriate for students who have never taken a traditional undergraduate biology lab course, as well as those who have.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPBIO 2060 - CURRENT TOPICS IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course will offer an overview of faculty research in computational biology, a field of tremendous growth and excitement. It will also offer a sampling of current literature in this field, as well as an opportunity for students to develop and practice their presentation skills. The course will meet once a week, and will follow a seminar-style format, with a PowerPoint presentation, followed by a question-and-answer session. To familiarize students with alternative presentation formats, and to allow for more flexibility, the course may also include one or more webinar/teleconference sessions. Throughout the semester, students will take turns serving as introducer, presenter, and moderator of question-and-answer sessions. The topics covered in this course will be in line with the five specialization areas of the joint CMU-Pitt Ph.D. program in computational biology: computational genomics, computational, structural biology, cellular and systems modeling, bio image informatics, and computational neurobiology. The initial meeting will feature an icebreaker exercise and a refresher on professional presentation skills.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

CMPBIO 2065 - SCALABLE MACHINE LEARNING FOR BIG DATA BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMPBIO 2066 - SCALABLE MACHINE LEARNING FOR BIG DATA BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
Machine learning(ML) has become an integral part of computational thinking in the era of big data biology. This course will focus on understanding the statistical structure of largescale biological data sets using ML algorithms. We will cover the basics of ML and study their scalable versions for implementation on a distributed computing framework. We will pursue distributed ML algorithms for: matrix factorization, convex optimization, dimensionality reduction, clustering, classification, graph analytics and deep learning, among others. The course will be project driven (3 to 4 mini projects) with source material from genomic sciences, structural biology, drug discovery,

systems modeling and biological imaging. There will be one final project, along with a presentation. Students will be expected to design, implement and test their ML solutions in Apache Spark.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMPBIO 2066 - SCALABLE MACHINE LEARNING FOR BIG DATA BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
Machine learning(ML) has become an integral part of computational thinking in the era of big data biology. This course will focus on understanding the statistical structure of largescale biological data sets using ML algorithms. We will cover the basics of ML and study their scalable versions for implementation on a distributed computing framework. We will pursue distributed ML algorithms for: matrix factorization, convex optimization, dimensionality reduction, clustering, classification, graph analytics and deep learning, among others. The course will be project driven (3 to 4 mini projects) with source material from genomic sciences, structural biology, drug discovery, systems modeling and biological imaging. There will be one final project, along with a presentation. Students will be expected to design, implement and test their ML solutions in Apache Spark.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMPBIO 2066 - SCALABLE MACHINE LEARNING FOR BIG DATA BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
High-throughput techniques are revolutionizing biomedical research. From whole genome sequencing, to RNA-Seq transcriptome profiling, to high-throughput mass spectrometry for protein profiling, to high-throughput biochemical screening, to flow cytometry for cell profiling, to high-content screening, to literature analysis and electronic medical records, from molecule to patient, modern techniques generate vast quantities of data. In order to be effective, biomedical researchers require the appropriate computational tools to correctly interpret and utilize this data. As machine learning is the science of finding and applying patterns in data, it is an essential tool for turning data into knowledge and actionable insights and has been rising in prominence in biomedical research. This course will focus on the practical aspects of effectively applying state-of-the-art machine learning methods at scale to large, biomedically relevant datasets. Topics covered include traditional machine learning algorithms, distributed machine learning, cloud and distributed computing, and deep learning. A strong programming and mathematical background is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMPBIO 2070 - COMPUTATIONAL GENOMICS

Minimum Credits: 3
Maximum Credits: 3
Dramatic advances in experimental technology and computational analysis are fundamentally transforming the basic nature and goal of biological research. The emergence of new frontiers in biology, such as evolutionary genomics and systems biology is demanding new methodologies that can confront quantitative issues of substantial computational and mathematical sophistication. In this course we will discuss classical approaches and latest methodological advances in the context of the following biological problems: 1) computational genomics, focusing on gene finding, motifs detection and sequence evolution. 2) Medical and populational genetics, focusing on polymorphism analysis, linkage analysis, pedigree and genetic demography, 3) analysis of high throughput biological data, such as gene expression data, focusing on issues ranging from data acquisition to pattern recognition and classification. 4) Molecular and regulatory evolution, focusing on phylogenetic inference and regulatory network evolution, and 5) systems biology, concerning how to combine sequence, expression and other biological data sources to infer the structure and function of different systems in the cell. From the computational side this course focuses on modern machine learning methodologies for computational problems in molecular biology and genetics, including probabilistic modeling, inference and learning algorithms, pattern recognition, data integration, time series analysis, active learning, etc.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPBIO 2075 - MOLECULAR EVOLUTION

Minimum Credits: 3
Maximum Credits: 3
Sequencing technology is continually progressing, and genome sequences from different species and populations continue to become available in increasing numbers. Such data allows questions about molecular evolution to be addressed in new and exciting ways. This course introduces students to the evolutionary analysis of DNA and amino acid sequences. Lectures on theory will be accompanied by practical instruction in the use of contemporary computational methods and software. Topics include: population genetics of selection and mutation, models of sequence evolution, phylogenetic models, analysis of multiple sequence alignments for rates and patterns of divergence, inference of natural selection, and co-evolution between proteins. Emphasis is placed on quantitative modeling and the biological principles underlying observed patterns of molecular evolution. Interested students should have a basic grasp of molecular biology and calculus.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPBIO 2080 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in computational biology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

CMPBIO 2085 - COMPUTATIONAL BIOLOGY INTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
This course allows a student to gain computational biology experience in a real-world setting. Internships vary widely in scope, but common to all is the chance to practice computational biology skills acquired in the classroom. Typically, students seek and secure their own internships. Internships must be approved by CPCB Program Directors.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

CMPBIO 2090 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

CMPBIO 3090 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation.

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Computational Biology (PHD)

MSCBIO 2010 - SEMINAR IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Seminar series of the joint Pitt-CMU Ph.D. program in computational biology. Nationally and internationally recognized researchers in the field of computational biology present scientific findings. Students meet informally with each speaker to discuss key areas of computational biology, including: computational structural biology, computational genomics, cellular and systems modeling, bio image informatics, and computational neurobiology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSCBIO 2012 - CRITICAL THINKING IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
This is an upper level critical paper reading and discussion course in the areas of experimental genomics. Introductory lectures will be interspersed within the topic blocks, with most of the meeting time devoted to critical discussion of assigned journal articles. Students will be responsible for leading class discussions and fielding questions on those articles. There will be written and oral presentations of final student proposals at the end of the semester.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCBIO 2013 - ADVANCED COMPUTATIONAL BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This is a graduate-level course that will explore cutting-edge biophysical/computational methods for analyzing and predicting the structure, dynamics, and function of biological macromolecules. Designed for students with at least one graduate level course on computational structural biology or similar. Student is expected to know MD simulations (any forcefield); sequence alignment; and foundational knowledge on the biophysics of biomolecules, as well as coding of simple analytical tools of protein properties. The course integrates biophysics with molecular dynamics simulations, and AI/ML-driven tools (e.g., AlphaFold) to address challenges in drug discovery, protein engineering, and systems biology. Emphasis is placed on bridging theoretical models with real-world applications, such as rational drug design and understanding disease mechanisms at atomic resolution.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCBIO 2015 - COMPUTATIONAL IMAGING FOR SPATIAL SYSTEMS BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
The recent explosion of next-generation, high-content, high-throughput spatial imaging technologies for intact tissues measuring protein expressions, DNA and RNA probes for investigating systems biology challenges has attracted the interest of NIH and other international agencies in funding precision medicine efforts, including Human Tumor Atlas Network (HTAN), Immuno-Oncology Translation Network (IOTN), Human BioMolecular Atlas Program (HuBMAP), Human Cell Atlas (HCA) and Human Protein Atlas (HPA). In this course, we will study these spatial imaging technologies in greater depth, from low-resolution, spatially barcoded approaches for spatial transcriptomics to high-resolution in situ approaches for imaging proteins, DNA and RNA (CODEX, MIBI, IMC-CyTOF, Seq-FISH, MERFISH) expressions. We will focus on several key aspects of these technologies requiring evaluation and benchmarking in the context

of spatial approaches: validation of reagents; comparison to gold-standard methods; comparison between related techniques; and relation to analyses on dissociated cells. We will discuss the technologies in terms of: tissue preparation and reagent validation, imaging development and optimization, and computational inference to allow for high-resolution systems biology analysis of large tissues sections. We will include experimental hands-on lectures using in-house hyperplexed immunofluorescence imaging apparatus. Prerequisites: No biological background is expected. The assignments will cover the necessary biology. Experience in programming and some software engineering is preferred. Knowledge of probability, statistics, linear algebra and algorithms will be useful. Prior introduction to machine learning and imaging is a bonus. Strong interest in cancer imaging informatics is a plus. The class is open to senior year undergraduates and graduate students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCBIO 2019 - CPCB WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
The CPCB Writing Workshop is designed to introduce students to the basics of descriptive scientific writing, grantsmanship, the grant review process, and other related topics that will help them present their research and ideas in an impactful and persuasive way. This summer mini-course held in the second 4-week summer session is a required 1-credit, pass/fail course for CPCB students.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

MSCBIO 2020 - GENE EXPRESSION REGULATION: DATA AND ALGORITHMS

Minimum Credits: 3
Maximum Credits: 3
This course is a graduate level course designed primarily for those students who want to learn about the computational methods and tools that are used in the analysis of promoter regions and transcription regulation data. Students with a biological background and knowledge of introductory level statistics can participate as well as students of quantitative background. The course will primarily focus on the methods that are used for the identification of transcription factor binding sites in the promoter regions of the genes. Both sequence-based and structure-based methods will be discussed. Various technologies for data collection will also be presented, including DNA arrays, SELEX, chip, and their derivatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to a selection of popular python packages used in bioinformatics and computational and systems biology. Students will be graded on programming assignments. Each assignment will explore a different sub-discipline of computational biology and introduce students to a new python package. There will be two 1.5 hour lectures a week which will often include an in-class practical exercise. There are weekly programming assignments and a final project and presentation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCBIO 2027 - BIOIMAGING, ANALYSIS AND SPATIAL BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to micron, nanometer, and sub-nanometer scale imaging-based approaches in experimental, computational and systems biology. Emphasis will be placed on understanding the fundamentals of image formation, processing, and

analysis of brightfield, phase-contrast, highly multiplexed, super-resolution, live-cell, cryo-EM, and computational imaging, along with imaging-based spatial transcriptomic methods. Applications of these methods in studying biological phenomena in space and time will also be discussed. Python will be the programming language in which image processing, machine learning, and system biology methods introduced in the course will be implemented. Students are expected to know Python basics. It is also expected that students have a basic understanding of linear algebra and calculus.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCBIO 2030 - INTRODUCTION TO COMPUTATIONAL STRUCTURAL BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course will introduce students to computational structural biology, primarily relying on physical and chemical principles, as well as associated computational approaches. The course is a core class for both (a) the joint program in computational biology and (b) the molecular biophysics program. The course will cover biomolecular structure, statistical mechanical phenomenon in biophysics, simulation of biomolecular behavior, and key applications of computations in the field of structural biology. Specific topics: probability theory, statistical mechanics and thermodynamics, simulation methods, electrostatic phenomena, biochemical kinetics, binding, coarse-grained modeling, computations for structure determination, drug design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 2041 - CELLULAR, SYSTEMS, AND MOLECULAR MODELING

Minimum Credits: 4
Maximum Credits: 4
Cellular, Systems, and Molecular Modeling undertakes the ambitious task of studying the dynamics of biological modeling.png and biomedical processes from a whole system point of view. The observed systems range over orders of magnitude, from tissue to cells to molecular assemblies! Engineering tools are used along with genome-scale information in mathematical and/or computational models that usually adopt a top-down approach. Modeling diseases, entire 'virtual' cells, or subcellular networks of interactions are among typical tasks. Major research topics include the modeling of complex signaling and regulatory networks, transport mechanisms, spatio-temporal evolution of microphysiological events, as well as establishing the links between the development of complex phenotypes and the seemingly unrelated molecular events.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSCBIO 2042 - CRITICAL THINKING IN COMPUTATIONAL BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This is an upper level critical paper reading and discussion course in the areas of experimental genomics. Introductory lectures will be interspersed within the topic blocks, with most of the meeting time devoted to critical discussion of assigned journal articles. Students will be responsible for leading class discussions and fielding questions on those articles. There will be written and oral presentations of final student proposals at the end of the semester.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 2045 - SPECIAL TOPICS IN COMPUTATIONAL BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course will focus on advanced methods for modeling and reasoning about the dynamics of biological systems. Emphasis will be

placed on emerging techniques that complement those based on differential equations and machine learning. Examples include: rule-based modeling, process algebras, hybrid systems, as well as applications of model checking and type theory. Students will be asked to present and provide written summaries of recent papers, and to complete a course project of their own design.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

MSCBIO 2050 - LABORATORY METHODS FOR COMPUTATIONAL BIOLOGY

Minimum Credits: 2
Maximum Credits: 2
Computational biologists frequently focus on analyzing and modeling large amounts of biological data, often from high-throughput assays or diverse sources. It is therefore critical that students training in computational biology be familiar with the paradigms and methods of experimentation and measurement that lead to the production of these data. This one-semester laboratory course gives students a deeper appreciation of the principles and challenges of biological experimentation. Students learn a range of topics, including experimental design, structural biology, next generation sequencing, genomics, proteomics, bio imaging, and high-content screening. Class sessions are primarily devoted to designing and performing experiments in the lab using the above techniques. Students are required to keep a detailed laboratory notebook of their experiments and summarize their resulting data in written abstracts and oral presentations given in class-hosted lab meetings. With an emphasis on the basics of experimentation and broad views of multiple cutting-edge and high-throughput techniques, this course is appropriate for students who have never taken a traditional undergraduate biology lab course, as well as those who have and are looking for introductory training in more advanced approaches. Touches upon a range of topics, including structural biology, genomics, proteomics, and bio imaging a different laboratory method is covered each week, in the lab of a host faculty member who uses that method. The theory and practical aspects of each method are covered during a lecture session prior to each lab session. Students are required to submit a short lab report each week, summarizing the goals of the experiment, the critical steps and sources of error, and the analysis of the resulting data. With an emphasis on instrumentation and high-throughput data collection, this course is appropriate for students who have never taken a traditional undergraduate biology lab course, as well as those who have.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 2060 - CURRENT TOPICS IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course will offer an overview of faculty research in computational biology, a field of tremendous growth and excitement. It will also offer a sampling of current literature in this field, as well as an opportunity for students to develop and practice their presentation skills. The course will meet once a week, and will follow a seminar-style format, with a PowerPoint presentation, followed by a question-and-answer session. To familiarize students with alternative presentation formats, and to allow for more flexibility, the course may also include one or more webinar/teleconference sessions. Throughout the semester, students will take turns serving as introducer, presenter, and moderator of question-and-answer sessions. The topics covered in this course will be in line with the five specialization areas of the joint CMU-Pitt Ph.D. program in computational biology: computational genomics, computational, structural biology, cellular and systems modeling, bio image informatics, and computational neurobiology. The initial meeting will feature an icebreaker exercise and a refresher on professional presentation skills.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

MSCBIO 2065 - SCALABLE MACHINE LEARNING FOR BIG DATA BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Machine learning(ML) has become an integral part of computational thinking in the era of big data biology. This course will focus on understanding the statistical structure of largescale biological data sets using ML algorithms. We will cover the basics of ML and study their scalable versions for implementation on a distributed computing framework. We will pursue distributed ML algorithms for: matrix factorization, convex optimization, dimensionality reduction, clustering, classification, graph analytics and deep learning, among others.

The course will be project driven (3 to 4 mini projects) with source material from genomic sciences, structural biology, drug discovery, systems modeling and biological imaging. There will be one final project, along with a presentation. Students will be expected to design, implement and test their ML solutions in Apache Spark.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 2066 - SCALABLE MACHINE LEARNING FOR BIG DATA BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
High-throughput techniques are revolutionizing biomedical research. From whole genome sequencing, to RNA-Seq transcriptome profiling, to high-throughput mass spectrometry for protein profiling, to high-throughput biochemical screening, to flow cytometry for cell profiling, to high-content screening, to literature analysis and electronic medical records, from molecule to patient, modern techniques generate vast quantities of data. In order to be effective, biomedical researchers require the appropriate computational tools to correctly interpret and utilize this data. As machine learning is the science of finding and applying patterns in data, it is an essential tool for turning data into knowledge and actionable insights and has been rising in prominence in biomedical research. This course will focus on the practical aspects of effectively applying state-of-the-art machine learning methods at scale to large, biomedically relevant datasets. Topics covered include traditional machine learning algorithms, distributed machine learning, cloud and distributed computing, and deep learning. A strong programming and mathematical background is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 2070 - COMPUTATIONAL GENOMICS

Minimum Credits: 3
Maximum Credits: 3
Dramatic advances in experimental technology and computational analysis are fundamentally transforming the basic nature and goal of biological research. The emergence of new frontiers in biology, such as evolutionary genomics and systems biology is demanding new methodologies that can confront quantitative issues of substantial computational and mathematical sophistication. In this course we will discuss classical approaches and latest methodological advances in the context of the following biological problems: 1) computational genomics, focusing on gene finding, motifs detection and sequence evolution. 2) Medical and populational genetics, focusing on polymorphism analysis, linkage analysis, pedigree and genetic demography, 3) analysis of high throughput biological data, such as gene expression data, focusing on issues ranging from data acquisition to pattern recognition and classification. 4) Molecular and regulatory evolution, focusing on phylogenetic inference and regulatory network evolution, and 5) systems biology, concerning how to combine sequence, expression and other biological data sources to infer the structure and function of different systems in the cell. From the computational side this course focuses on modern machine learning methodologies for computational problems in molecular biology and genetics, including probabilistic modeling, inference and learning algorithms, pattern recognition, data integration, time series analysis, active learning, etc.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 2074 - EVOLUTIONARY BIOLOGY OF HUMAN DISEASE

Minimum Credits: 3
Maximum Credits: 3
Evolution is a fundamental unifying principle of biology. This class takes a broad approach to illustrate how an evolutionary perspective augments medical research and practice. Topics covered range from the evolution of human populations, to antibiotic resistance, and include medical conditions as diverse as diabetes, cardiovascular disease, cancer or aging.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 2075 - MOLECULAR EVOLUTION

Minimum Credits: 3
Maximum Credits: 3
Sequencing technology is continually progressing, and genome sequences from different species and populations continue to become available in increasing numbers. Such data allows questions about molecular evolution to be addressed in new and exciting ways. This course introduces students to the evolutionary analysis of DNA and amino acid sequences. Lectures on theory will be accompanied by practical instruction in the use of contemporary computational methods and software. Topics include: population genetics of selection and mutation, models of sequence evolution, phylogenetic models, analysis of multiple sequence alignments for rates and patterns of divergence, inference of natural selection, and co-evolution between proteins. Emphasis is placed on quantitative modeling and the biological principles underlying observed patterns of molecular evolution. Interested students should have a basic grasp of molecular biology and calculus.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 2080 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in computational biology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

MSCBIO 2085 - COMPUTATIONAL BIOLOGY INTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

MSCBIO 2090 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSCBIO 2370 - DRUG DISCOVERY

Minimum Credits: 3
Maximum Credits: 3
Drug discovery is an interdisciplinary science that seeks to identify small molecular and/or biologic probes and to understand at the molecular level how these probes affect macromolecular processes. This course will discuss various topics that are relevant to current approaches and principles in drug discovery including target validation, drug origins, cell based screening, high throughput screening, proteomic approaches to drug discovery, computational biological aspects of drug discovery, and pharmacoinformatics, as well as topics in preclinical drug development and intellectual property. The course will include case studies intended to aid students in a full understanding of the drug discovery process.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSCBIO 3090 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Computer Engineering - Arts and Sciences

COEA 2000 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 6
Master's thesis research.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 2900 - GRADUATE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
A professional internship may be taken at any time during the course of graduate study. Ph.D. students may take this course up to two times for credit, MS students may take it at most once.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis
Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Directed study.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
This course involves study which is approved by the faculty adviser but carried out independently by student.
Academic Career: Graduate
Course Component: Independent Study

Grade Component: Grad SN Basis
Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 3000 - RESEARCH AND DISSERTATION: PHD

Minimum Credits: 1
Maximum Credits: 9
Research and dissertation Ph.D.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 3893 - GRADUATE SEMINAR

Minimum Credits: 1
Maximum Credits: 1
A weekly series of presentations by engineers and scientists, visiting researchers, faculty, and graduate students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: PLAN: Computer Engineering (MS or PHD)

Computer Science

CS 0401 - INTERMEDIATE PROGRAMMING USING JAVA

Minimum Credits: 4
Maximum Credits: 4
This course is a rigorous introduction to the fundamental concepts and techniques of computer programming using the java programming language. This is a first course for students who intend to major in computer science.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

CS 0441 - DISCRETE STRUCTURES FOR CS

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to understand and use (abstract) discrete structures that are backbones of computer science. In particular, this class is meant to introduce logic, proofs, sets, relations, functions, counting, and probability, with an emphasis on applications in computer science.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: CREQ: MATH 0220 or 0230 or 0235

CS 0445 - DATA STRUCTURES

Minimum Credits: 3
Maximum Credits: 3
This course emphasizes the study of the basic data structures of computer science (stacks, queues, trees, lists) and their implementations using the java language included in this study are programming techniques which use recursion, reference variables, and dynamic memory

allocation. Students in this course are also introduced to various searching and sorting methods and also expected to develop an intuitive understanding of the complexity of these algorithms.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: CS 0401 (MIN GRADE 'C')

CS 0447 - COMPUTER ORGANIZATION AND ASSEMBLY LANGUAGE

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to study the components of computing systems common to most computer architectures. In particular, this class is meant to introduce data representation, types of processors, memory types and hierarchy, and device drivers. The students will learn MIPS assembly language, the design of arithmetic and logic units, and basic designs for RISC processors.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: CREQ: CS 0445

CS 1510 - ALGORITHM DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course will cover methods and strategies that are useful for the design of nonnumeric algorithms. Students are expected to design their own algorithms.
Academic Career: UGRD
Course Component: Lecture
Grade Component: LG/SNC
Course Requirements: PREQ: [(CS 1501 or COE 1501) and CS 1502] or (CS 0458 and CS 1710); MIN GRADE 'C' FOR ALL COURSES LISTED

CS 1511 - INTRODUCTION TO THEORY OF COMPUTATION

Minimum Credits: 3
Maximum Credits: 3
Understanding the theory of computation provides deeper in sights into various topics in computer science. This is an introductory level theory course. The aim of this course is to study the power (or lack of it) of various models of computation. Topics to be covered include: automata, formal languages, computability, and computational complexity.
Academic Career: UGRD
Course Component: Lecture
Grade Component: LG/SNC
Course Requirements: PREQ: CS 1502 or 1710; (MIN GRADE 'C' FOR ALL COURSES LISTED)

CS 1520 - PROGRAMMING LANGUAGE FOR WEB APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
Various programming paradigms will be studied using java and scripting languages. The use of java in programming web based applications, network applications, and the use of the extensive java libraries will be studied. The programming paradigm of building software by gluing components will be explored through the use of scripting languages such as perl and JavaScript. Applications include developing guis and internet programming.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: CS 0445 or COE 0445; (MIN GRADE 'C'); PROG: Dietrich Sch Arts and Sciences or Sch Computing and Information

CS 1550 - INTRODUCTION TO OPERATING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
An introduction to basic concepts of operating systems, common to most computer systems, which interfaces the machine with upper-level programs. This course will introduce processes as processing unit, process management, concurrency, communication, memory management and protection, and file systems.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: (CS 0447 or COE 0447) and (CS 0449 or COE 0449) or (0456 and 1750); MIN GRADE 'C' FOR ALL COURSES LISTED; PROG: Dietrich Sch Arts and Sciences or Sch Computing and Information

CS 1621 - STRUCTURE PROGRAMMING LANGUAGES

Minimum Credits: 3
Maximum Credits: 3
An analytical examination of modern high-level programming language structures; including design specification and implementation. Advanced forms of data types, expressions, and control primitives. Relationship of storage management techniques and language design.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: CS (0441 and 0445) or (0406 and 0455); (MIN GRADE 'C' FOR ALL COURSES LISTED)

CS 1651 - ADVANCED SYSTEMS SOFTWARE

Minimum Credits: 3
Maximum Credits: 3
To discuss in depth some advanced features of fundamental importance in the design of operating systems. The subjects discussed include interprocess communication, real-time scheduling, advanced file systems, security and protection mechanisms. The objective of the course is to provide an understanding of these advanced issues, as well as to bring awareness of the known solutions to these problems and to the limitations of these solutions.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: CS 1550 or 1312 or 1792; (MIN GRADE 'C' FOR ALL COURSES LISTED)

CS 1699 - SPECIAL TOPICS IN COMPUTER SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This is a special topics course that allows the computer science department to test run a course before deciding whether to permanently add it to our curriculum.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

CS 2000 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 6

Master's thesis research.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

CS 2001 - RESEARCH TOPICS/COMPUTER SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course introduces the students to the research being conducted in the computer science department. Active, state-of-the-art research topics will be covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2002 - RESEARCH EXPERIENCE/COMPUTER SCI

Minimum Credits: 3
Maximum Credits: 3
In this course, each student will perform exploratory research topics covered in CS 2001. The research will be supervised and directed by faculty members working in the area of the topic chosen by the student.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 2001

CS 2003 - COMPUTER SCIENCE COLLOQUIUM

Minimum Credits: 1
Maximum Credits: 1
The computer science colloquium is offered as a one unit graduate class, with a satisfactory/no credit (S/NC) grading option. The aim of this weekly meeting is to discuss the most recent advances in computer science.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad SN Basis
Course Requirements: PREQ: CS 2001 and 2002; PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2012 - ALGORITHM DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course will cover methods and strategies that are useful for the design of nonnumeric algorithms. Students are expected to design their own algorithms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2015 - ALGORITHMS AND DATA STRUCTURES 2

Minimum Credits: 3
Maximum Credits: 3

As the second in a two-course sequence on algorithms and data structures, this course covers a broad range of the most commonly used algorithms. Some examples include algorithms for searching, encryption, compression, graphs, and dynamic programming. The students will implement and test several algorithms. The course is programming intensive.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Instructor Consent

CS 2021 - STRUCTURED PROGRAMMING LANGUAGES

Minimum Credits: 3
Maximum Credits: 3
An analytical examination of modern high-level programming language structures; including design specification and implementation. Advanced forms of data types, expressions, and control primitives. Relationship of storage management techniques and language design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CSCI-MS)

CS 2030 - SOFTWARE ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide a general survey of software engineering. Some of the topics covered include: software project planning and management, requirements engineering, model-based engineering, design patterns, and testing. Particular emphasis is on a team project in which small teams of students design and implement a software system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2032 - SOFTWARE QUALITY ASSURANCE

Minimum Credits: 3
Maximum Credits: 3
This course provides students with a broad understanding of modern software testing and quality assurance. Although it will cover testing theory, the emphasis is on providing practical skills in software testing currently used in industry. To that end, it will cover manual and automated tests, test-driven and behavior-driven development, performance testing, and understanding and developing a testing process.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2035 - INTERFACE DESIGN METHODOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will introduce concepts and common practices for building software for user interfaces. Concepts will connect across input, visual layout techniques, and software patterns for responsive user interaction with a focus on mobile platforms (web and native). Emergent interface concepts, such as voice, AR/VR, and IoT will also be explored while building upon the course's software foundation. This course is targeted for students who desire skills in front-end development, interface design and prototyping, and user experience engineering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2037 - INTRODUCTION TO HUMAN-COMPUTER INTERACTION

Minimum Credits: 3
Maximum Credits: 3
The focus of the course is on the design of human-centered systems that people find usable, desirable, and useful. The course will introduce students to user-centered practices in Human-Computer Interaction. The course will cover the theory and practical application of Human-Computer Interaction concepts and ideas. Students will gain knowledge on diverse methods and tools to understand, improve, and create technology that harmonizes with and improves human capabilities, goals, and social environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2041 - INTRODUCTION TO COMPUTER ARCHITECTURE

Minimum Credits: 3
Maximum Credits: 3
Examination of computer architecture and hardware system organization. Topics include: CPU organization, sequential and microprogrammed control, instruction set implementation, memory organizations, input/output structure, peripherals and computer communications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (CS 0447 AND CS 0449) or CSCI-MS or CSCI-PHD

CS 2045 - INTRODUCTION TO HIGH PERFORMANCE COMPUTING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the architecture of and software techniques for parallel and high performance computing systems. The content includes fundamental aspects of vector processing, shared-memory and distributed-memory systems. Students will be expected to complete a number of projects demonstrating specific applications in parallel processing paradigms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2051 - ADVANCED SYSTEMS SOFTWARE

Minimum Credits: 3
Maximum Credits: 3
To discuss in depth some advanced features of fundamental importance in the design of operating systems. The subjects discussed include interprocess communication, real-time scheduling, advanced file systems, security and protection mechanisms. The objective of the course is to provide an understanding of these advanced issues, as well as to bring awareness of the known solutions to these problems and to the limitations of these solutions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2052 - DATA COMMUNICATION AND COMPUTER NETWORKS

Minimum Credits: 3
Maximum Credits: 3
This course will include basic principles and topics of computer communications. An overview of interfaces that interconnect hardware and software components, describing the procedures and rules involved in the communication process and the software which controls computers communication. Discussion on network architectures, design principles, basic protocol suites, and the concept of internetworking. Proficiency in this course requires a foundation in intermediate Java programming, basic C programming, elementary data structures, as well as knowledge in multithreading and mutexes.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2053 - APPLIED CRYPTOGRAPHY AND NETWORK SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course will provide the necessary conceptual background and hands-on experience to understand the most common cryptographic algorithms and protocols and how to use them to secure computers networks and distributed applications. Topics include: cryptographic algorithms for data confidentiality, authentication, and integrity, user authentication methods (secure tokens and biometrics), internet security protocols, security in local area networks, firewalls, and intrusion detection systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2055 - DATABASE MANAGEMENT SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to provide an in-depth knowledge of database systems design. Thus, the emphasis is on how to model one's own data and how to use available database management systems effectively. Towards this end, the relational and the object-relational models are discussed in great detail and object-oriented and other data models are also presented. Commercial database management systems are examined and students get practical experience through the use of such systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2056 - INTRODUCTION TO DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course aims to expose students to different data management, data manipulation, and data analysis techniques. The class will cover all the major data management paradigms (relational/SQL, XML/Xquery, RDF/SPARQL) including NOSQL and data stream processing approaches. Going beyond traditional data management techniques, the class will expose students to information retrieval, data mining, data warehousing, network analysis, and other data analysis topics. Time permitting, the class will include big data processing techniques, such as the map/reduce framework.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2057 - PRIVACY IN THE ELECTRONIC SOCIETY

Minimum Credits: 3
Maximum Credits: 3
Privacy is an increasingly significant concern in our modern, connected society. We all share personal information on a daily basis with a wide range of organizations. Although at times such sharing can be intentional and beneficial for the user, other times information is shared against the user's will, used for purposes that the user did not expect, revealed to entities other than those approved by the user, or used to infer additional information that the user did not intend to reveal. In this course, students will learn to reason about what information is revealed through the use of computer systems. They will study several different scenarios in which information sharing is either unavoidable or to some extent desirable, and discuss the balance between the benefits and costs of sharing. Finally, students will learn

about several privacy-enhancing technologies (PETs), and how these can be put to use by software developers to defend the privacy of their users.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: PLAN: CSCI-PHD and CSCI-MS.

CS 2060 - INTRODUCTION TO CLOUD COMPUTING

Minimum Credits: 3
Maximum Credits: 3
Cloud computing has emerged as a new paradigm for efficient and highly elastic delivery of computing services over the Internet to achieve economies of scale. The course will explore the concept of Cloud Computing, considering both its benefits and challenges. The course will also cover the basic design principles and architectures of Cloud Computing, including its usability and utility to deliver efficiently and flexibly infrastructure, platform and software as a service. Topics include types of public, private and hybrid cloud computing services, data centers architecture and deployment, cloud computing programming models, virtualization and virtual networking and storage, and large-scale distributed processing framework to manage, process and store big data applications running in clustered systems. The course will also include hands-on projects focused on developing applications on a MapReduce and Hadoop cluster. Upon successfully completing the course of the course, students will gain an understanding of the goals, benefits, and models of cloud computing, and how storage, processing, and services are designed and managed in a virtualized environment. Through hands-on projects, students will demonstrate proficiency in deploying and evaluating cloud computing applications and services. They will be able to design and deploy data-centered applications and services, and efficiently use frameworks and tools for data analytics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2071 - HUMAN LANGUAGE TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the field of natural language processing (NLP) - the creation of computer programs that can understand, generate, and learn languages used by humans. It will expose students to real-world applications such as speech recognition, information retrieval, dialogue agents, question answering systems, and machine translations by means of computational techniques including search algorithms, dynamic programming, hidden Markov models, probabilistic context free grammars, and related machine learning algorithms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 1501; (MIN GRADE 'C' or TRANSFER) and MATH 0280 or 1180; PLAN: CSCI-MS or CSCI-PHD

CS 2074 - INTRODUCTION TO COMPUTER VISION

Minimum Credits: 3
Maximum Credits: 3
In this class, students will learn the basics of modern computer vision. The course will cover topics such as image filtering, edge detection, feature extraction, description and matching, grouping and clustering, object detection, activity recognition, and recognition with a human in the loop.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2075 - INTRODUCTION TO MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
This introductory machine learning course will give an overview of many models and algorithms used in modern machine learning, including linear models, multi-layer neural networks, support vector machines, density estimation methods, Bayesian belief networks, clustering, ensemble methods, and reinforcement learning. The course will give the student the basic ideas and intuition behind these methods, as well as a more formal understanding of how and why they work. Through homework assignments students will have an opportunity to experiment with many machine learning techniques and apply them to various real-world datasets.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2078 - INTRODUCTION TO DEEP LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course will cover the basics of modern deep neural networks. The first part of the course will introduce neural network architectures, activation functions, and operations. It will present different loss functions and describe how training is performed via backpropagation. In the second part, the course will describe specific types of neural networks, e.g. convolutional, recurrent, and graph networks, as well as their applications in computer vision and natural language processing. The course will also briefly discuss reinforcement learning and unsupervised learning, in the context of neural networks. In addition to attending lectures and completing bi-weekly homework assignments, students will also carry out and present a project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: MATH 0230 and (MATH 0280 or MATH 1180) and CS 1501 with a minimum grade of C or TRANSFER.

CS 2084 - BIAS AND ETHICAL IMPLICATIONS IN ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
Artificial intelligence holds tremendous promise to benefit nearly all aspects of society, including healthcare, food production, economy, education, security, the law, and even our personal activities. The development of AI is creating new opportunities to improve the lives of people around the world. At the same time, these intelligent models may incorporate existing biases or create new biases that can seriously harm society. At its worst, AI can exacerbate misguided old practices and aggravate past social harms with its unprecedented processing powers and the veneer of seemingly objectivity, as humans in various social factions are disparately impacted by the AI-aided decisions. Facing the ethical implications of AI, students need to be prepared with the critical intellectual capacities that allow them to understand and deal with these ethical challenges. These capacities comprise multi-disciplinary concepts ranging from statistical learning theories, model design, and ethical foundation, to psychological and cultural frameworks that are necessary for successfully navigating and evaluating responsible AI practices. Further, "ethical competence" will involve understanding various challenges surrounding AI, such as ethical regulation, fairness assessment, and interpretability of models. Note that this is a technical class. Our focus will be on designing, evaluating, and mitigating bias in machine learning models. You will have three programming assignments in Python.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2099 - SPECIAL TOPICS IN COMPUTER SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This is a special topics course that allows the computer science department to test run a course before deciding whether to permanently add it to our curriculum.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2110 - THEORY OF COMPUTATION

Minimum Credits: 3
Maximum Credits: 3
This course deals with computability theory, automata theory and formal languages. Various models of computation will be examined, their relations to each other and their properties will be studied. Topics include models for computable functions and church's thesis, models for recognizers and their relation to formal grammars, algorithmically solvable and unsolvable problems, and the complexity of computations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS

Minimum Credits: 3
Maximum Credits: 3
This course deals with the analysis of algorithms and the relevance of such analysis to the design of efficient algorithms. The derivation of results that are primarily of theoretical significance shares importance with the practical task of designing efficient algorithms. Topics covered: searching and sorting, graph algorithms, arithmetic, np-completeness, and lower bound techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2210 - COMPILER DESIGN

Minimum Credits: 3
Maximum Credits: 3
The design and implementation of current high level languages. Emphasis is placed on the structure of compilers. Lexical, syntax and semantic analysis as well as target code generation and register allocation. Storage management techniques for recursive and retentive control structures. Formal specification techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2310 - SOFTWARE ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course will examine the software engineering process in general, the considerations for large software projects in particular, and then will focus on the conversion of software specifications into production code. Topics will include modern design methods, safety-critical software, verification and validation, testing theory and methods, reengineering of legacy software.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2410 - COMPUTER ARCHITECTURE

Minimum Credits: 3
Maximum Credits: 3
A study of the hardware structure of computer systems and subsystems. Topics include: processor architecture, parallelism and pipelining, cache and main memory organization, i/o controllers and i/o processors, and interconnection structures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2510 - COMPUTER OPERATING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
An in-depth study of the control abstractions in modern operating systems and the issues involved in efficient implementation of those abstractions. Topics will include concurrency and its control, memory management, resource management, and structure of distributed and parallel operating systems. These topics will be developed through the lectures, assigned readings from the literature, and an examination of actual operating systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2520 - WIDE AREA NETWORKS

Minimum Credits: 3
Maximum Credits: 3
The course provides an understanding of the basic principles of broadband networks. It will introduce protocols suitable for broadband networks, with emphasis on atm. Other technologies, such as frame relay and smds, will be discussed. The course will also address important design issues for high speed networks including characterizations of (a) network traffic and its implications on network design, and (b) application performance objectives, traffic policing, and congestion control algorithms that can meet those diverse objectives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2550 - PRINCIPLES OF DATABASE SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
The main objective of this course is to provide an in-depth knowledge of database management systems design. Topics covered at length are concurrency control including concurrency on structured data, recovery and query optimization. Some important aspects of distributed databases are discussed, including distributed concurrency control and fault tolerance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2610 - INTERFACE DESIGN & EVALUATION

Minimum Credits: 3
Maximum Credits: 3

This course covers methodology for the modeling, specification, design, measurement, and evaluation of Human-Computer Interfaces (HCI). Included topics are: interaction models and modes, conceptual/logical/physical interface structures, objectively measurable interface patterns, and criteria for interface evaluation. HCI relationships to software engineering and artificial intelligence are highlighted.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2620 - INTERDISCIPLINARY MODELING AND VISUALIZATION

Minimum Credits: 3
Maximum Credits: 3
This course discusses computer graphics, modeling and visualization techniques used to solve scientific problems. Focus falls on identifying scientific problems, proposing solutions involving graphical modeling and visualization, and designing, implementing, and evaluating the solutions. Examples include interactive software systems, quantitative analysis tools, or new applications of existing visualizations methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2637 - FOUNDATIONS OF HUMAN-COMPUTER INTERACTION

Minimum Credits: 3
Maximum Credits: 3
Human-Computer Interaction is the science of building technologies for human use and studying how people use existing technologies. This course provides an introduction to user research methods in Human-Computer Interaction, including the generative methods used to design technologies, evaluative methods used to assess technologies, and human and automated data analysis approaches. The course will discuss applications of these topics to both well-established technologies (websites, mobile apps) and emerging technologies (e.g., brain-computer interfaces, AR/VR) as well as applications to emerging research areas in HCI such as crowdsourcing and human-AI interaction. A strong programming background is expected to take this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2710 - FOUNDTNS OF ARTIFICIAL INTELLGNC

Minimum Credits: 3
Maximum Credits: 3
This course covers the foundational techniques in artificial intelligence, including: problem definition and analysis, heuristic search, adversarial search, knowledge representation, planning and constraint satisfaction, and methods for reasoning under uncertainty. Attention will be given to the roles of these techniques in the design of intelligent agents.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2731 - INTRO NATURAL LANGUAGE PROCSSNG

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the field of Natural Language Processing (NLP) - the creation of computer programs that can

understand, generate, and learn natural language. Natural language understanding will be used as a vehicle to introduce the three major subfields of NLP: syntax, semantics, and pragmatics. The course will introduce both knowledge-based and statistical methods for NLP, and will illustrate the use of such methods in a variety of application areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2750 - MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course will give an overview of many techniques and algorithms in machine learning, beginning with topics such as linear and logistic regression, multi-layer neural networks and ending up with more recent topics such as boosting and support vector machines. The basic ideas and intuition behind modern machine learning methods, as well as, a more formal understanding of how and why they work will be covered. Students will have an opportunity to experiment with various machine learning techniques or apply them to a selected problem or domain in the context of a term project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering Electrical & Computer Engineer (ECE-MSECE, ECE-PHD)

CS 2756 - PRINCIPLES OF DATA MINING

Minimum Credits: 3
Maximum Credits: 3
Data mining is the process of efficient supervised or unsupervised discovery of non-trivial and useful knowledge and patterns from collections of data. This proposed course aims to provide a discussion of multiple common tasks in data mining, including association rules/sequential patterns, classification, anomaly detection, avoiding false discoveries, and clustering. Besides, this course will also introduce the latest advances in data mining and provide extensive hands-on experience via programming projects. Non-CS students interested in enrolling must suggest project ideas and obtain the instructors written permission to override the enrollment requirements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 1656

CS 2756 - PRINCIPLES OF DATA MINING

Minimum Credits: 3
Maximum Credits: 3
Data mining is the process of efficient supervised or unsupervised discovery of non-trivial and useful knowledge and patterns from collections of data. This proposed course aims to provide a discussion of multiple common tasks in data mining, including association rules/sequential patterns, classification, anomaly detection, avoiding false discoveries, and clustering. Besides, this course will also introduce the latest advances in data mining and provide extensive hands-on experience via programming projects. Non-CS students interested in enrolling must suggest project ideas and obtain the instructors written permission to override the enrollment requirements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2770 - COMPUTER VISION

Minimum Credits: 3
Maximum Credits: 3

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Computer Science or Computer Engineering Electrical & Computer Engineer (ECE-MSECE; ECE-PHD)

CS 2893 - MODERN QUANTUM COMPUTING

Minimum Credits: 3
Maximum Credits: 3
This course introduces modern quantum computing theories and experiments for graduate and advanced undergraduate students in Computer Science, SCI, and related fields. It covers essential topics, including 1. basic quantum computing concepts using linear algebra, 2. variational quantum algorithms, 3. quantum optimization and quantum machine learning with coding exercises, 4. practical quantum error correction techniques, and 5. post-quantum cryptography. Students will gain hands-on skills, enabling them to conduct research on real-world quantum applications using emerging quantum technologies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2900 - GRADUATE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
A professional internship may be taken at any time during the course of graduate study. Ph.D. students may take this course up to two times for credit, MS students may take it at most once.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

CS 2905 - COMPUTER SCIENCE COOPERATIVE PROGRAM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

CS 2910 - MS PROJECT

Minimum Credits: 1
Maximum Credits: 3
A project under the supervision of a faculty member or a group of faculty members.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

CS 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
This course involves study which is approved by the faculty adviser but carried out independently by student.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

CS 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9
Any adjunct or full member of the graduate faculty of the department may direct doctoral dissertations.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

CS 3410 - ADV TOPICS COMPUTER ARCHITECTURE

Minimum Credits: 3
Maximum Credits: 3
This course will survey current topics in computer architecture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 2410

CS 3510 - ADV TOPICS IN OPERATING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
An in-depth study of specific topics of modern operative systems, the theory behind them, and their implementation. Topics may include advanced concepts in distributed systems, multimedia systems, file systems, resource management, distributed shared memory, among others.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 2510

CS 3521 - ADV TOPCS SENSING/UBIQUITOUS TEC

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the fundamental issues related to designing and analyzing sensor networks and applications. Topics include but are not limited to: driving applications for sensor nets; wireless networking issues; directed diffusion, aggregation, and data dissemination; power aware routing computing and communication; hardware and software platform and tools.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 2520 or TELCOM 2321

CS 3550 - ADV TOPICS IN MANAGEMENT OF DATA

Minimum Credits: 3
Maximum Credits: 3
The course is devoted to a reevaluation of traditional database techniques and the examination of emerging approaches for the reliable and efficient data management in large distributed systems. Examples of such systems include multi databases, mobile and multimedia databases, and advanced OS and AI. Topics include object management, workflows and extended transactions, semantics-based concurrency control and recovery, active and real-time database techniques. The concepts will be examined within the context of a state-of the-art system.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 3551 - ADV TOPICS IN DISTBD INFOR SYS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on emerging technologies for large scale, distributed information systems. Topics to be examined include data and information modeling, heterogeneous data integration, data distribution, caching and replication, web databases, distributed query processing and searching, multimodal access, quality of data, content networks, and pervasive data management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 2510 and 2550

CS 3570 - ADVANCED TOPICS IN USER INTERFACE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

CS 3670 - ADVANCED TOPICS IN THE APPLICATIONS AND TECHNOLOGIES OF VIRTUAL AND AUGMENTED REALITY

Minimum Credits: 3
Maximum Credits: 3
This PhD seminar surveys research frontiers in augmented, mixed, and virtual reality (collectively referred to as `XR'). Seminar activities will have students read and debate landmark and recent papers while building lightweight prototypes and running small empirical studies. Topics include human perception and comfort in XR; tracking and sensor fusion (VIO/SLAM); displays and optics; rendering and performance (OpenXR/WebXR, foveation, edge/cloud); 3D interaction, haptics, and spatial audio; scene understanding and neural rendering (NeRF/gaussians); multi-user systems and synchronization; evaluation methods and analysis; and privacy, safety, and ethics. A semester-long team project culminates in a paper-style write-up, demo, and public presentation. Suitable for students targeting HCI, vision/graphics, systems, and ML for XR.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CS 3710 - ADV TOPICS ARTIFICIAL INTELLGNC

Minimum Credits: 3
Maximum Credits: 3
This course will survey current topics in artificial intelligence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 2710

CS 3720 - ADVANCED TOPICS IN INTERNET OF THINGS

Minimum Credits: 3
Maximum Credits: 3
A practical course in IoT systems, including sensing, data collection, data preparation, data transmission, and AI/Machine Learning

methods. The class will involve discussions of fundamentals of building systems, discussion of open problems, and designing and building a prototype IoT system.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CS 3730 - ADV TOPCS NATURAL LANG PROCSSNG

Minimum Credits: 3
Maximum Credits: 3
Natural language processing (NLP) is primarily concerned with creating computer programs that interact with human languages. The objective of this course is to continue the studies of natural language processing (NLP), to explore selected topics among syntax, semantics, and pragmatics more deeply, and to discuss recent advances in (NLP).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 2731

CS 3750 - ADV TOPICS IN MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course will survey advanced topics in machine learning, for example, inductive learning, reinforcement learning, and neural network learning.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 2750

CS 3790 - ADVANCED TOPICS IN EDUCATIONAL TECHNOLOGY: PERSONALIZED LEARNING ENVIRONMENTS

Minimum Credits: 3
Maximum Credits: 3
The 2010 National Educational Technology Plan outlined how "The challenge for our education system is to leverage the learning sciences and modern technology to create engaging, relevant, and personalized learning experiences for all learners." While instruction has traditionally been one-size-fits-all, the rise of web-based and mobile technologies provide an opportunity to automatically detect what learners need and adapt instruction to their unique prior knowledge, motivation, and preferences. In this seminar course, we survey different types of personalization in educational technologies (e.g., cognitive, metacognitive, social, motivational), computational modeling techniques for representing learners and their needs, and best practices in designing personalized supports for learners. Students will lead one or more class discussions, participate in the other discussions, and complete a group course project. Students must have a foundational knowledge of algorithms and data structures before enrolling in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CS 3800 - ADVANCED TOPICS IN COMPUTING

Minimum Credits: 3
Maximum Credits: 3
This course aims to provide students with an introduction to a range of advanced topics in computing. It will explore the current and future challenges facing the emerging computing paradigms. These will also be used to illustrate the many different influences and trade-offs involved in computing and information systems.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

CS 3800 - ADVANCED TOPICS IN COMPUTING

Minimum Credits: 3
Maximum Credits: 3
This course aims to provide students with an introduction to a range of advanced topics in computing. It will explore the current and future challenges facing the emerging computing paradigms. These will also be used to illustrate the many different influences and trade-offs involved in computing and information systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CS 3900 - PHD DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
The course may involve a project under the supervision of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

Computing and Information

CMPINF 0401 - INTERMEDIATE PROGRAMMING

Minimum Credits: 4
Maximum Credits: 4
This is an intermediate programming course that focuses on programming via an object-oriented paradigm. Students entering CMPINF 0401 are expected to have some previous concepts and then focus on object-oriented programming, including classes, encapsulation and abstraction, inheritance, polymorphism and interfaces. Some introductory data structures and algorithms will also be covered in this course.This class is a programming-intensive course, and students will be expected to complete several non-trivial programming projects throughout the term.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: ANTI-REQ: Enrollment not permitted if previously enrolled in CS 0401 OR INFSCI 0017.

CMPINF 1207 - WRITING MACHINES

Minimum Credits: 3
Maximum Credits: 3
Large Language Models (LLMs) like ChatGPT promise--or threaten--to upend everything we know about writing. Can machines really write? What do writing machines do to or for human writers? This class approaches the contemporary buzz about ChatGPT and Natural Language Generation (NLG) through a sociotechnical and historical lens, exploring automated writing through historical and contemporary writing machines: 18th century automatons, Ouija boards, combinatorial poetics, procedural algorithms, recurrent neural networks, and the transformer technology that drives cutting-edge LLMs like ChatGPT. The course is organized into units focusing on different methods of automating writing: mechanical; spiritual; procedural; statistical; simulative. Each unit teaches students historical and technical contexts of its associated automation through texts and hands-on projects. Students who take this class will learn to generate text using computational processes and critically examine the text they produce. In so doing, students will engage with the political and ethical implications of large-scale data usage to train machine learning algorithms, including issues of underrepresented languages, bias, hate speech, further marginalizing communities, automating labor, environmental impacts, dirty data, and privacy violations. As we trace the development and commercialization of NLG, we'll consider whose writing is being automated, and for what purposes.

Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

CMPINF 2100 - DATA-CENTRIC COMPUTING

Minimum Credits: 3
Maximum Credits: 3
This course will provide an introduction to programming, data processing, and data mining, and applied machine learning using Python for highly motivated students with little or no prior experience in programming. The course will focus on learning the basics of Python programming language in the context of working with data, planning and organizing programs, commonly-used algorithms, data management, data cleaning, basic machine learning, data mining, and fundamentals of computational modeling.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPINF 2105 - MATHEMATICAL AND STATISTICAL FOUNDATIONS FOR DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course will create the foundational mathematical, statistical, and analytical skills needed for subsequent in-depth courses in data science. Students will be introduced to important calculus, matrix, statistics and probability fundamentals important in data science. These topics are taught in a hands-on manner to focus on the practical application rather than a purely theoretical treatment of the material. No programming experience is required as all concepts are demonstrated with Excel. "Pen and paper" exercises are completed in Jupyter notebooks to familiarize students with Jupyter and to introduce LaTeX.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPINF 2110 - MANAGING, QUERYING, AND PRESERVING DATA

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the practical methodologies of data management, storage, and querying in the context of relational, document, and graph database management systems. This course covers fundamental concepts of data organization and retrieval, including the relational model, structured query language (SQL), graph/network concepts, and Cypher. In addition to building skills and understandings for managing data in a database system, this course will examine strategies and important concepts for continued access and preservation of data. This course considers the technical infrastructure for storing, publishing, discovering and preserving research data. It will address the importance of data documentation in data science, disciplinary metadata standards, file formats that support long-term preservation of data, and strategies for sharing data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CMPINF 2100 Introduction to Data-Centric Computing

CMPINF 2120 - APPLIED PREDICTIVE MODELING

Minimum Credits: 3
Maximum Credits: 3
The ability to collect, store and process large amounts of detailed data in a variety of fields has led to a surge in the use of data in various decision making tasks, ranging from governmental policy making to drafting players in sports. Data literacy is thus important and in this first introductory course we will focus on shifting the traditional mode of deterministic (yes/no) thinking to probabilistic thinking. In this course, we will review concepts from applied probability and statistics and explore how they can be used in building a data-driven infrastructure with applications ranging from understanding a variety of everyday phenomena (e.g., descriptive modeling) to making decisions based on data (e.g., predictive modeling). In particular, we will focus on the principles and best practices in dealing with data,

including understanding (a) the bias-variance tradeoff, (b) how to avoid overfitting, (c) how to choose the most appropriate model for your data and (d) how to evaluate your model's performance. While the main focus of the course is on supervised learning, we will also introduce unsupervised learning and in particular the problem of clustering. We will also explore the concept of Monte Carlo simulations and resampling, and how they can be used to make predictions for systems that are too complicated to be solved in closed form. We will also provide an overview of analytical methods for specialized form of data including time series and relational data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CMPINF 2100 Introduction to Data Centric Computing

CMPINF 2130 - THE ART OF DATA VISUALIZATION

Minimum Credits: 3
Maximum Credits: 3
Visualization is a language of art to discover, understand, and communicate meanings. This course introduces how to speak in the visual style in the era of big data by programming on the elements of arts: lines, forms, and colors. This course is designed to break the boundaries between art, science, and engineering and teach creative coding to students of all kinds of backgrounds.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPINF 2140 - RESPONSIBLE DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
"Data are a form of power" and the ways that data scientists use data have an impact on individuals and communities. In this course, we will interrogate the work of data scientists through a social justice lens and develop a personal statement that articulates responsible data science. Responsible data practices cut across the lifecycle of a dataset, and a responsible data scientist will ask questions about the decisions and people behind the data collection, people represented or ignored in the dataset, and the people impacted by tools and algorithms that use the data. In this course, we will engage with social justice, policy, and people-oriented dimensions of data work. Each module will introduce a case study or vignette that illustrates these dimensions across different aspects of data work. Through these modules, we will develop cognitive approaches for examining data, our positionality, and the implications of data collection, analysis, and algorithms on communities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPINF 2211 - FOUNDATIONS OF CLOUD COMPUTING

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to some of the core concepts of cloud computing. Students will gain both the foundational knowledge and hands-on practical experience required for understanding cloud computing from historical, software engineering, and business perspectives. The course will cover the essential characteristics of cloud computing, including its history, business uses, and technology use cases enabled by the proliferation of cloud platforms. Students will learn about the different cloud computing service models, as well as some of the key components of a cloud information technology infrastructure.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPINF 2221 - APPLIED BAYESIAN ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
In this course students will learn the foundational assumptions, concepts, and popular tools for applying Bayesian techniques to solve

challenging data related problems. This course is hands-on and demonstrates the key concepts and skills through numerous programming examples in lectures, homework assignments, and projects. The course begins by reviewing probability distributions with a special emphasis on how distributions communicate uncertainty. The Bayesian "mindset" is introduced by showing how probability distributions allow subjective information to be used in modeling tasks via Prior distributions. Students will be shown the connection between Bayesian Priors and Non-Bayesian regularization/penalization methods which they have been introduced to in previous courses. From there, students are taught how to properly train, validate, and communicate the Bayesian modeling results for linear, generalized linear models, and multi-level (hierarchical) models using popular open-source libraries. Special emphasis is made to diagnose the Bayesian inference procedure to ensure the models are adequate and trustworthy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPINF 2222 - APPLIED DEEP LEARNING

Minimum Credits: 3
Maximum Credits: 3
In this course students will learn the foundational assumptions, concepts, and popular tools for applying deep learners to a wide variety of supervised and unsupervised learning problems. The course is hands-on and demonstrates the key concepts and skills through numerous programming examples in lectures, homework assignments, and projects. The course begins by introducing various optimization strategies which underlie how deep learners are trained, before moving to the proper training, validating, and tuning of deep learning methods for supervised learning problems. This portion of the course stresses how the fundamental optimization concepts impact model training. Students will also learn how deep learners relate to and are extensions of generalized linear models in order to reinforce essential supervised learning concepts. The course concludes by focusing on applying deep learning techniques to unsupervised learning problems via variational autoencoders. Multiple autoencoder architecture strategies and training approaches are demonstrated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMPINF 2223 - LARGE LANGUAGE MODELS (LLMs) AND THEIR APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
From social media posts to open government materials, LLMs are pervasive in current human society. This course traces the evolution of natural language processing from traditional rule-based systems to modern Large Language Models. Students will explore the limitations of early NLP approaches, understand the breakthroughs that enabled neural language models, and discover how the revolutionary Transformer architecture transformed the field. Students will engage in discussions on social and ethical issues associated with using LLMs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CMPINF 2105 and 2120

CMPINF 2910 - CASE STUDIES IN DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course is a project-based capstone for the Master of Data Science degree. A case study approach is taken to structuring analysis of data, communicating findings, and informing decision-making processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: CMINF 2105, 2140, 2110, 2120, 2130, and (CMPINF 2221 or CMPINF 2222 or CMPINF 2211 or CMPINF 2223); PLAN: DS-MDSC

CMPINF 2999 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Various advanced topics in computing and information will be covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Critical Care Medicine

CCM 5430 - CRITICAL CARE MEDICINE

Minimum Credits: 0
Maximum Credits: 0
The goal of this elective is to provide a multi-disciplinary experience in care of the critically ill. Rounds conducted each morning result in a plan of treatment for each day. The medical student will participate in all aspects of care of the patients in ICU. Emphasis is placed on bedside titration of care. Recognition and appropriate treatment of respiratory failure, arrhythmias, and hyperalimentation are emphasized. The student participates in cardiopulmonary resuscitations. Students participate in night call.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 4

CCM 5460 - 2-WEEK CRITICAL CARE MEDICINE ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This elective provides a comprehensive overview of Critical Care Medicine, featuring rotations through various ICU sub-specialties including Neuro Trauma, Neurovascular, Surgical Trauma, Abdominal Transplant, and Cardiothoracic care. Students will shadow CCM attendings during rounds and interact with key members of the critical care team, including rapid response teams (RRT), critical care nurses (CCRN), respiratory therapists (RT), and critical care pharmacists (PharmD). The goal is to offer a thorough understanding of critical care practices and team dynamics, illustrating the complexities of managing critically ill patients.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

CCM 5475 - PICU MULTIDISCIPLINARY 2-WEEK ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This is a 2-week rotation in which students will be exposed to the invaluable interprofessional relationships and education inherent to patient care of critically ill pediatric patients in the hospital setting.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

CCM 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

CCM 5840 - CRITICAL CRE MEDICINE RESEARCH (DIRECTED STUDIES)

Minimum Credits: 0
Maximum Credits: 0
Independent Study
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

CCM 5899 - INDEPENDENT STUDY IN CRITICAL CARE MEDICINE

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

CCM 5900 - EXTRAMURAL CRITICAL CARE MEDICINE

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in critical care medicine may be arranged at an institution other than the University of Pittsburgh school of medicine. Arrangements must be made in accordance with the process set out in the UPSOM catalog with all appropriate approvals to be received before the course may be added to the student's schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Critical European Culture Studies

CECS 2250 - EUROPEAN SECURITY: A TRANSDISCIPLINARY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
In a world shaken by war, climate change, pandemic, inflation, hunger, and rapid forced migration, questions of security take on a new level of urgency. Rather than be overwhelmed by polycrisis, this seminar will provide an opportunity to grapple actively with questions of security in a European, Transatlantic, and global context. The course will survey literature on security and securitization. As its object it will focus on the EU and European security questions, understood broadly. Participants will consider state and military questions, but we will also consider security in relation to topics like climate, economy, gender, migration, populism, among others. The goal of the seminar is to incubate a transdisciplinary research community taking up a problem, method/s, or emerging field that cuts across disciplines and that develops research on security in European and/or international context. It will intersect with a faculty research group. It will entail a combination of activities: common readings, guest speakers, a master class, teleconferences, and sharing work in progress. Participants will have the option of writing a seminar paper, developing an annotated bibliography, or undertaking a relevant project upon consultation with the instructor.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

CECS 2500 - FOUNDATIONS OF CRITICAL EUROPEAN CULTURE STUDIES

Minimum Credits: 3
Maximum Credits: 3
The EU aspires to political, economic, and cultural union, making it unique among the world's globalist projects. Yet the mechanisms of cultural union remain seldom explored in the studies of the EU and within the field of Cultural Studies in general. The University of Pittsburgh is one of the few places in the world that introduce students to the methods of critical European culture studies. The course will begin by exploring the processes of European unionization that have emerged in the post-WWII era, the institutions that drive political, economic and cultural union in the contemporary EU. It will introduce students to the study of cultural policy and ask them to consider a variety of cultural forms. It will set the contemporary project of the EU in relation to longer histories of Europeanization and it will set them in relief to other models like Paneurope, the Europe of Nations, Eurasia, Eurafrica, and so on. Specific attention will be given to border regimes, migration histories, (post)colonial and broad geopolitical relations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CECS 3000 - PH.D. DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 15
Students work individually under the guidance of their faculty advisor in preparation for and during the writing of the dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Cross-Disciplinary Dental Education

DMED 5001 - DIRECTED STUDY IN PERSON-CENTERED CARE

Minimum Credits: 1
Maximum Credits: 1
A customized course of study in concepts related to person-centered care for students who transfer to the School of Dental Medicine.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DMED 5110 - FOUNDATIONS OF PERSON-CENTERED CARE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5112 - PRINCIPLES OF PROFESSIONAL PRACTICE

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5113 - FOUNDATIONS OF PERSON-CENTERED CARE LAB (BIOMEDICAL MASTERS PROGRAM)

Minimum Credits: 1
Maximum Credits: 1
This course is the lab component of course DMED 5111 Foundations of Person-Centered Care and is limited to students enrolled in the Biomedical Masters Program.
Academic Career: Graduate
Course Component: Practicum
Grade Component: ABCF

DMED 5130 - PROFESSIONALISM AND ETHICS 1

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5142 - FOUNDATIONS OF PERSON-CENTERED CARE 2

Minimum Credits: 2
Maximum Credits: 2
In this course, students will build upon foundational knowledge of person-centered care, including social and cultural factors in oral health, interpersonal communication skills, disease prevention, and evidence based care. The goal of the course is to prepare students for clinical dental practice by introducing principles of person centered care for oral health care in a clinical setting and throughout a career in dentistry. Concepts that are introduced in this course will be reinforced and expanded upon in the Foundations of Person Centered Care course series, which is also offered in the predoctoral curriculum. This course includes lectures, laboratory sessions, small group discussions, small group exercises, in-class and homework assignments. COVID-19 Modifications Due to the nature of the COVID-19 (coronavirus) pandemic, changes to this syllabus may occur. Any course modifications (such as class schedules, rotation assignments, assignments, examination formats, etc.) will be communicated to students by the course director or the Office of Academic Affairs. Students are expected to check their University email account regularly for updates. For assistance with technical difficulties, please submit an Educational Technology Services help ticket at sdmteaching@pitt.edu. Any student experiencing personal issues should contact the Office of Student Affairs for information on University support services.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5143 - PRINCIPLES OF PROFESSIONAL PRACTICE 2

Minimum Credits: 2
Maximum Credits: 2
The primary goal of the Principles of Professional Practice course series is to teach students how essential practice management concepts contribute to the development and maintenance of a successful professional dental practice. This first- and second-year course series will focus on integrating the new student practitioner into their first practice, which begins with their clinical exposure at the School of Dental Medicine. Corollaries will be made from School practice-to[1]practice opportunities as an entry-level dental professional. Noting these essential components of dental practice are multifaceted and stretch across a varied spectrum of domains, emphasis will include presenting topics from the following subjects: professional and ethical behavior and decision-making; legal and regulatory concepts; communication and behavioral management skills; customer service; models of healthcare delivery; leadership and office policy; and the dental record. Concepts that are introduced in this course series will be reinforced and expanded upon in the Successful Practice Management course series, which is offered in the third- and fourth-years of the predoctoral curriculum. Course material will be presented through lectures, in-class discussions, and assignments that relate to the clinical application of presented topics.
Academic Career: Dental Medicine

Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5144 - CARIOLOGY AND CARIES MANAGEMENT 1

Minimum Credits: 2
Maximum Credits: 2
In this course, students will be introduced to current concepts of the etiology, epidemiology, and clinical 2 prevention and management strategies of dental caries. Students will be provided with actual clinical experience in diagnosing caries in subsequent courses. Successful completion of this course will provide students with the foundational knowledge for prevention and conservative management of caries appropriate for the general dental practitioner. In addition, the students will be prepared with the operative dentistry knowledge and techniques to successfully restore the dentition utilizing composite resin materials and amalgam. Additionally, the student will learn adjunctive esthetic information and alternative treatment modalities. This course will provide the foundational knowledge to allow the student to understand and apply the basic principles of preparation design, adhesion, and finishing of composite restorations and amalgam restorations. This course includes lectures and class discussions. The accompanying laboratory course, DMED 5145, provides an opportunity for hands-on experiences in a pre-clinical environment. Attendance is mandatory for all lectures. Rationale: Caries is the most prevalent disease of children and one of the most prevalent diseases at all ages. The majority of dentists spend the majority of their patient contact time addressing caries-associated problems. Having an in-depth understanding of caries etiology, prevention, and management strategies is the foundation for ethical and appropriate patient care. This course provides for a contemporary understanding of these issues and reflects currently updated approaches to caries prevention and management (such as those now being disseminated under the title of: The International Caries Classification and Management System).
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5145 - CARIOLOGY AND CARIES MANAGEMENT 1 LAB

Minimum Credits: 3
Maximum Credits: 3
This pre-clinical lab course is given in conjunction with the lecture course (DMED 5140) in which the student will learn how to accurately diagnose and stage caries as well as restore teeth to their proper form and function. 2 In this course, students will acquire the psycho motor and instructional skills in treating Non-Cavitated, Moderate Cavitated and Extensive Cavitated (Class I, II, III, IV, V) lesions using Flouride varnish, SDF, bonded composite restorative materials and amalgam. Students will also learn how to place sealants and bases.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

DMED 5146 - CONTEMPORARY CARIOLOGY: FOUNDATIONS OF PREVENTION AND INTERVENTION

Minimum Credits: 1
Maximum Credits: 1
In this course, the students will be introduced to the study of dental caries, including its etiology, pathophysiology, diagnosis, prevention, and management. Students will explore factors influencing caries development and learn evidence-based strategies for promoting oral health and effective treatment approaches. Practical sessions will include hands-on experience in collaboration with the Cariology and Caries Management 1 Lab course, allowing students to apply their knowledge in a real-world context.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5160 - PROFESSIONALISM AND ETHICS 2

Minimum Credits: 1
Maximum Credits: 1

This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5170 - CARIOLOGY AND CARIES MANAGEMENT 2

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5171 - CARIOLOGY AND CARIES MANAGEMENT 2 LAB

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

DMED 5172 - APPLICATIONS OF PERSON-CENTERED CARE

Minimum Credits: 2
Maximum Credits: 2
n this course, students will work with peers in a clinical setting where they will focus on developing practical skills related to risk assessment, head and neck examination, dental examination, gingival examination, oral disease prevention, and health promotion. This course is the capstone experience of the first year of the dental curriculum, preparing students to enter the second year by applying the foundational skills acquired in Foundations of Person-Centered Care 1 and 2, as well as other courses, such as Caries Management, Practice Management, Periodontics 1, Periodontal Instrumentation, and Head and Neck Anatomy.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5173 - APPLICATIONS OF PERSON-CENTERED CARE

Minimum Credits: 3
Maximum Credits: 3
In this course, students will work with peers in a clinical setting where they will focus on developing practical skills related to risk assessment, head and neck examination, dental examination, gingival examination, oral disease prevention, and health promotion. This course is the capstone experience of the first year of the dental curriculum, preparing students to enter the second year by applying the foundational skills acquired in Foundations of Person-Centered Care 1 and 2, as well as other courses, such as Caries Management, Practice Management, Periodontics 1, Periodontal Instrumentation, and Head and Neck Anatomy.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5173 - APPLICATIONS OF PERSON-CENTERED CARE

Minimum Credits: 3
Maximum Credits: 3
In this course, students will work with peers in a clinical setting where they will focus on developing practical skills related to risk assessment, head and neck examination, dental examination, gingival examination, oral disease prevention, and health promotion. This course is the capstone experience of the first year of the dental curriculum, preparing students to enter the second year by applying the foundational skills acquired in Foundations of Person-Centered Care 1 and 2, as well as other courses, such as Caries Management, Practice Management, Periodontics 1, Periodontal Instrumentation, and Head and Neck Anatomy.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5190 - PROFESSIONALISM AND ETHICS 3

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5212 - APPLICATIONS OF PROFESSIONAL PRACTICE 1

Minimum Credits: 2
Maximum Credits: 2
This course will build on concepts taught in the first year predoctoral program.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5230 - PROFESSIONALISM AND ETHICS 4

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5243 - APPLICATIONS OF PROFESSIONAL PRACTICE 2

Minimum Credits: 2
Maximum Credits: 2
The Applications of Professional Practice (APP) course series builds on the essential practice management concepts introduced in the Principles of Professional Practice 1 and 2 courses in the first year and contributes to the development and maintenance of a successful professional dental practice. This second-year course series focuses on applying the principles learned in the first-year curriculum to the students' own clinical practice via the submission of compliance reports designed to help their assigned clinical teammates. Team leaders will use the reporting generated from the students in this course to facilitate clinical efficiency within the clinical partnerships. Students

will also learn to navigate the electronic health record (EHR) and provide feedback to their clinical team. Students will assess the impact of key performance indicators and adherence to school compliance policies on clinical productivity metrics. Students will also complete three complete patient record audits of randomly selected patients assigned to their clinical practice team and 5 clinical practice team (CPT) reports due at specified times during the semester. In addition to learning the skills necessary to adequately interpret EHR data regarding their clinical teams, students will be exposed to a number of topics related to practice management. Noting these essential components of dental practice are multifaceted and stretch across a varied spectrum of domains, emphasis will include presenting topics from the following subjects: professional and ethical behavior and decision-making; legal and regulatory concepts; communication and behavioral management skills; customer service; models of healthcare delivery; leadership and office policy; and the dental record. Students must complete all mandated reporting and attend all scheduled team meetings to discuss their reporting with their clinical partners. Students will learn about various models of healthcare delivery and the legal, financial, and contractual obligations associated with each of those models. Students will complete an individual assessment of several employment contracts evaluating each for its beneficial characteristics and drawbacks.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5260 - PROFESSIONALISM AND ETHICS 5

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5290 - PROFESSIONALISM AND ETHICS 6

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5310 - OROFACIAL PAIN AND TEMPOROMANDIBULAR JOINT DISORDERS

Minimum Credits: 1
Maximum Credits: 1
Patients with orofacial pain (OFP) present to dental practices for treatment on a regular basis. In the United States, temporomandibular disorders (TMD) and OFP affect up to 15% of the adult population. As such, the dental student must be able to identify and appropriately manage these patients.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5330 - PROFESSIONALISM AND ETHICS 7

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5360 - PROFESSIONALISM AND ETHICS 8

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5370 - MULTIDISCIPLINARY CASE STUDIES

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to further develop and refine student's values, knowledge, and skills as they relate to providing person-centered care using an interdisciplinary lens that considers relevant sociocultural, clinical, biomedical, and behavioral facts and risk factors. A hallmark of the course is the integration and synthesis of knowledge learned from the various disciplines. Age, race, sex, and gender-based considerations, as well as social determinants of health, will also be addressed whenever relevant and/or appropriate. The format of the course will be online, synchronous, case-based discussions with a panel of experts from various disciplines, as appropriate to the case. Cases will be presented in a format similar to that used in the Integrated National Board Dental Examination. Opportunities for small group discussions will also be provided. Students may be given preparatory materials to review ahead of the sessions.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

DMED 5390 - PROFESSIONALISM AND ETHICS 9

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5430 - PROFESSIONALISM AND ETHICS 10

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5440 - PRE-TREATMENT EVALUATION AND MEDICAL RISK ASSESSMENT

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide clinical experiences in communicating with medical providers and other members of the healthcare team for pre-treatment evaluation and medical risk assessment of patients with complex health profiles. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in assessing and recognizing medical circumstances that require pre-treatment medical consultation and communicating with medical colleagues to determine medical risk and modifications to treatment, at the level of a general dentist. Students will participate in a variety of experiences to increase skills in: (a) assessing medical risk factors, (b) preparing medical consultations and communicating pertinent health information with medical colleagues, (c) interpreting the results of medical consultations, and (d) modifying oral health treatment plans based on those results.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DMED 5460 - PROFESSIONALISM AND ETHICS 11

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5490 - PROFESSIONALISM AND ETHICS 12

Minimum Credits: 1
Maximum Credits: 1
This course series will follow student progression each term through all four years of the curriculum and will assess the professional and ethical knowledge, skills, and values that the faculty members of Pitt Dental Medicine deem essential for a successful general dentist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when students are participating in didactic, preclinical, or clinical activities associated with the Pitt Dental Medicine program, including Pitt Dental Medicine activities occurring between terms.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5801 - SINGLE TOOTH DENTAL IMPLANT SURGICAL PLACEMENT

Minimum Credits: 2
Maximum Credits: 2
In this course, students will use foundational knowledge taught in Implantology I (5311) and Implantology II (5346) to effectively diagnose and treatment plan the surgical placement of a single tooth implant in ideal anatomical sites that do not require augmentative procedures. The student will interpret a cone beam CT scan of the edentulous site; plan and print a surgical guide for implant placement; virtually place the dental implant in computer software; physically place the dental implant in a CT-generated printed model of their specific patient; and finally, surgically place the dental implant in the patient, follow the patient's healing postoperatively. This course will include hands-on demonstrations and a weekly review of literature pertaining to dental implants. The course is a limited participation course of 4 students who will be paired for assisting in pre-clinical exercises and implant surgeries.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DMED 5802 - OBSTRUCTIVE SLEEP APNEA AND ORAL HEALTH

Minimum Credits: 1
Maximum Credits: 1
In this course, students will gain knowledge about obstructive sleep apnea (OSA) and upper airway constriction. Students will learn to identify the signs and symptoms associated with a constricted airway, including relevant diagnostic tests and the opportunity to experience the use of a home sleep study device. Students will learn about treatment and management approaches to address airway obstruction, including referral.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5803 - DENTAL PHOBIA CLINIC

Minimum Credits: 1
Maximum Credits: 1
Dental students currently receive comprehensive education on managing dental anxiety through DSANE 5313 (Pain and Anxiety Control) and demonstrate competency in managing anxiety with the nitrous oxide competency through Dental Anesthesiology and Oral and Maxillofacial Surgery. This selective will go further and introduce students to managing patients with moderate to severe dental anxiety using a pharmacologic approach under minimal to moderate sedation. Patients will be screened in screening clinic and OD/TP clinic using the Modified Dental Anxiety Scale and medical questionnaire. Eligible patients with moderate to severe dental anxiety will be assigned to the Dental Phobia Clinic housed in the Center for Patients with Special Needs. Following a comprehensive care model, students will be assigned patients appropriate for treatment by a predoctoral student. Treatment requiring sedation will be provided using oral anxiolysis or nitrous oxide to manage anxiety. Selective students under the supervision of a restorative faculty member will treat patients under minimal and moderate sedation, supported by the Department of Dental Anesthesiology.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DMED 5999 - INDEPENDENT CLINICAL STUDIES

Minimum Credits: 7
Maximum Credits: 7
This course is designed for clinical faculty to engage in a series of independent learning activities related to the provision of dental care.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

Cultural Studies

CLST 2006 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course entails the exploration of a special topic chosen by the instructor.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLST 2009 - DIRECTED STUDIES

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLST 2050 - CULTURAL STUDIES COMMON SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This annual seminar focuses on a single topic crossing disciplinary and departmental boundaries. Cultural studies faculty with a broad range of research interests participate in weekly talks and discussions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Cultural Studies

Dental Anesthesiology

DSANE 2015 - SCIENTIFIC BASIS FOR CLINICAL THERAPEUTICS

Minimum Credits: 1
Maximum Credits: 1
The basis for dental therapeutics is presented in this graduate course. The course emphasizes the elements of controlled trials by critiquing published articles relevant to dental therapeutics. Pharmacologic agents of interest include local anesthetics, nonsteroidal anti-inflammatory analgesic drugs, opioid analgesics, sedatives/hypnotics and antibiotics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

DSANE 2025 - ADVANCED MODERATE SEDATION

Minimum Credits: 2
Maximum Credits: 2
This 60-hour graduate course provides comprehensive didactic and preclinical training stipulated in the American Dental Association Guidelines for the Use of Sedation and General Anesthesia by Dentists. It is designed for residents enrolled in postdoctoral training programs in periodontics, endodontics, prosthodontics, advanced general dentistry, general practice residencies and other comparable programs. Successful completion of this course, combined with documentation of twenty supervised clinical cases of moderate sedation fulfill the educational requirements for moderate sedation endorsed by the American Dental Association.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DSANE 2114 - PATH AND MANAGEMENT OF MEDICAL EMERGENCY

Minimum Credits: 2
Maximum Credits: 2
This course covers the prevention, recognition, and treatment of medical emergencies that can occur in the dental setting. Differential diagnosis is presented according to the presenting signs and symptomotology. Emphasis is placed on the proper office protocol during an emergency, including the assembly of an emergency drug kit. Experience with IV and IM techniques is included.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DSANE 2242 - PRINCIPLES OF ANESTHESIA

Minimum Credits: 2
Maximum Credits: 2
This is the second course in a series of three didactic courses dealing with the philosophy and methods of pain and anxiety control in dentistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DSANE 2243 - POST-DOCTORAL MODERATE SEDATION CLINIC

Minimum Credits: 2
Maximum Credits: 2
This course is designed to integrate with the didactic course series dealing with the philosophy and methods of pain and anxiety control in dentistry. In this clinical course, under the supervision of the anesthesia faculty, students will select and administer the various pain and anxiety control techniques learned in the classroom.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

DSANE 2270 - POST-DOCTORAL MODERATE SEDATION 2

Minimum Credits: 2
Maximum Credits: 2
The course will foster an appreciation for the important role of pain and anxiety control in dentistry. The resident will demonstrate proficiency in technical aspects of nitrous oxide anxiolysis, conscious sedation, patient management, and the pharmacologic use of medications. All aspects of anesthesia will be undertaken in the clinic. The resident will experience hands-on management of intravenous sedation from pre-operative evaluation to discharge.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

DSANE 2400 - INTRODUCTION TO ADVANCED ANESTHESIOLOGY 1

Minimum Credits: 1
Maximum Credits: 1
This course introduces advanced techniques in anesthesiology that apply to the dental anesthesiology resident/student entering the initial segment of advanced, post-doctoral training. This didactic instruction is to provide preliminary instruction concerning hospital and out-patient based anesthesiology that will prepare the student/resident for advanced anesthesiology beyond the pre-doctoral level.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

DSANE 2500 - INTRODUCTION TO DENTAL ANESTHESIOLOGY 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

DSANE 5241 - ANESTHESIA 1: LOCAL ANESTHESIA

Minimum Credits: 2
Maximum Credits: 2
In this course, students will be introduced to local anesthesia and gain an appreciation for the important role of its use in dentistry. Areas of focus include pain management, pre-operative evaluation, pharmacology, and technique. This course includes lectures and class discussions. An opportunity for hands-on application of concepts will be provided.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DSANE 5245 - LOCAL ANESTHESIA TECHNIQUE LAB

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

DSANE 5272 - ANESTHESIA 2: MEDICAL EMERGENCIES

Minimum Credits: 1
Maximum Credits: 1
In this course, students are provided with information pertaining to the prevention, recognition, and treatment of selected medical emergencies occurring in the dental office. Emphasis is placed on patient evaluation and prevention. Emergency drugs and equipment are specified, as well as clinical their application. Lifesaving management of the medically compromised patient is incorporated into the dental treatment plan. Course lectures will include concepts endorsed by the American Dental Association and introduce the student to resources available through the Journal of the American Dental Association. This course will offer foundational knowledge in emergency medicine which will enable the student to assess and manage patients experiencing a medical emergency in the dental office.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DSANE 5311 - PATIENT MANAGEMENT: ENTERAL SEDATION

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be expected to meet the educational requirements for predoctoral dental students set forth in the October, 2007 the American Dental Associations Guidelines for Teaching Pain Control and Sedation to Dentists and Dental Students. In combination with course material presented in pharmacology, physiology, and clinical medicine, satisfactory completion of this course, along with subsequent clinical exposures, will place the student in compliance with the ADA guidelines for enteral sedation. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DSANE 5313 - ANESTHESIA 3: PAIN AND ANXIETY CONTROL

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be presented with methods of pharmacologic management of pain and anxiety. It is presented as essentially two separate sections: 1) anxiety control with nitrous oxide sedation and 2) pain control with analgesic. Anxiety control encompasses current pharmacologic management in anxiety control for dentistry. This section of the course focuses on the techniques that a general practice dentist can provide in an office setting. The methods of anxiety reduction and sedation that will be presented were selected on the basis of efficacy and safety. Inhalation sedation (nitrous oxide) techniques are covered in depth. Sedation and general anesthesia with respect to the role of the dental anesthesiologist is described. Pediatric management techniques are not covered. Pain control encompasses an introduction to prescription writing and establishes prescribing protocols for both non-steroidal anti-inflammatory and opioid analgesics. Often pain medications are prescribed to the dental patient in an empirical sense; the goal of this portion of the course is to impart a clinical rational for prescribing pain medications. A method is established so that the student can make a therapeutic choice based on the needs of the patient and contemporary dental practice. A focus is placed with respect to drug diversion and responsible opiate prescribing. Atypical analgesics for oral-facial neuropathic pain will also be presented. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DSANE 5315 - NITROUS OXIDE LAB

Minimum Credits: 0
Maximum Credits: 0
In this course, students will reinforce the knowledge of nitrous oxide gained didactically by engaging in hands-on use of the machines and self-experience of the medication, if desired, in a small group educational setting. This course will serve to assess preclinical competence in order to allow students to progress to the administration of nitrous oxide to dental patients. This course includes small group lab sessions.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

DSANE 5342 - CLINICAL MEDICINE

Minimum Credits: 1
Maximum Credits: 1
This is a graduate course in clinical medicine directed to predoctoral dental students. In this course, students will gain a better understanding of common medical conditions and their current treatment. This course will help prepare new dentists for providing dental care to the growing population of aging patients with complex medical conditions and managing these patients in conjunction with our physician colleagues. This course includes class lectures and discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DSANE 5344 - MEDICAL EMERGENCIES - WISER CENTER

Minimum Credits: 0
Maximum Credits: 0
In this course, students will apply skills and knowledge in order to manage the most commonly occurring medical emergencies that may occur in the dental office. Using simulated scenarios, emphasis will be placed on airway management, medication use, emergency drug kit usage, and recognition and management of medical emergencies. Students will also acquire the experience of a team approach to responding to emergency events. This course will be offered in conjunction with the Peter M. Winter Institute for Simulation, Education & Research (WISER, www.wiser.pitt.edu).
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DSANE 5345 - NITROUS OXIDE SEDATION LAB

Minimum Credits: 0.5
Maximum Credits: 0.5
Academic Career: DMED
Course Component: Practicum
Grade Component: Grad HSU Basis

DSANE 5375 - NITIOUS OXIDE SEDATION LAB

Minimum Credits: 0.5
Maximum Credits: 0.5
Academic Career: DMED
Course Component: Practicum
Grade Component: Grad HSU Basis

DSANE 5802 - ADVANCED LOCAL ANESTHESIA TECHNIQUES

Minimum Credits: 1
Maximum Credits: 1
In this course, students will gain an appreciation for the important role of local anesthesia in dentistry. Students will develop and practice techniques in advanced and alternative delivery of local anesthesia. This course will include three lectures as well as two lab sessions. One lab session will allow students to practice intraosseous, PDL, and intrapulpal techniques on a pig model. The other lab session, an optional peer to peer experience, will allow students to practice gow gates, akinosi, mental nerve block, and infraorbital techniques. An exam on standard local anesthesia techniques must be passed prior to enrollment.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

DSANE 5810 - RESEARCH & WRITING IN DENTAL ANESTHESIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DSANE 5813 - CLINICAL MEDICINE FOR ORAL AND MAXILLOFACIAL SURGERY/DENTAL ANESTHESIOLOGY CANDIDATES

Minimum Credits: 1
Maximum Credits: 1
This course will provide dental students seeking advanced education in Oral and Maxillofacial Surgery and Dental Anesthesiology a superior foundation in Clinical Medicine and Pathophysiology of Disease.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DSANE 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
An individualized program of advanced studies in anesthesia.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DSANE 5912 - CLINICAL ANESTHESIOLOGY 2

Minimum Credits: 1
Maximum Credits: 1
This is a one year undergraduate dental course dealing with the philosophy and methods of pain and anxiety control in dentistry. Concepts of pain and anxiety, as well as, the principles of their psychologic and pharmacologic modifications are explored. Modalities ranging from non-drug and regional analgesic to enteral and parenteral sedative medication techniques are administered by the student under the supervision of the anesthesia faculty. The advantages, disadvantages, and complications associated with these techniques are compared.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DSANE 5943 - CLINICAL ANESTHESIOLOGY 3

Minimum Credits: 4
Maximum Credits: 4
This is a one year undergraduate dental course dealing with the philosophy and methods of pain and anxiety control in dentistry. Concepts of pain and anxiety, as well as, the principles of their psychologic and pharmacologic modifications are explored. Modalities ranging from non-drug and regional analgesic to enteral and parenteral sedative medication techniques are administered by the student under the supervision of the anesthesia faculty. The advantages, disadvantages, and complications associated with these techniques are compared.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DSANE 5971 - CLINICAL ANESTHESIOLOGY 1

Minimum Credits: 1
Maximum Credits: 1
This is a one year undergraduate dental course dealing with the philosophy and methods of pain and anxiety control in dentistry. Concepts of pain and anxiety, as well as, the principles of their psychologic and pharmacologic modifications are explored. Modalities ranging from non-drug and regional analgesic to enteral and parenteral sedative medication techniques are administered by the student under the supervision of the anesthesia faculty. The advantages, disadvantages, and complication associated with these techniques are compared.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

Dental Microbiology

DSMIC 5941 - IMMUNOLOGY ORAL FACIAL COMPLEX

Minimum Credits: 1
Maximum Credits: 1
This course uses literature reviews, student presentation, discussions and demonstrations to review the role of microorganisms and host immune responses in the pathogenesis of caries, periodontal diseases and periapical infections. Microbial and immunological factors affecting bone formation, tooth transplantation, bone implants, and the dental management of patients with allergies, autoimmune diseases and immunodeficiency disorders will also be discussed.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Dental Pharmacology

DSPHL 2243 - SCIENTIFIC BASIS FOR CLINICAL THERAPEUTICS

Minimum Credits: 1
Maximum Credits: 1
The basis for dental therapeutics is presented in this graduate course. The course emphasizes the elements of controlled trials by critiquing published articles relevant to dental therapeutics. Pharmacologic agents of interest include local anesthetics, nonsteroidal anti-inflammatory analgesic drugs, opioid analgesics, sedatives/hypnotics and antibiotics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Dental Medicine

DENT 2001 - FULL-TIME GRADUATE DENTAL MEDICINE STUDY

Minimum Credits: 0
Maximum Credits: 0
Students who are working full-time in a school of dental medicine graduate program may register for this course.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

DENT 2002 - PROFESSIONAL & ETHICS 1

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2003 - PROFESSIONALISM & ETHICS 2

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2004 - PROFESSIONALISM & ETHICS 3

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in

didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2005 - PROFESSIONALISM & ETHICS 4

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2006 - PROFESSIONALISM & ETHICS 5

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2007 - PROFESSIONALISM & ETHICS 6

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2008 - PROFESSIONALISM & ETHICS 7

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2009 - PROFESSIONALISM & ETHICS 8

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2010 - PROFESSIONALISM & ETHICS 9

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2011 - PROFESSIONALISM & ETHICS 10

Minimum Credits: 1
Maximum Credits: 1
This course series will follow graduate students progression each term through all years of the curriculum and will assess the professional and ethical knowledge, skills, and values by demonstration of following the established policies of SDM and enrolled graduate residency programs that the faculty members of Pitt Dental Medicine deem essential for a successful graduate specialist. This assessment includes actions displayed in all locations within the School as well as in external curricular locations when graduate students are participating in didactic and clinical activities associated with the enrolled Residency Program, including Residency activities occurring between terms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2019 - GRADUATE PATIENT CARE

Minimum Credits: 0
Maximum Credits: 0
This course will provide patient care opportunities in a clinical setting under direct faculty supervision. Treatment procedures will include all aspects of dentistry.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 2029 - GRADUATE PATIENT CARE - FALL

Minimum Credits: 5
Maximum Credits: 5
This course will provide patient care opportunities in a clinical setting under direct faculty supervision. Treatment procedures will include all aspects of dentistry.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 2039 - GRADUATE PATIENT CARE SPRING

Minimum Credits: 5
Maximum Credits: 5
This course will provide patient care opportunities in a clinical setting under direct faculty supervision. Treatment procedures will include all aspects of dentistry.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 2049 - GRADUATE PATIENT CARE

Minimum Credits: 0
Maximum Credits: 0
This course will provide patient care opportunities in a clinical setting under direct faculty supervision. Treatment procedures will include all aspects of dentistry.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SNC Basis

DENT 2059 - GRADUATE PATIENT CARE - SUMMER

Minimum Credits: 5
Maximum Credits: 5
This course will provide patient care opportunities in a clinical setting under direct faculty supervision. Treatment procedures will include all aspects of dentistry.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 2130 - APPLIED HEAD AND NECK ANATOMY

Minimum Credits: 1
Maximum Credits: 1
This course is designed to introduce graduate students in clinical specialties to applied (surgical) head and neck anatomy. The course is comprised of didactic and dissection components, in addition to required readings. The dissection portion is planned to meet the specific needs of the various clinical specialties.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

DENT 2150 - ETHICS IN THE DENTAL SPECIALTIES

Minimum Credits: 0
Maximum Credits: 0
The Ethics in the Dental Specialties course is designed to provide the first year advanced education student with a review of the general

principles of ethics and the application of ethical principles in the interactions between general dentists, dental specialists and the patients whose care they share. The students will be provided the opportunity to identify and work through ethical dilemmas specifically involving their chosen dental specialty.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 2201 - MASTERS RESEARCH 1

Minimum Credits: 1
Maximum Credits: 3
The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

DENT 2202 - MASTERS RESEARCH 2

Minimum Credits: 1
Maximum Credits: 3
The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

DENT 2203 - MASTERS RESEARCH 3

Minimum Credits: 1
Maximum Credits: 3
The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

DENT 2204 - MASTERS RESEARCH 4

Minimum Credits: 1
Maximum Credits: 3
The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data, and submit a final thesis and scientific paper for peer review.

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

DENT 2205 - MASTERS RESEARCH 5

Minimum Credits: 1
Maximum Credits: 3
The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

DENT 2206 - MASTERS RESEARCH 6

Minimum Credits: 1
Maximum Credits: 3
The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

DENT 2207 - MASTERS RESEARCH 7

Minimum Credits: 1
Maximum Credits: 3
The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

DENT 2208 - MASTERS RESEARCH

Minimum Credits: 1
Maximum Credits: 3
The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

DENT 2947 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

DENT 3142 - INTRODUCITON TO TRANSLATIONAL RESEARCH

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

DENT 5000 - FULL-TIME DENTAL MEDICINE STUDY

Minimum Credits: 0
Maximum Credits: 0
Students who are working full-time for their doctor of dental medicine degree may register for this course.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DENT 5211 - DIAGNOSIS AND TREATMENT PLANNING 1

Minimum Credits: 1
Maximum Credits: 1
This course parallels the curricular theme of the second year, providing the opportunity to acquire and practice basic clinical skills and to prepare students to conduct comprehensive patient evaluations. Topics include: obtaining and interpreting medical, dental and medication histories; assessing the patient's health status; and assessing risk. The course will utilize previously acquired knowledge related to the examination of oral, dental and periodontal structures. Students will apply knowledge from their periodontology courses to diagnose gingivitis and periodontitis. Students will continue to develop their skills in oral disease prevention and health promotion. This course includes lecture, clinical assignments with an upperclassman, and case-based learning activities.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DENT 5242 - DIAGNOSIS AND TREATMENT PLANNING 2

Minimum Credits: 1
Maximum Credits: 1
In this course, an emphasis will be placed on assimilating historical information, identified risk factors, diagnostic testing, radiologic examination, periodontal examination, and soft and hard tissue examination in order to formulate an evidence-based, sequenced prioritized, comprehensive and individualized treatment plan that takes into account social determinants of heath, prognosis, prevention of disease and maintenance of health.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DENT 5283 - DIAGNOSIS AND TREATMENT PLANNING 3

Minimum Credits: 2
Maximum Credits: 2
In this course, second year students will be provided with an opportunity to apply foundational knowledge in diagnosis and treatment planning to a patient case. The student will work as part of a group to assess, diagnose, treatment plan and present a case to faculty and peers. Students will work within their group to write a written case report. After faculty review of the case report, each group of students will present their case orally during a 20-minute oral presentation. The presentation is followed by faculty questions. Students will also attend one implant conference to gain exposure to multi-disciplinary treatment planning and will then write a journal entry reflecting on this experience. Finally, the student's behavioral skills will be assessed as he/she discusses a treatment plan with a patient through the use of a standardized patient competency examination.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 5312 - DENTISTRY FOR PATIENTS WITH SPECIAL HEALTHCARE NEEDS

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be provided with an introduction to the arena of special needs dentistry; the material presented will demonstrate the management and treatment of patients with disabilities/special healthcare needs. The primary goals of this course are to introduce the predoctoral dental student to common developmental and acquired disabilities and to provide an increased understanding regarding barriers to care for individuals with disabilities. The focus of the course is to enable the student to understand the necessary parameters of care and modifications to dental treatment to best accommodate individuals with special healthcare needs. The material presented will aid the student in assessing, planning, implementing, and monitoring treatment for patients with special healthcare needs. Speakers will include faculty members and guests from various disciplines within the University and external organizations. This course includes lectures, required assignments (readings and/or audio-video), and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DENT 5326 - SUCCESSFUL PRACTICE MANAGEMENT 1

Minimum Credits: 3
Maximum Credits: 3
This course prepares students to manage a dental practice by promoting strategies to improve clinical productivity ethically and efficiently. It emphasizes practice management skills tied to patient care, time management, and clinical benchmarks, with a focus on Relative Value Units (RVUs) and Provider-Based Overhead (PBO). Students will self-assess clinical skills, track their progress, and receive structured guidance to meet curriculum goals.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5346 - SUCCESSFUL PRACTICE MANAGEMENT 2

Minimum Credits: 3
Maximum Credits: 3
This course prepares students to manage a dental practice by promoting strategies to improve clinical productivity ethically and efficiently. It emphasizes practice management skills tied to patient care, time management, and clinical benchmarks, with a focus on Relative Value Units (RVUs) and Provider-Based Overhead (PBO). Students will self-assess clinical skills, track their progress, and receive structured guidance to meet curriculum goals.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5347 - SUCCESSFUL PRACTICE MANAGEMENT 2

Minimum Credits: 3
Maximum Credits: 3
The primary goal of the Successful Practice Management (SPM) course series is to teach students the value of developing effective strategies to enhance overall clinical productivity that is ethically balanced with the needs of assigned patients. In doing so, this course will follow and assess student clinical progression in their own SDM clinical practice. The course series will emphasize a business model of dental practice development focused on maximizing educational experiences for the student rather than on traditional financial-driven metrics.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: ABCF

DENT 5377 - SUCCESSFUL PRACTICE MANAGEMENT 3

Minimum Credits: 3
Maximum Credits: 3
This course prepares students to manage a dental practice by promoting strategies to improve clinical productivity ethically and efficiently. It emphasizes practice management skills tied to patient care, time management, and clinical benchmarks, with a focus on Relative Value Units (RVUs) and Provider-Based Overhead (PBO). Students will self-assess clinical skills, track their progress, and receive structured guidance to meet curriculum goals.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5383 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 1

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the areas of oral diagnosis and treatment planning, evidence-based dentistry and the treatment of adult and geriatric patients for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in diagnosing and treatment planning, in providing evidence-based care to patients and in the treatment of adult and geriatric patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in these areas.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5389 - CLINICAL DENTISTRY FOR PATIENTS WITH SPECIAL HEALTH CARE NEEDS 1

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of special healthcare needs dentistry for predoctoral dental students. By the end of the clinical course series, students will be able to demonstrate competence in assessing the needs of, and in providing care to, dental patients with special healthcare needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with special healthcare needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5426 - SUCCESSFUL PRACTICE MANAGEMENT 4

Minimum Credits: 6
Maximum Credits: 6
This course prepares students to manage a dental practice by promoting strategies to improve clinical productivity ethically and efficiently. It emphasizes practice management skills tied to patient care, time management, and clinical benchmarks, with a focus on Relative Value Units (RVUs) and Provider-Based Overhead (PBO). Students will self-assess clinical skills, track their progress, and receive structured

guidance to meet curriculum goals.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5440 - SENIOR CASE PRESENTATION

Minimum Credits: 2
Maximum Credits: 2
In this course, students will present a comprehensive patient case to classmates and faculty for feedback and assessment. The presentation will consist of both a written and oral component. The student will be required to provide documentation, including study models and photos, to support their patient care decisions. The student is expected to incorporate Evidenced Based Dentistry prior to establishing a treatment path, utilizing critical thinking to explore multiple treatment modalities. Upon completion of this course, students will have demonstrated the skills needed to competently evaluate treatment modalities as an entry level general dentist and to discuss a case with health professional peers and colleagues. This course includes an orientation lecture and a seminar session in which students present their final project to faculty and peers.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

DENT 5446 - SUCCESSFUL PRACTICE MANAGEMENT 5

Minimum Credits: 6
Maximum Credits: 6
This course prepares students to manage a dental practice by promoting strategies to improve clinical productivity ethically and efficiently. It emphasizes practice management skills tied to patient care, time management, and clinical benchmarks, with a focus on Relative Value Units (RVUs) and Provider-Based Overhead (PBO). Students will self-assess clinical skills, track their progress, and receive structured guidance to meet curriculum goals.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5455 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of oral diagnosis and treatment planning and in assessing outcomes of care for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in diagnosing and treatment planning and in assessing outcomes of care to dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in these areas.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5469 - CLINICAL DENTISTRY FOR PATIENTS WITH SPECIAL HEALTH CARE NEEDS 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of special healthcare needs dentistry for predoctoral dental students. By the end of the clinical course series, students will be able to demonstrate competence in assessing the needs of, and in providing care to, dental patients with special healthcare needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with special healthcare needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5478 - QUALITIES OF A GENERAL DENTIST 12

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5900 - INDEPENDENT STUDY

Minimum Credits: 0
Maximum Credits: 3
This independent study course is designed for the undergraduate dental student who desires to pursue additional knowledge in specific areas of dentistry. The content of the course is specified by the student and supervising faculty. Format is designed to encourage independent student experiences with the faculty acting in an advisory capacity with limited direct interaction.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5905 - DENTAL TERMINOLOGY IN SPANISH

Minimum Credits: 1
Maximum Credits: 1
This Beginner Course is designed to build on an existing introductory-level background in Spanish language skills. The course sessions build on basic skills and introduces students to dental-related terminology. Students will have opportunities to practice their Spanish conversational skills, building toward the goal of being able to conduct a problem-focused dental interview with a Spanish-speaking patient. Students will learn the basics of how to interview patients (in Spanish) about common dental conditions by practicing these conversations with native speakers.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 5912 - CLINICAL TEACHING PRACTICUM 2

Minimum Credits: 2
Maximum Credits: 2
Students in the ACT ARCO program will have an opportunity to apply skills learned in the prerequisite didactic courses in a clinical teaching setting.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

DENT 5913 - EDUCATIONAL ADMINISTRATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5915 - INTRODUCTION TO PEER TUTORING IN DENTAL EDUCATION

Minimum Credits: 2
Maximum Credits: 2

Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DENT 5916 - PEER TUTORING IN DENTAL EDUCATION

Minimum Credits: 1
Maximum Credits: 1
This is a selective course which will allow participants to practice the skills necessary to provide peer tutoring as part of the School of Dental Medicine Peer Tutoring Program. This selective is open to second, third, and fourth year students. Course Goals: This course will provide an opportunity to students to practice skills in a peer-tutoring environment. The goal is to provide students with basic tools and skills necessary for peer-tutoring. Students will be able to consult on their tutoring skills with the selective course director(s), on the content with the tutoring content course director(s).
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5920 - PRINCIPLES OF CLINICAL TEACHING

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

DENT 5921 - CLINICAL TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5922 - APPRENTICESHIP IN CLINICAL TEACHING

Minimum Credits: 1
Maximum Credits: 1
This course provides an opportunity for fourth-year ACT ARCO students to shadow and learn from a faculty member during clinical teaching about how to create a safe learning environment in the clinic and how to navigate teaching dental students in the presence of patients.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DENT 5923 - BEHIND THE SCENES: THE ADMINISTRATIVE SIDE OF TEACHING

Minimum Credits: 1
Maximum Credits: 3
This course provides an opportunity for fourth-year ACT ARCO students to work alongside a faculty member and experience what is involved in teaching "behind the scenes", including preparing and updating instructional materials and working within a learning management system under the supervision of faculty. This course provides an additional optional experience for the ACT ARCO students to learn more about different aspects of an academic career and responsibilities of a faculty member. This experience supplements students' knowledge and experience gained in the following ACT ARCO courses that they complete during their third year: "Fundamentals of Teaching: Principles and Methods," "Principles of Clinical Teaching" and "Clinical Teaching Practicum."

Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DENT 5924 - CLINICAL DENTISTRY FOR PATIENTS WITH SPECIAL HEALTH CARE NEEDS

Minimum Credits: 3
Maximum Credits: 3
This is a clinical selective course offered to fourth-year dental students that wish to gain additional hands-on experience treating Patients with Special Healthcare Needs. The time commitment is one clinic session per week for one semester. The selective student will typically function as the primary care provider for patients with varying degrees of Special Healthcare Needs, often including treatment of patients who are receiving various forms of sedation. The student will also be responsible for all discussions and communications with the patient and/or family members/caregivers of these patients.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5925 - ACCELERATED CLINICAL DENTISTRY FOR PATIENTS WITH SPECIAL HEALTH CARE NEEDS

Minimum Credits: 3
Maximum Credits: 3
This is a clinical selective course offered to fourth-year students that wish to gain additional hands-on experience treating Patients with Special Healthcare Needs. The commitment time involves a minimum of 12 clinical sessions (1/2 day sessions) during the weeks between the summer semester of 3rd year and the fall semester of the fourth year (ie, summer "break"). The grade for this course will be recorded during the fall semester of the fourth year. This clinical course will be an intense and condensed version of the semester-long selective in CPSN which is typically offered in the fall or spring. The selective student will typically function as the primary care provider for patients with varying degrees of special needs, often including the treatment of patients who are receiving various forms of sedation. The student will also be responsible for all discussions and communications with the family members/caregivers of these patients.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5926 - TEACHING PRACTICUM - STANDARDIZED PATIENT FACILITATED LEARNING

Minimum Credits: 1
Maximum Credits: 1
The goal of this course is to provide an opportunity for students to gain experience in facilitating small group learning sessions. Students will co-facilitate Standardized Patient (SP) sessions for predoctoral students in the School of Dental Medicine with a faculty mentor. In this course, students receive coaching, support, assistance, and feedback related to their co-facilitator role in first- or second-year SP sessions. Students will receive didactic instruction and complete assignments to prepare them for this role and will receive feedback from the course director as well as teaching evaluations from predoctoral students. This is beneficial for anyone interested in a career in academia.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

DENT 5947 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DENT 5977 - EDUCATIONAL RESEARCH IN DENTAL MEDICINE (R)

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5978 - KEYS TO SUCCESS: DIVERSITY, EQUITY, INCLUSION, AND BELONGING IN DENTAL EDUCATION AND PRACTICE

Minimum Credits: 1
Maximum Credits: 1
This course will provide students with tools to recognize social biases and engage a diverse group of students, colleagues, and practitioners. The course will also provide a safe and welcoming environment for respectful conversations around diversity, equity, inclusion, and belonging and provide resources for understanding inclusive teaching and diversity in the curriculum.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 5980 - LEADERSHIP AND CAREER DEVELOPMENT IN DENTAL EDUCATION

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

DENT 5981 - FUNDAMENTALS OF TEACHING: PRINCIPLES AND METHODS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

DENT 5982 - TEACHING PRACTICUM IN DENTAL EDUCATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5983 - ACADEMIC CAREER TRACK CAPSTONE COURSE 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5984 - ACADEMIC CAREER TRACK CAPSTONE COURSE 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5985 - CHARTING YOUR OWN CAREER PATH IN DENTISTRY

Minimum Credits: 1
Maximum Credits: 1
This selective course is a coaching-based course to provide support as students explore career plans and identify preparatory steps. Coaching is a powerful tool to aid the career decision-making process utilizing tools and best practices from adult development, career counseling, and coaching. Coaching is partnering with student coachees in a thought-provoking and creative process that inspires them to maximize their personal and professional potential. The coaching process honors the student-coachee as the expert in their life. Coaching is different from mentoring and advising in that coaching utilizes powerful questions to elicit answers, perspectives, and strategies from the student-coachee. The course sessions are designed as group and peer coaching sessions and draw on the students' resourcefulness. The course consists of alternating group coaching sessions and peer support meetings. Group coaching sessions are designed to (1) help students discover, clarify, and align with their needs to achieve their goals, (2) encourage student/coachee self-discovery, (3) elicit student-generated solutions and strategies, and (4) offer support, encouragement, perspective, strategies to support students in achieving their desired results. Peer support meetings are designed to follow up on group coaching discussions and to facilitate input, feedback, and advice by peers. In addition to the session and meetings, students will engage in individual reflections.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

Dermatology

DERM 5380 - DERMATOLOGY CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
This elective emphasizes clinical dermatology. The student will participate in the outpatient clinics at Flak Clinic, Childrens Hospital and the VA Hospital. These activities will be complemented by grand rounds, kodachrome conference, dermatopathy conference, and journal club conference. There are lectures in the basic sciences.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

DERM 5420 - BASIC DERMATOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective emphasizes clinical dermatology. The student will participate in our outpatient clinics at Falk Clinic, Children's Hosp, and the VA Hosp. In addition, the student may participate with hospital consultations, clinical therapeutic trials, the pigmented lesion and melanoma program, the cutaneous ulceration and rehabilitation, and the technique of Mohm's microscopic-controlled excision of skin cancer. These activities will be complemented by weekly grand rounds, Kodachrome conf, dermatopath conf, and journal club conf. There are weekly lectures in basic sciences.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

DERM 5425 - ADVANCED DERMATOLOGY

Minimum Credits: 0
Maximum Credits: 0
Students are expected to develop skills necessary to independently complete a history and physical examination, identify required laboratory studies, develop a rationale differential diagnosis, and articulate and defend an appropriate treatment plan. The didactic portion will include regular participation in all dermatology department conferences and didactic sessions, and a weekly lecture and q and a session with the course director. Students are expected to formally present one patient at grand rounds and are encouraged to write a case report for publication. Evaluation is based on an exam given on the last day of the elective as well as clinical performance.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 4

DERM 5440 - DERMATOPATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
Interact with dermatology and pathology residents as well as dermatopathology fellows and participate in lectures and weekly grand rounds. Participation in case review and sign out sessions. Additional slides available for optional independent study. Independently study at microscope available. Students attempt diagnosis of cases & present them to faculty. Students gain understanding of skin as a separate organ having unique pathobiologic responses. Acquire adequate diagnostic proficiency with response processes seen in dermatopathology. Final evaluation on overall performance.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

DERM 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department of dermatology to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

DERM 5810 - DERMATOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Research projects in dermatology are available to interested and motivated students. Project areas include 1) various aspects of wound healing; 2) skin microbiology; 3) biological behavior and causes of skin cancer; 4) dermal biochemistry; 5) epidermal cell biology; 6) clinical studies; 7) mycosis fun guides and immune modulation; 8) scleroderma fibroblast study; 9) pigmented lesions and cutaneous immunology. These activities will be complemented by departmental conferences. At the end of the project, the student will present a seminar on his/her results.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

DERM 5900 - EXTRAMURAL DERMATOLOGY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in dermatology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the UPSOM course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Diagnostic Sciences

DIASCI 2110 - ADVANCED ORAL PATHOLOGY 1

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course in oral pathology is to provide the student a logical approach to the differential diagnosis of oral lesions. The definitive information necessary for the establishment of a final diagnosis is then provided. The course consists of a series of lectures augmented by laboratory sessions and clinical pathologic conferences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 2140 - ADVANCED IMAGING

Minimum Credits: 1
Maximum Credits: 1
The course on advanced imaging reinforces the importance of right way of using technology and understanding the usage of advanced techniques like CT, MRI and ultrasound in dentistry. It also helps them to understand the digital radiography and its advantages and disadvantages over the film based technique. It helps them to choose appropriate imaging modality for treatment planning for procedures like implants. The diagnostic part of the course should help residents in describing, interpreting and developing most relevant differential diagnosis for the systemic and bone pathology that is seen on the radiographs. Literature component of the course will help them in knowing the latest research in the field and promotes ideas to develop research integrating imaging.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DIASCI 2142 - ADVANCED ORAL PATHOLOGY 2

Minimum Credits: 1
Maximum Credits: 1
This conference provides the essential information for histologic diagnosis of oral pathologies. This individualized program provides concentrated instruction in the microscopic aspects of those oral diseases related to the specific clinical specialty in which the resident is enrolled.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 2144 - OROFACIAL PAIN AND TEMPOROMANDIBULAR JOINT DISORDERS

Minimum Credits: 0
Maximum Credits: 0
Patients with orofacial pain present to dental practices for treatment on a regular basis. The purpose of the course is to address the knowledge gaps in OFP and TMD. The learning objectives are to provide a foundational knowledge base of orofacial pain and the different TMD, and screening, evaluation and risk assessment of TMDs and OFP. Formulating a differential diagnosis, and enabling

interprofessional, evidence-based treatment decisions and collaboration in clinical practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 2191 - PATHOBIOLOGY 1

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DIASCI 2282 - PATHOBIOLOGY 2

Minimum Credits: 2
Maximum Credits: 2
Applied pathobiology provides the venue wherein residents apply pathobiology to their field of specialization. Utilizing an investigative approach, residents identify a topic of interest and demonstrate by means of a powerpoint presentation pathobiological concepts as they apply to patient care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DIASCI 5110 - FUNDAMENTALS OF RADIOLOGY 1

Minimum Credits: 1
Maximum Credits: 1
This course introduces the student to the basic principles of radiology. Students will continue to reinforce concepts addressed in other courses, including Dental Anatomy, Periodontics, and Cariology and Caries Management. This course offers the first-year dental student instruction in the fundamentals of theory and practice that includes discussions of the following: dental radiological physics; radiologic safety as it applies to dentistry; factors that affect the image quality of radiographs and how to prevent radiology technique or artifact errors; concepts of, and equipment used in, digital radiography. This course includes a self-paced online component (recommended lecture completion dates and test freezing dates will be posted), and mandatory in-class sessions on select topics.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DIASCI 5110 - FUNDAMENTALS OF RADIOLOGY 1

Minimum Credits: 1
Maximum Credits: 1
This course introduces the student to the basic principles of radiology. Students will continue to reinforce concepts addressed in other courses, including Dental Anatomy, Periodontics, and Cariology and Caries Management. This course offers the first-year dental student instruction in the fundamentals of theory and practice that includes discussions of the following: dental radiological physics; radiologic safety as it applies to dentistry; factors that affect the image quality of radiographs and how to prevent radiology technique or artifact errors; concepts of, and equipment used in, digital radiography. This course includes a self-paced online component (recommended lecture completion dates and test freezing dates will be posted), and mandatory in-class sessions on select topics.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 5140 - FUNDAMENTALS OF RADIOLOGY 2

Minimum Credits: 1
Maximum Credits: 1
In this course, students will continue to build on the concepts addressed in the Dental Anatomy, Periodontics and Cariology courses as well as Fundamentals of Radiology 1. This course offers the first-year dental student instruction in the fundamentals of theory and practice that include the following: 1. A working knowledge of the dental radiological technique, safety, and interpretation as they apply to dentistry. 2. Concepts of intra and extra oral radiography, techniques, and anatomy. 3. A pre-clinical laboratory exercise to develop practical skills in dental x-ray procedures. 4. Small group exercises in basic radiographic interpretation of caries and periodontium to serve as the foundation for future radiographic interpretation and patient care. This course includes in-class/virtual lectures, a small group interpretation exercises, and a pre[1]clinical/shadowing exercise on radiology technique. TopHat system may be used in this class. It is the students' responsibility to download, install and register with TopHat using PITT email before start of term. Due to the evolving nature of the COVID-19 (coronavirus) pandemic, changes to this syllabus are likely to occur. Any course modifications (such as class schedules, rotation assignments, assignments, examination formats, etc.) will be communicated to students by the course director or the Office of Academic Affairs. Students are expected to check their University email account regularly for updates. For assistance with technical difficulties, please submit an Educational Technology Services help ticket at sdmteaching@pitt.edu. Any student experiencing personal issues should contact the Office of Student Affairs for information on University support services.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DIASCI 5140 - FUNDAMENTALS OF RADIOLOGY 2

Minimum Credits: 1
Maximum Credits: 1
This course is a continuation of Fundamentals of Radiology 1. In this course, students will continue to build on the concepts addressed in the Dental Anatomy, Periodontics and Cariology courses. This course offers the first-year dental student instruction in the fundamentals of theory and practice that include the following: a working knowledge of the dental radiological technique, safety and interpretation as they apply to dentistry; concepts of intra- and extra-oral radiography, techniques and anatomy;a pre-clinical laboratory exercise to develop practical skills in the area of dental x-ray procedures; self-instruction materials that cover normal radiographic anatomy; and a working knowledge of the dental radiological interpretation as they apply to dentistry. This course includes a self-paced online component (recommended lecture completion dates and test freezing dates will be posted), in-class/online zoom sessions on select topics, and a preclinical radiology technique rotation.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 5173 - GENERAL AND SYSTEMIC PATHOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course is organized to present the pathologic processes which underlie a variety of human disease states. Topics in general pathology include cell injury and cell death, inflammation and repair, hemodynamic disorders, neoplasia, and autoimmune, environmental, genetic, and pediatric diseases. Topics in systemic pathology include disease of vasculature, heart, kidneys, lungs, and blood. Oral implications of systemic disease are introduced. This course includes lectures and class discussions. The goal of teaching general pathology is to provide a foundation of the basic processes of disease, such as cellular pathology, inflammation and repair, fluid and hemodynamic derangements, and neoplasia. The study of metabolic deficiencies, environmental, pediatric and genetic disease processes is also included. The student should be able to understand inflammation and repair throughout the body, including the oral cavity. The goal of teaching systemic pathology to the dental student is to educate him/her in the diseases affecting specific organ systems such as cardiovascular, blood, hematopoietic, lymphoreticular and immune systems, respiratory, gastrointestinal, hepatobiliary, pancreatic, genitourinary, male reproductive, breast and female reproductive, endocrine, musculoskeletal and central and peripheral nervous systems. The student should complete the course with a fundamental knowledge of common systemic diseases. They should be able to identify how their patients diseases can affect dental treatment.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DIASCI 5213 - INTRODUCTION TO RADIOLOGY 3

Minimum Credits: 0.5
Maximum Credits: 0.5
In this course, students will continue to build on the concepts addressed in the Dental Anatomy, Periodontics and Cariology courses as well as Introduction to Radiology 1 and 2. This course offers the second year dental student instruction in the fundamentals of theory and practice that include the following: 1) a working knowledge of the dental radiological interpretation as they apply to dentistry; 2) a pre-clinical/shadowing exercise to develop practical skills in the area of dental x-ray procedures; and 3) small group exercises in basic radiographic interpretation of caries and periodontium to serve as the foundation for future radiographic interpretation and patient care. This course includes a self-paced online component (recommended lecture completion dates and test freezing dates will be posted), small group interpretation exercises, and a pre-clinical/shadowing exercise on radiology technique. In-class session is available upon request for any topics that the class would like to review with the course director.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

DIASCI 5214 - ORAL AND MAXILLOFACIAL PATHOLOGY AND RADIOLOGY 1

Minimum Credits: 2
Maximum Credits: 2
The practice of dentistry requires the ability to distinguish normal oral anatomy from oral abnormalities, and to determine implications for treatment. Oral and Maxillofacial Pathology and Radiology are aimed at the recognition of the etiologic, clinical, radiographic, microscopic features of abnormalities, and disease processes unique to the oral perioral structures, as well as those which reflect systemic disease. Selection criteria for prescribing radiographs and advanced imaging modalities are incorporated to prescribe the right imaging and to be able to diagnose on all appropriate methods of dental related imaging. Where appropriate, treatment of oral diseases will be addressed. The course integrates material learned in the basic science curriculum, including embryology, biochemistry, histology, cell biology, and physiology, and applies it to the diseased state (pathology). Where appropriate, treatment of oral diseases will be addressed. By the end of the course, you will be able to distinguish normal oral anatomy from oral abnormalities, and to determine implications for treatment, which is essential to the practice of dentistry. This course includes lectures, class discussions, and case-based learning activities.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DIASCI 5214 - ORAL AND MAXILLOFACIAL PATHOLOGY AND RADIOLOGY 1

Minimum Credits: 2
Maximum Credits: 2
The practice of dentistry requires the ability to distinguish normal oral anatomy from oral abnormalities, and to determine implications for treatment. Oral and Maxillofacial Pathology and Radiology are aimed at the recognition of the etiologic, clinical, radiographic, microscopic features of abnormalities, and disease processes unique to the oral perioral structures, as well as those which reflect systemic disease. Selection criteria for prescribing radiographs and advanced imaging modalities are incorporated to prescribe the right imaging and to be able to diagnose on all appropriate methods of dental related imaging. Where appropriate, treatment of oral diseases will be addressed. The course integrates material learned in the basic science curriculum, including embryology, biochemistry, histology, cell biology, and physiology, and applies it to the diseased state (pathology). Where appropriate, treatment of oral diseases will be addressed. By the end of the course, you will be able to distinguish normal oral anatomy from oral abnormalities, and to determine implications for treatment, which is essential to the practice of dentistry. This course includes lectures, class discussions, and case-based learning activities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: ABCF with +/- Values

DIASCI 5244 - ORAL AND MAXILLOFACIAL PATHOLOGY AND RADIOLOGY 2

Minimum Credits: 2
Maximum Credits: 2
The practice of dentistry requires the ability to distinguish normal oral anatomy from oral abnormalities, and to determine implications for

treatment. Oral and Maxillofacial Pathology and Radiology is aimed at the recognition of the etiologic, clinical, radiographic, microscopic features of abnormalities, and disease processes unique to the oral perioral structures, as well as those which reflect systemic disease. Selection criteria for the radiographs and advance imaging modalities are incorporated to prescribe right imaging and to be able to diagnose on all appropriate dental related imaging. Where appropriate, treatment of oral diseases will be addressed. The course integrates material learned in the basic science curriculum, including embryology, biochemistry, histology, cell biology, and physiology, and applies it to the diseased state (pathology). Where appropriate, treatment of oral diseases will be addressed. By the end of the course, you will be able to distinguish normal oral anatomy from oral abnormalities, determine implications for treatment, which is essential to the practice of dentistry. This course includes lectures, class discussions, and case-based learning activities. Evaluation will consist of two (2) quizzes (20% each), a comprehensive final examination (50%), class/CPC participation and attendance (10%).
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DIASCI 5244 - ORAL AND MAXILLOFACIAL PATHOLOGY AND RADIOLOGY 2

Minimum Credits: 2
Maximum Credits: 2
The practice of dentistry requires the ability to distinguish normal oral anatomy from oral abnormalities, and to determine implications for treatment. Oral and Maxillofacial Pathology and Radiology are aimed at the recognition of the etiologic, clinical, radiographic, microscopic features of abnormalities, and disease processes unique to the oral perioral structures, as well as those which reflect systemic disease. Selection criteria for prescribing radiographs and advanced imaging modalities are incorporated to prescribe the right imaging and to be able to diagnose on all appropriate methods of dental related imaging. Where appropriate, treatment of oral diseases will be addressed. The course integrates material learned in the basic science curriculum, including embryology, biochemistry, histology, cell biology, and physiology, and applies it to the diseased state (pathology). Where appropriate, treatment of oral diseases will be addressed. This course is a continuation of DIASCI 5214, Oral and Maxillofacial Pathology and Radiology 1.
Academic Career: Graduate
Course Component: Lecture
Grade Component: ABCF with +/- Values

DIASCI 5245 - INTRODUCTION TO DENTAL RADIOGRAPHIC TECHNIQUES

Minimum Credits: 1
Maximum Credits: 1
In this course students will be introduced to practical knowledge and skills required to perform intraoral and extraoral radiography. Students will practice on manikins and take radiographs, students will practice placing XCP instruments on each other, and observe and help senior dental students complete radiographic procedures in the radiology clinic.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5245 - INTRODUCTION TO DENTAL RADIOGRAPHIC TECHNIQUES

Minimum Credits: 1
Maximum Credits: 1
In this course students will be introduced to practical knowledge and skills required to perform intraoral and extraoral radiography. Students will practice on manikins and take radiographs, students will practice placing XCP instruments on each other, and observe and help senior dental students complete radiographic procedures in the radiology clinic.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5320 - MANAGEMENT OF DENTAL EMERGENCIES

Minimum Credits: 1
Maximum Credits: 1

In this course, students will learn the principles and procedures for the examination, diagnosis, treatment and documentation of the patient with a dental emergency. Students will be provided with numerous examples of dental emergencies that encompass the various dental disciplines. The goal of this course is to provide students with the foundational knowledge needed to properly evaluate and treat dental emergencies in an expeditious and efficient manner. Students will apply the skills acquired in this didactic course when treating patients during their clinical rotations in the Emergency Care Clinic. This knowledge and experience is intended to help the student manage their patients while in dental school, and after graduation when in a private practice setting. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DIASCI 5341 - SEMINARS IN ORAL PATHOLOGY AND ORAL MEDICINE

Minimum Credits: 1
Maximum Credits: 1
This course will help students develop diagnostic and management skills as they pertain to oral and maxillofacial pathology by building on the basic knowledge acquired in systemic and oral pathology. This course will focus on the recognition, description and management of clinical and radiographic entities which is encountered by general dentists. The course format will be clinical-pathologic correlations (CPCS) seminars. The students will be provided with cases to review.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: ABCF with +/- Values

DIASCI 5345 - SEMINARS IN ORAL PATHOLOGY AND ORAL MEDICINE

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is for the student to develop diagnostic and management skills as they pertain to oral and maxillofacial pathology, to a level of competence deemed appropriate for general dental practice. The course builds on the basic knowledge acquired previously in General and Systemic Pathology (DIASCI 5170) and Oral and Maxillofacial Pathology and Radiology (DIASCI 5214 and 5244). This course focuses on the recognition, description, diagnosis, and management of clinical and radiographic entities that may be encountered by the general dentist in private practice. Age-, race-, sex-, and/or gender-based differences in the prevalence, clinical presentation, pathophysiology, treatment approaches, and prognosis of various lesions and/or conditions will be highlighted when appropriate. Relevant histologic findings may also be discussed. The course format is primarily case-based, to serve as an appropriate substitute for a clinical rotation in oral pathology/oral medicine. Student attendance and participation are required as this will help the student develop the skills necessary to effectively and appropriately describe, diagnose and discuss 2 various pathologic lesions and conditions. Such skills are also deemed necessary for good record keeping and for effective communication with peers, other professionals, and patients.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DIASCI 5389 - CLINICAL EMERGENCY 1

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of emergency dentistry for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with emergent needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with emergent dental needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5459 - CLINICAL RADIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide clinical experiences in the area of oral and maxillofacial radiology for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to oral and maxillofacial radiology patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the oral and maxillofacial radiology patient.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5469 - CLINICAL EMERGENCY 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of emergency dentistry for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with emergent needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with emergent dental needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5800 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 1
This directed study course is designed for the predoctoral dental student who desires to pursue additional knowledge in specific areas of diagnostic sciences. These areas may include any of the following, but are not limited to: general, systemic, or oral pathology, or oral medicine. The content of the course is specified by the student and approved by a full-time faculty member. The teaching format is designed to teach the student specific knowledge or skills using enhanced faculty interaction and personal contact.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DIASCI 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This course provides the student with the opportunity to independently originate, organize and complete a scientific investigation on a topic in dentistry.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DIASCI 5911 - DENTAL EMERGENCY SELECTIVE

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5917 - ORAL HEAD AND NECK CANCER SELECTIVE

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5918 - RADIOLOGY AND 3D PRINTING IN DENTISTRY

Minimum Credits: 1
Maximum Credits: 1
The course will introduce the students to the basics of 3D printing and an intermediate level of training in CBCT software and its features. We will be discussing various aspects of CBCT like anatomy, case interpretation, clinical software applications and workflows. We will also discuss essential 3D printing methodology including segmentation of DICOM data, 3D printing techniques, applications in dentistry and 3D printing models relevant to dentistry.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 5918 - RADIOLOGY AND 3D PRINTING IN DENTISTRY

Minimum Credits: 1
Maximum Credits: 1
The course will introduce the students to the basics of 3D printing and an intermediate level of training in CBCT software and its features. We will be discussing various aspects of CBCT like anatomy, case interpretation, clinical software applications and workflows. We will also discuss essential 3D printing methodology including segmentation of DICOM data, 3D printing techniques, applications in dentistry and 3D printing models relevant to dentistry.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 5941 - DENTAL EMERGENCY SELECTIVE

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5944 - CLINICAL PATHOLOGIC CORRELATION IN ORAL AND MAXILLOFACIAL PATHOLOGY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

Digital Studies and Methods

DSAM 3000 - DIGITAL STUDIES AND METHODS: SEMINAR

Minimum Credits: 3
Maximum Credits: 3

This seminar addresses the relationships between digital computing and the humanities and allied social sciences, both as a subject of both historical interest and contemporary practical concern. We engage in ongoing theoretical discussions but also fully engage with what it takes to implement interpretive research in the digital environment. Students leave this class having gained a personally significant understanding of current debates in the field of digitally-oriented interpretive research as well as having built a digital project of their own. This course serves as one of the core requirements for the graduate certificate in digital studies and methods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

DSAM 3100 - DIGITAL STUDIES AND METHODS: PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
This course provides a studio-based, semi-structured learning environment in which students focus exclusively on producing and sharing their own, more advanced, work using digital computing within the context of the humanities and allied social sciences. In this practicum, the students begin to investigate more fully the particular digital tools and methods that seem most promising to their longer-term research agenda. It is designed as a collaboration with the university library system, co-led by and taught in digital scholarship services. This course serves as one of the core requirements for the graduate certificate in digital studies and methods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

DSAM 3200 - DIGITAL STUDIES AND METHODS: CAPSTONE

Minimum Credits: 3
Maximum Credits: 3
This course, which serves as the final required course for the graduate certificate in digital studies and methods, will require three major efforts on the part of the student. First, the student will undertake (or substantially add to) a large-scale, independent research project that reflects the mindful use of digital technologies in their field of research that contributes meaningful scholarly knowledge. Second, they will produce an annotated portfolio of the work that they have done during the DSAM certificate that also includes methodological reflections on the use of digital methods in the humanities and allied social sciences. Finally, they will present this portfolio and their capstone work at the end of the term in a DSAM showcase. This course has prerequisites: both DSAM 3000 and DSAM 3100
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

DSAM 3999 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
This course allows students to work on individual digital projects under the direction of a faculty advisor. This course requires instructor approval and is used only in exceptional circumstances for the graduate certificate in digital studies and methods.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

Doctor of Chiropractic

DC 3111 - SPINAL ANATOMY

Minimum Credits: 4
Maximum Credits: 4
This is a foundational course for chiropractic students focusing on the regional anatomy of the thoracic, lumbopelvic, and cervical spine. Anatomical structures, function and relationships of the bones, joints, muscles, blood vessels and nerves in each region are examined in

detail from both a gross and histological perspective, and as appropriate, developmental processes will be explored. Clinical correlations and applications, foundational anatomical concepts and terminology are introduced. Prosected cadavers enable observation and review of the anatomy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3112 - HUMAN FUNCTION AND METABOLISM

Minimum Credits: 6
Maximum Credits: 6
This is an integrated course covering the function and metabolism of the human body from molecules to cells to organs and organ systems. It incorporates principles and content from biochemistry, molecular biology and physiology in a continuous framework. The course begins with the nature of macro-molecules as the foundation of living structures, including their synthesis, function and degradation. This is followed by a detailed presentation of amino acids, proteins, enzymes, nucleic acids and carbohydrate and lipid metabolism. Next, the biology and microanatomy of cells and tissue types, their structure and function are discussed as a prelude to the study of homeostasis, homeostatic systems, and the function and physiology of tissue and organ systems. Throughout the course, clinical correlations and examples are included allowing for a deeper understanding and appreciation of the nature of molecular, biochemical and physiological regulation of function and metabolism in health and disease. The goal is to enable students to integrate basic science principles into their understanding of many common clinical conditions and presentations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3113 - GROSS ANATOMY I (FOUNDATIONS OF MUSCULOSKELETAL AND THORACIC ANATOMY)

Minimum Credits: 4
Maximum Credits: 4
This is a foundational course for chiropractic students focusing on the regional anatomy of the back, upper and lower extremities, and thorax, with an emphasis on osteology of the entire skeleton. Anatomical structures, function and relationships of the bones, joints, muscles, blood vessels, nerves, and viscera in each region are examined in detail from both a gross and histological perspective, and as appropriate, developmental processes will be explored. Clinical correlations and applications, foundational anatomical concepts and terminology are introduced. Prosected cadavers enable observation and review of the anatomy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3115 - NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course provides an in-depth study of the structure and function of the nervous system. It includes the role of the nervous system in regulating human health and homeostasis; the role of the nervous system in maintaining balance and posture, and the pathophysiology involved in disorders of gait, posture and balance; central and peripheral nervous system plasticity; the neurophysiology of pain and pain mechanisms; and essentials of physiological psychology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3116 - GROSS ANATOMY

Minimum Credits: 5
Maximum Credits: 5
This course will be divided into both lectures and laboratories exploring, in detail, the gross anatomy of the human body. Small group facilitated discussions provide for the clinical correlation, context, and relevance of the structures being studied. Clinical examples will be used throughout the course enabling the student to integrate basic science information into a clinical context. Wherever possible, pathologic anatomy will be presented and discussed. The laboratories will include the use of dissected human cadavers and prosections.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3117 - CLINICAL MICROBIOLOGY AND IMMUNOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course has two major components. Clinical microbiology will be presented to cover bacteriology, mycology, and virology, including the major etiological agents responsible for global infectious diseases. The course focuses on key clinical topics such as common viral diseases, meningitis, streptococcal infections, pneumonia, diphtheria, tetanus, enteric infections, anaerobic infections, and tuberculosis. The goal is to provide future chiropractors with the knowledge to enhance their problem-solving diagnostic skills as well as to appreciate their role as health care team members in diagnosing and preventing infectious disease. The immunology section covers principles of immunology including the development of the immune system, immune system disorders, and the role of immunization in the prevention of infectious diseases. Students will explore the role of the chiropractic profession as advocates of the American public health system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3118 - PATHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course covers the general principles of pathology, including the nature of inflammation and healing, and the reaction of cells and tissues to injury, infection, radiation, metabolic disturbances and degeneration. The nature of neoplasms, hypersensitivity reactions, autoimmune disease and deficiency diseases will be covered, as well as organ and tissue-specific pathology. Emphasis will be given to conditions relevant to clinical chiropractic practice. Weekly small group facilitated discussions will provide for the clinical correlation, context, consequences, and relevance of the pathology and pathophysiology being studied.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3119 - GROSS ANATOMY II (VISCERAL, HEAD AND NECK ANATOMY)

Minimum Credits: 5
Maximum Credits: 5
This course will be divided into both lectures and laboratories exploring, in detail, the gross anatomy of the neck, head, abdomen, pelvis, perineum, and posterior abdominal wall. Anatomical structures, function and relationships of the bones, joints, muscles, blood vessels, nerves and viscera are examined in detail from both a gross and histological perspective, and as appropriate, developmental processes will be explored. Clinical examples will be used throughout the course enabling the student to integrate basic science information into a clinical context. Wherever possible, pathological anatomy will be presented and discussed. The laboratories will include the use of prosected cadavers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3131 - INTRODUCTION TO DIAGNOSTIC IMAGING

Minimum Credits: 1
Maximum Credits: 1
A variety of imaging modalities will be discussed, with a focus on the normal appearance of the spine and pelvis on conventional radiography. Conventional radiography is commonly used in chiropractic offices. Foundational understanding of the appropriate clinical use of diagnostic imaging and the fundamental process of how conventional radiographs are produced and interpreted for diagnosis. In addition to the normal radiographic appearance of skeletal structures, this course will also introduce an approach to evaluating imaging studies as well as basic mensuration procedures which are used to aid in the identification and diagnosis of prevalent spine related disorders. Radiography decision-making will be highlighted.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3132 - THE PATIENT INTERVIEW

Minimum Credits: 1
Maximum Credits: 1
Highlighting the biopsychosocial model, this course will focus on the essential elements of the chief complaint, past, social, and family histories in order to form a rational differential diagnosis list. Additionally, the student will learn how taking a thorough history is essential to creating a patient problem list beyond their chief complaint as a holistic approach to health care. Students will become facile in motivational interviewing skills. The use of simulated patients will allow students to receive formative feedback as they develop this essential component of clinical reasoning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3133 - DIAGNOSTIC IMAGING I

Minimum Credits: 1
Maximum Credits: 1
Identification of soft tissue structures of the head, neck, chest, abdomen, and pelvis seen on plain film radiography. Basic anatomy of these regions seen on computed tomography and magnetic resonance imaging is also studied. Opportunities to practice, self-quiz, and apply knowledge to accurately identify anatomical structures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3134 - PRINCIPLES OF DIFFERENTIAL DIAGNOSIS

Minimum Credits: 2
Maximum Credits: 2
This course will introduce and reinforce the importance of differential diagnosis within the professional responsibilities of the chiropractor. Specifically, this course will place emphasis on the need for chiropractors to differentiate between plausible conditions of the neuromusculoskeletal system that are amenable to conservative care and diseases which may require co-management with or referral to other health care providers. Students will get hands on experience in differential diagnosis through the use of simulated patients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3135 - DIAGNOSTIC IMAGING II

Minimum Credits: 1
Maximum Credits: 1
This course will provide students with an in-depth understanding of the diagnostic imaging techniques used to assist diagnosis of thoracic and lumbopelvic spine disorders such as fractures, rib joint dysfunction, disc herniation, scoliosis, lumbar disc herniation with radiculopathy, central canal stenosis, and axial spondyloarthritis. Students will learn to interpret x-rays, MRIs, and CT scans, as well as understand the clinical implications of their findings. Through case studies and hands on practice/simulations, students will develop the skills necessary to effectively communicate imaging findings to patients and other health care professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3136 - CLINICAL PAIN CLASSIFICATION AND PHENOTYPING

Minimum Credits: 2
Maximum Credits: 2
This course will provide students with a comprehensive understanding of the mechanisms underlying pain perception, modulation, and chronic pain conditions. Through lectures, case studies, and interactive discussions, students will explore the biopsychosocial model of pain, the role of central sensitization in chronic pain, and the impact of psychological and social factors on pain perception. Students will also learn the importance of evidence-based pain classification and treatment approaches for patients with various painful conditions, with a focus on interdisciplinary and collaborative care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3137 - MEDICAL SCREENING & DIAGNOSIS: CHEST AND ABDOMEN

Minimum Credits: 2
Maximum Credits: 2
This course will introduce students to medical screening and the physical examination of patients, starting with the basics of examination including professionalism, communication (including trauma-informed communication), draping, cultural considerations and vital signs. The proper use of the stethoscope and sphygmomanometer will be taught as well as the skills of percussion and auscultation. This course includes cardiac, vascular, pulmonary and abdominal examinations, with consideration of screening for abnormalities requiring urgent attention or referral. When needed, simulators and simulations will be used to assist in recognizing abnormal heart, lung, and abdominal sounds and clinical findings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3151 - CLINICALLY RELEVANT PALPATION

Minimum Credits: 1
Maximum Credits: 1
This course will teach the foundational examination skills of observation and palpation instructing the student in the identification of clinically relevant osseous landmarks and soft tissues of the spine and extremities. Additionally, palpatory techniques of soft tissues that hold clinical relevance in prevalent conditions of the spine and extremities in chiropractic practice will be taught.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3152 - INTRODUCTION TO THE CHIROPRACTIC PROFESSION AND PRIMARY SPINE CARE

Minimum Credits: 2
Maximum Credits: 2
This is an introductory course to the chiropractic profession. It covers the history of manipulative therapy from antiquity to the present, with an emphasis on the pre-history and history of the chiropractic profession. Also included are a general introduction to the profession and its practice, nationally and internationally; its educational, political and sociological context and relationship to the other health professions; the course includes a discussion of key historical figures in the development of the chiropractic profession, and factors influencing the continued development and evolution of the profession around the world. The course concludes with a discussion of the role of the chiropractor as a primary spine provider.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3153 - EVIDENCE BASED PRACTICE I

Minimum Credits: 2
Maximum Credits: 2
This class will introduce the basic principles of evidence-based practice and promote information mastery by using subject specific databases. Student engagement will focus on translating patient health histories from Clinical Practicum I into a clinical research (PICO) question while employing appropriate types of sources and research. Health literacy will be introduced to students through self-reflection of their role as future practitioners and members of the health care system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3154 - INTRODUCTION TO CLINICAL REASONING

Minimum Credits: 2
Maximum Credits: 2
This course will introduce students to the clinical reasoning process, through discussions of actual case studies. The course illustrates the steps and logic used in the clinical and diagnostic reasoning process. Occasionally, standardized patients or actual patients may be present during a clinical case conference.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3155 - MANUAL THERAPY PSYCHOMOTOR SKILL DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
This laboratory course will promote the development of safe and effective psychomotor adjustive skills to prepare the student for adjusting classes. Instruction will focus on appropriate body mechanics through adjustive speed impulse drills and strength and endurance training of the core and shoulder. The use of adjustive tissue and joint pretension will be presented and force-sensing technology will be incorporated to provide immediate feedback in this and other skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3156 - SPINAL AND TISSUE BIOMECHANICS

Minimum Credits: 2
Maximum Credits: 2
This course will describe the functional anatomy, kinetics, and kinematics of the spine and pelvis. An introduction to gait biomechanics, mechanistic research, and treatment principles will be provided. Focusing on the biomechanical properties of muscles, nerves, and connective tissue, tissue injury and repair will be highlighted. Other topics in this course include stress-strain curves, length-tension relationships, hysteresis, types of loads and forces, and the response of various types of tissue. Additional emphasis is placed on prevalent conditions of the spine in chiropractic practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3157 - SOFT TISSUE MANIPULATION

Minimum Credits: 1
Maximum Credits: 1
Basic principles of assessing and treating the soft tissue structures of the body. Micro-lectures present evidence-based rationale, when available, for each of the treatments presented. Hands-on skills include trigger point therapy, instrument-assisted soft tissue manipulation, and muscle stretching techniques. Professional communication skills and management plans as they pertain to acute versus chronic conditions will be introduced.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3158 - EVIDENCE BASED PRACTICE II

Minimum Credits: 2
Maximum Credits: 2
This course will explore the science of health care, beginning with an overview of the types of science and study designs commonly conducted in health services research. Specific focus will be given to primary clinical and systematic reviews of diagnosis and therapeutic effectiveness studies, harm, and prognosis. Specifically, students will demonstrate the ability to search for, select, critically appraise, interpret the results, and ultimately decide the value of primary studies. Students will utilize accepted critical appraisal methods to identify and understand the strengths, limitations, biases, and results of primary data and higher-level designs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3159 - THORACIC & LUMBOPELVIC SPINE RELATED DISORDERS

Minimum Credits: 3
Maximum Credits: 3
This course provides the diagnostic and therapeutic knowledge necessary for the assessment and management of injuries, defects, or disorders of the thoracic spine and lumbopelvic spine including those which are associated with upper extremity symptoms. Discussion of mechanical, congenital, or traumatic and neuromusculoskeletal disorders affecting the thoracic spine as well as its adjacent soft tissues are emphasized. Topics will center on conservative management options and the current evidence basis for treatment effectiveness.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3160 - EXAMINATION OF THE THORACIC AND LUMBOPELVIC SPINE

Minimum Credits: 2
Maximum Credits: 2
This hands-on laboratory will focus on learning the physical examination skills necessary to evaluate and diagnose prevalent conditions of the lumbar spine and pelvis. Focus will be placed on learning both low- and high-index neurological examination procedures and high payoff, evidence-based orthopedic tests. Case simulations will be central to enhancing the student's ability to conduct a problem-focused examination with sound clinical reasoning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3161 - THORACIC & LUMBOPELVIC MOBILIZATION AND MANIPULATION

Minimum Credits: 2
Maximum Credits: 2
This hands-on laboratory develops and applies the anatomical, biomechanical, and pathophysiologic basis for chiropractic adjustive therapy. Topics include adjustive technique terminology, thoracic adjusting mechanics, adjusting contraindications/complications, adjustive therapy decision analysis, adjustive treatment guidelines and safe application of chiropractic adjustments. Adjustive techniques include prone, supine, seated and standing procedures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3162 - REHABILITATIVE EXERCISE: THORACIC & LUMBOPELVIC SPINE

Minimum Credits: 1
Maximum Credits: 1
This hands-on laboratory provides evidence-based approaches related to active care of patients with prevalent thoracic spine related disorders. Supported by Thoracic Spine Related Disorders, this lab will focus on, among other topics, stretching, strengthening, restoration of ideal breathing mechanics and development of core stability, parascapular stabilization, thoracic mobility, postural correction, Schroth exercises, lumbar stabilization, and pelvic floor exercises.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3163 - CLINICAL REASONING FOR THE PRIMARY SPINE PROVIDER

Minimum Credits: 1
Maximum Credits: 1
This course will focus on using standardized patients to teach students the skills necessary for diagnosing and managing common disorders of the lumbar spine and pelvis. Through interactive case studies, students will learn to recognize and interpret clinical signs and symptoms, as well as order and interpret relevant diagnostic tests. Students will also develop treatment plans and management strategies for patients with conditions such as disc herniation with radiculopathy, central canal stenosis, and sacroiliac joint dysfunction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3164 - EVIDENCE BASED PRACTICE III

Minimum Credits: 2
Maximum Credits: 2
In this course, students will focus on critical appraisal of systematic reviews, clinical guidelines, prognosis, and harm studies. This course

will place special emphasis on hands-on practice and the application of key critical appraisal concepts to ensure accurate interpretation of study outcomes. Students will utilize accepted critical appraisal methods to identify and understand the strengths, limitations, biases, and results of primary data and higher-level designs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3171 - CLINICAL PRACTICUM I

Minimum Credits: 1
Maximum Credits: 1
Students begin their clinical education with a half-day per week of observation experience in one of the chiropractic clinical education facilities. This may be augmented with multidisciplinary observation within UPMC and the Pittsburgh VA. The goal of this experience is to become familiar with the nature of chiropractic practice. As a preparation for this experience, students will attain certification in HIPAA and CPR/AED. Students maintain a log of their clinical experiences (throughout the eight terms).
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3172 - CLINICAL PRACTICUM II

Minimum Credits: 1
Maximum Credits: 1
Students continue their clinical education with a half-day per week of observation experience in one of the chiropractic clinical education facilities. This may be augmented with multidisciplinary observation within UPMC and the Pittsburgh VA. The goal of this experience is to become familiar with clinical reasoning in chiropractic practice. Students will be expected to continue to maintain a log of their clinical experiences throughout the 8 terms.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3173 - CLINICAL PRACTICUM III AND COMPREHENSIVE CLINICAL EXAM

Minimum Credits: 1
Maximum Credits: 1
Students continue their clinical education with a half-day per week of observation experience in one of the chiropractic clinical education facilities. This may be augmented with multidisciplinary observation within UPMC and the Pittsburgh VA. The goal of this experience is to develop clinical reasoning skills through observation and occasional clinical assisting. Students will continue to maintain a log of their clinical experiences throughout the 8 terms.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: Restricted to Doctor of Chiropractic (CHIRO-DCH)

DC 3231 - DIAGNOSTIC IMAGING III

Minimum Credits: 1
Maximum Credits: 1
This course will provide students with an in-depth understanding of the diagnostic imaging techniques used to assist diagnosis of prevalent disorders of the cervical spine such as disc herniation with radiculopathy, spondylosis with or without myelopathy. Students will learn to interpret x-rays, MRIs, and CT scans and understand the clinical implications of their findings. Through case studies and hands on practice/simulations, students will develop the skills necessary to effectively communicate imaging findings to patients and other health

care professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3232 - CLINICAL LAB DIAGNOSIS

Minimum Credits: 1
Maximum Credits: 1
This course introduces clinical laboratory test interpretation, including hematology, blood chemistry, urinalysis, and serology. Students will learn the appropriate use of clinical laboratory tests that can be performed in the office as well as appropriate methods of specimen collection and handling. Students discuss the interpretation of clinical laboratory findings in selected clinical cases in a weekly seminar. Emphasis is placed on relevancy to chiropractic practice and on clinical reasoning skills. Students will also be asked to select their own cases from the medical literature for small group discussions as part of the weekly activity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3233 - CLINICAL PHARMACOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course is a survey of general pharmacology and toxicology, with particular focus of medications frequently encountered in chiropractic practice, notably anti-inflammatories, analgesics, muscle relaxants, and antibiotics. Additionally, students will be given an overview of commonly prescribed antidepressants, antacids, biologics, and disease modifying anti-rheumatologic drugs. Current issues related to chiropractic and pharmacology (e.g. how chiropractic care can positively impact the opioid crisis) will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3234 - MEDICAL SCREENING & DIAGNOSIS: HEAD AND NECK

Minimum Credits: 2
Maximum Credits: 2
This course continues with the skills of physical examination of the head and neck, including the head, eyes, ears, nose and throat, thyroid gland and regional lymphatic tissue. Students will learn the proper use of an ophthalmoscope and otoscope to recognize common abnormalities of the eyes and ears. The principles of performing a cranial nerve examination will be introduced and practiced during the course. This course also includes an overview of the examination of the skin, hair, and nails, including features of the most common dermatological conditions. Examination findings requiring urgent medical attention or referral are emphasized. When appropriate simulators and simulations will be used to assist in recognizing normal and abnormal findings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3235 - CLINICAL NEUROLOGY

Minimum Credits: 3
Maximum Credits: 3
The lecture portion of this course presents a survey of neurological diseases, focusing on those with lesions of the brain and spinal cord. Diseases will be categorized into cerebrovascular disorders, balance disorders, seizure disorders, sleep disorders, congenital disorders, infections, neoplasms, demyelinating diseases, progressive neurologic disorders, traumatic brain injury, and spinal cord injury. Emphasis will be placed on relevance to chiropractic practice and differential diagnostic skills. The laboratory portion of this course will focus on the advanced neurological examination. When possible, this course will correlate with Clinical Observation V.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3236 - DIAGNOSTIC IMAGING IV

Minimum Credits: 1
Maximum Credits: 1
This course will provide students with an in-depth understanding of the diagnostic imaging techniques used to assist diagnosis of prevalent disorders of the extremity joints. Students will learn to interpret x-rays, MRIs, MSK ultrasound, and CT scans and understand the clinical implications of their findings. Through case studies and hands on practice/simulations, students will develop the skills necessary to effectively communicate imaging findings to patients and other health care professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3251 - CERVICAL SPINE RELATED DISORDERS

Minimum Credits: 3
Maximum Credits: 3
This course will provide the diagnostic and therapeutic knowledge necessary for the assessment and management of injuries, defects, or disorders of the cervical spine including those associated with upper extremity symptoms. Mechanical, congenital, or traumatic and neuromusculoskeletal disorders affecting the cervical spine as well as its adjacent soft tissues will be discussed. Topics will center on conservative management options and the current evidence basis for treatment effectiveness.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3252 - EXAMINATION OF THE CERVICAL SPINE

Minimum Credits: 2
Maximum Credits: 2
Concordant with Cervical Spine Disorders, this hands-on laboratory will focus on learning the physical examination skills necessary to evaluate and diagnose prevalent conditions of the cervical spine. Focus will be placed on learning both low- and high-index neurological examination procedures, including the cranial nerve examination, and high payoff, evidence-based orthopedic tests. Case simulations will be central to enhancing the student's ability to conduct a problem-focused examination with sound clinical reasoning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3253 - CERVICAL MOBILIZATION AND MANIPULATION

Minimum Credits: 2
Maximum Credits: 2
This hands-on laboratory develops and applies the anatomical, biomechanical, and pathophysiologic basis for chiropractic adjustive therapy. Topics include adjustive technique terminology, thoracic adjusting mechanics, adjusting contraindications/complications, adjustive therapy decision analysis, adjustive treatment guidelines and safe application of chiropractic adjustments. Adjustive techniques include prone, supine, seated and standing procedures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3254 - REHABILITATIVE EXERCISE: CERVICAL SPINE

Minimum Credits: 1
Maximum Credits: 1
This hands-on laboratory will introduce evidence-based approaches related to active care of patients with prevalent cervical spine disorders. Supported by Cervical Spine Related Disorders, this lab will focus on, among other topics, stretching, strengthening, McKenzie principles of classification and therapy, and neuromobilization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3255 - CLINICAL REASONING FOR THE PRIMARY SPINE PROVIDER 2

Minimum Credits: 1
Maximum Credits: 1
This course will focus on using case simulations to teach students the skills necessary for diagnosing and managing common disorders of the cervical spine. Through interactive case studies, students will learn to recognize and interpret clinical signs and symptoms and order relevant diagnostic tests. Students will also develop treatment plans and management strategies for patients with conditions such as whiplash (sprain/strain), postural syndrome, disc herniation with radiculopathy, and cervical spondylosis with or without myelopathy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3256 - NUTRITION IN CHIROPRACTIC PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This course covers the role of nutrition in the maintenance of health and the prevention and treatment of disease, as well as the role that nutritional supplementation and therapy may play in chiropractic practice. General principles of nutrition and nutrition therapy will be covered, including macronutrients and micronutrients, dietary assessment, and controversies in nutritional therapy. Weekly case-based discussions provide for integration of clinical, laboratory and dietary data in the management of patients with metabolic syndrome, chronic disorders, and degenerative disorders. The emphasis is on relevancy to chiropractic practice and the complementary role of nutritional therapy in chiropractic practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DC 3271 - CLINICAL PRACTICUM IV

Minimum Credits: 2
Maximum Credits: 2
Students continue their clinical education with a full day per week of experience in one of the chiropractic clinical education facilities. This will be augmented with multidisciplinary observation within UPMC and the Pittsburgh VA. The goal of this experience is to develop clinical reasoning skills through observation and participation in the history and examination of patients, as well as assisting with the treatment of patients. Students will continue to maintain a log of their clinical experiences throughout the 8 terms.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

East Asian Studies

EAS 2000 - RESEARCH AND THESIS MA DEGREE

Minimum Credits: 1
Maximum Credits: 6
Preparation of thesis.

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Attributes: Asian Studies

EAS 2005 - APPROACHES TO EAST ASIA

Minimum Credits: 3
Maximum Credits: 3
This course will center on how to use library materials for research on China and Japan. Students will be trained in bibliography, library techniques, and the use of text and reference works for East Asian studies. Students will also be encouraged to familiarize themselves with the range of new technologies available for advanced level research, including library databases and internet resources.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies

EAS 2702 - READING JAPANESE 2

Minimum Credits: 3
Maximum Credits: 3
A continuation of EAS 2701. Students will continue to develop reading skills by reading a variety of literature relevant to their fields of research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

EAS 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
The student undertakes a course of study under the direct supervision of a department faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

EAS 2990 - INDEPENDENT STUDY

Minimum Credits: 3
Maximum Credits: 3
Individual study under the guidance of a department faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

Economics

ECON 2000 - THESIS AND RESEARCH MA DEGREE

Minimum Credits: 1
Maximum Credits: 12
Students pursue study or research independently with minimal supervision by faculty.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

ECON 2320 - TOPICS IN URBAN AND ENVIROMENTAL ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
The first portion of the course is devoted to examining the allocation of resources within and between urban areas. The second portion of the course examines the relationship between this resource allocation and various urban problems including poverty, discrimination, housing, transportation, and urban public finance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2450 - ECONOMIC HISTORY

Minimum Credits: 3
Maximum Credits: 3
This course explores the economic history of the United States from European settlement up to the recent past. Topics covered will include: the origins of American industrial growth; the political economy of the constitution and constitutional ratification; economic and environmental change; the welfare effects of industrialization; the industrial organization of the great trusts, such as standard oil and American tobacco; the sources and consequences of regulatory change; and the great depression and the new deal. The course will train students in the tools and methods of the economic historian. In this way, the course will consider a wide body of theory and empirical tools that can be applied to the study history and historical change. The course readings will be mix of old classic articles and more recent work.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2730 - SEMINAR EXPERIMENTAL ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
There is a small, but rapidly growing literature in which behavioral experiments are used to test central propositions of various economic theories. This course will review the experimental literature that exists in several areas of economics, including industrial organization, social choice and preference revelation, behavior of decentralized markets and bargaining. A number of experiments will be replicated. Students will be expected to design their own experiments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2801 - COMMUNICATING ECONOMIC INSIGHTS

Minimum Credits: 3
Maximum Credits: 3
Communicating Economic Insights helps students develop written and oral communication and presentation skills essential for career success. Students practice writing documents for a variety of professional audiences, collaborative writing as well as multi-author revising skills. Students also learn presentation skills to enhance clear communication of ideas. Written and oral skills will emphasize the importance of one's audience as it determines style, tone, organization, and depth of concepts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2811 - INDIVIDUALS, FIRMS, AND MARKETS

Minimum Credits: 3
Maximum Credits: 3
Individuals, Firms, and Markets provides a rigorous introduction to contemporary microeconomic theory, with a focus on optimization techniques, the development of modeling skills and critical thinking strategies needed to understand and evaluate a wide variety of economic contexts. Topics covered include consumer and producer theory, decision making under uncertainty, choice over time, welfare analysis, competitive markets, monopoly, externalities, and public goods. The course stresses application of theory to economics and business problems, and a substantial amount of class work is devoted to examining scenarios based on such problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2812 - INCENTIVES AND INFORMATION

Minimum Credits: 3
Maximum Credits: 3
Incentives and Information are central to modern economics, and this course studies the question of how individuals and firms respond to incentives. These incentives are shaped, in large part, by the information possessed by each relevant party. In this course we study how such informational issues can lead to market inefficiencies, and what can be done to exploit or combat them. How should a seller design an auction, or the products available, to extract as much revenue as possible from buyers? How can firms design compensation schemes to get efficient effort from employees? What are the limits of what can be achieved through regulation? Students will learn how to address these and other similar questions using rigorous economic tools.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2813 - GLOBAL ECONOMICS AND FINANCE

Minimum Credits: 3
Maximum Credits: 3
Global Economics and Finance presents the main topics in modern macroeconomics and touches important questions in international economics and finance. Among the first set of topics, the course covers economic growth and business cycles, unemployment and labor market frictions, inequality, nominal frictions and monetary policy, and fiscal policy. The course also studies international linkages, including global imbalances, capital account sustainability, international capital market integration, international trade, nominal and real exchange rate determination, external debt, and the relationship between inequality and international trade.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2814 - EVIDENCE-BASED ANALYSIS IN LABOR, PUBLIC AND HEALTH ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
Evidence-Based Analysis in Labor, Public and Health Economics affords an opportunity for students to further develop their MQE toolkits through exposure to both seminal and frontier applied research on a diverse set of topics such as education, environmental sustainability, the non-profit sector and employment compensation. In addition to reviewing extant applied research, students will hone their own analytical approach working both individually and in groups to apply economic thinking and analysis to a broad set of business and policy problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2821 - QUANTITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
Quantitative Methods presents a framework for data-driven decision making under conditions of uncertainty and partial information, and it covers data analysis methods and techniques used in economic applications. The class will use R throughout; among the topics covered are graphical and descriptive data analysis, conditional probability, random variables, distribution functions, sampling, estimation, confidence intervals, hypothesis testing, and an introduction to regression methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2822 - ECONOMIC INFERENCE FROM DATA

Minimum Credits: 3
Maximum Credits: 3
Economic Inference from Data provides hands-on experience with applied econometric methods, allowing the student to establish empirical relationships of cause and effect. The course will cover advanced methods in regression analysis as well as a full toolkit of quasi-experimental methods that will allow the study of causal relationships even in the absence of a randomized control trial. The course includes hands-on empirical applications to solidify the concepts, with many examples from business and public policy settings. It will also focus also on learning the basic tools of programming and coding in R.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2823 - APPLICATIONS OF ECONOMIC ANALYSIS TECHNIQUES

Minimum Credits: 3
Maximum Credits: 3
Applications of Economic Analysis Techniques moves beyond ordinary regression to look at more-specialized models and data that are important to economists. The course expands students' knowledge of econometric methods to account for qualitative and selected dependent variables via maximum likelihood, and presents more structured estimation models. Throughout, the focus is on building students' experience with more advanced techniques, both for estimation and inferences; their understanding of the methods' pros and cons of these methods; and, importantly, how best to extract insights from them to aid in decision making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2824 - BIG DATA AND FORECASTING IN ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
Big Data and Forecasting in Economics covers cutting-edge methods typically used in statistical learning and is designed to help students learn how to apply the econometric techniques learned in the previous courses big data environments. The course introduces students to machine learning, text learning analysis, as well as scraping and data mining techniques using R. Some methods encountered in this course are classification, resampling, regularization, tree-based methods, supporting vector machines, deep learning, and unsupervised learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 2841 - DATA DESIGN FOR ECONOMIC APPLICATIONS (CAPSTONE)

Minimum Credits: 3
Maximum Credits: 3
Data Design for Economic Applications (Capstone) helps student formulate questions that are critical for an organization and then, guided by economic theory, deliver informative answers using data. The first portion of the course rounds out the data science toolbox of students by training them in techniques for data creation, including survey design and the design and implementation of randomized control trials.

The second portion of the course provides students with examples of problems facing real organizations, so they can apply what they have learned in the MQE program, working in groups to identify questions, analyze data, and present results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3001 - INTRO TO MATHEMATICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Intensive mathematics preparation for first year Ph.D. students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Economics (PHD), LEVEL: Year 1

ECON 3010 - MATHEMATICAL METHODS OF ECONOMIC ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course introduces the key mathematical tools needed to do economic research: static and dynamic optimization, fixed point theorems, differential equations among others.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: ECON 3001; PLAN: Economics (PhD)

ECON 3020 - ECONOMETRIC THEORY 1

Minimum Credits: 3
Maximum Credits: 3
This course covers elements of inferential statistics necessary for the study of econometric theory. It emphasizes estimation theory and its applications. Illustrations are drawn from several areas of economics. Students are expected to understand the theory of statistical inference mathematically as well as intuitively when applied to economic problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3030 - MICROECONOMIC THEORY 1

Minimum Credits: 3
Maximum Credits: 3
Theories of consumer behavior, producer behavior, market equilibrium, industry structure.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3040 - MACROECONOMIC THEORY 1

Minimum Credits: 3
Maximum Credits: 3
Introduction to dynamic macroeconomic theory with emphasis on dynamic optimization, dynamic competitive equilibria, and solution methods for dynamic models.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3050 - ECONOMETRIC THEORY 2

Minimum Credits: 3
Maximum Credits: 3
Surveys standard econometric models, their estimation, hypothesis testing and other inferential problems of, among others, (1) classical linear regression, (2) generalized linear regression models, including sur and pooled regression models, (3) dynamic models with spherical and nonspherical errors, (4) qualitative and limited dependent variable models, (5) simultaneous equations models--static and dynamic, (6) use and analysis of econometric models.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3060 - MICROECONOMIC THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This course will present the Arrow-Debreu-McKenzie Theory of competitive equilibrium, the theory of imperfect competition, economics of uncertainty, and game theory. The presentation will be self-contained, including a discussion of the mathematical techniques used.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3070 - MACROECONOMIC THEORY 2

Minimum Credits: 3
Maximum Credits: 3
The first part of the course will be devoted to studying models of economic growth and the role money plays in the growth process. The second part of the course will consist of an introduction to the macro-economic rational expectations literature. Both theoretical as well as empirical contributions will be surveyed and discussed in this area.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3080 - EMPIRICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
This course will cover empirical methods typically used in applied microeconomic research and it is designed to help you apply the techniques learned in the econometrics sequence. We will focus on techniques used in applied microeconomics to identify causal estimates. The course will cover data issues and distributional estimators in some detail along with matching and propensity scores, local regressions, instrumental variables, regression discontinuity designs, and inference issues. Many examples will come from development, health, labor, public economics, and political economy, but the material will be useful to any applied researcher. The course will focus also on the implementation of econometric techniques learning the basic tools of programming and coding. The goal of this class is to provide students with the tools needed to become critical readers of empirical work and teach them techniques that they can apply to their own original research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3080 - EMPIRICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
This course will cover empirical methods typically used in applied microeconomic research and it is designed to help you apply the techniques learned in the econometrics sequence. We will focus on techniques used in applied microeconomics to identify causal estimates. The course will cover data issues and distributional estimators in some detail along with matching and propensity scores, local regressions, instrumental variables, regression discontinuity designs, and inference issues. Many examples will come from development, health, labor, public economics, and political economy, but the material will be useful to any applied researcher. The course will focus also on the implementation of econometric techniques learning the basic tools of programming and coding. The goal of this class is to provide students with the tools needed to become critical readers of empirical work and teach them techniques that they can apply to their own original research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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implementation of econometric techniques learning the basic tools of programming and coding. The goal of this class is to provide students with the tools needed to become critical readers of empirical work and teach them techniques that they can apply to their own original research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3100 - SEMINAR IN MICROECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This is a seminar in microeconomic theory and analysis. Speakers from outside and inside the university will present state of the art research in microeconomic theory.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ECON 3110 - SEMINAR IN MACROECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This is a seminar in modern macroeconomic theory and analysis. Speakers from outside and inside the university will present state of the art research in macroeconomics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ECON 3120 - SEMINAR IN EXPERIMENTAL AND BEHAVIORAL ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This is a seminar in experimental and behavioral economics. Speakers from outside and inside the university will present state of the art research in experimental and behavioral economics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ECON 3120 - SEMINAR IN EXPERIMENTAL AND BEHAVIORAL ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
There is a small, but rapidly growing literature in which behavioral experiments are used to test central propositions of various economic theories. This course will review the experimental literature that exists in several areas of economics, including industrial organization, social choice and preference revelation, behavior of decentralized markets and bargaining. A number of experiments will be replicated. Students will be expected to design their own experiments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3130 - APPLIED MICROECONOMIC SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The primary aim of this course is to introduce Ph.D. Students to a sampling of the current professional research in various applied

microeconomics fields 'such as labor economics, health economics, public finance, industrial organization, development economics or political economy. Students learn and critically analyze the range of empirical approaches used to study topics within these areas, in preparation of doing their own applied work. This course requires attendance to the joint CMU/Pitt applied microeconomics workshop, where renowned guest speakers will be presenting their current working papers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ECON 3140 - SEMINAR IN LABOR AND DEVELOPMENT ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This is a seminar in labor and development economics. Speakers from outside and inside the university will present state of the art research in labor and development economics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ECON 3140 - SEMINAR IN LABOR AND DEVELOPMENT ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This is a seminar in labor and development economics. Special topics are selected each time the seminar is offered.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ECON 3160 - ECONOMETRICS SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Advanced topics in econometrics. Each student is assigned a special topic and is asked to present research results.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ECON 3210 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Hands-on teaching practicum course for graduate students to learn about university-level teaching. Theory and pedagogy are part of this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

ECON 3220 - RESEARCH METHODS IN ECONOMICS

Minimum Credits: 1
Maximum Credits: 1
This is a mandatory course for second-year PhD students. The course will introduce students to strategies for identifying interesting research ideas, to determine whether the idea is worth pursuing, to effectively review the literature, and to plan how to conduct the research. Insights into how these strategies change across fields within economics will be provided by relevant faculty guests. Other topics discussed in the course will include the typical difficulties involved in conducting research and how to address them; how to deal with

advisors; academic etiquette; techniques for presenting work in progress at seminars; and how to write and submit academic papers. Requirements will include the drafting of the second-year paper proposal (PhD Comprehensive Research Paper) and the selection of two faculty readers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3230 - OVERVIEW PREPARATION

Minimum Credits: 1
Maximum Credits: 1
In this course, PhD students who have not passed their overview will meet with the Director of Graduate Studies to discuss next steps.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

ECON 3310 - TOPICS IN URBAN ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
The course will introduce students to the fundamental papers and concepts in spatial economics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3310 - TOPICS IN URBAN ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This is a survey course of topics in public finance. The purpose is to acquaint students with a broad range of classical and contemporary issues in public finance. The course will be divided into several topic areas; taxation; expenditure analysis; economics of political processes; control of externalities; regulation; and fiscal federalism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3320 - TOPICS IN ENVIRONMENTAL ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
The first portion of the course with focus on empirical attempts to quantify the damages of air pollution and climate change. The second portion of the course will focus on quantitative analysis of policies to mitigate pollution in the developed and developing world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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Maximum Credits: 3
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Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3330 - TOPICS IN ECONOMIC HISTORY

Minimum Credits: 3
Maximum Credits: 3
This course explores the economic history of the United States from European settlement up to the recent past. Topics covered will include: the origins of American industrial growth; the political economy of the constitution and constitutional ratification; economic and environmental change; the welfare effects of industrialization; the industrial organization of the great trusts, such as standard oil and American tobacco; the sources and consequences of regulatory change; and the great depression and the new deal. The course will train students in the tools and methods of the economic historian. In this way, the course will consider a wide body of theory and empirical tools that can be applied to the study of history and historical change. The course readings will be a mix of old classic articles and more recent work.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3340 - TOPICS IN PUBLIC ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This is a survey course of topics in public finance. The purpose is to acquaint students with a broad range of classical and contemporary issues in public finance. The course will be divided into several topic areas; taxation; expenditure analysis; economics of political processes; control of externalities; regulation; and fiscal federalism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
Maximum Credits: 3
This is a survey course of topics in public finance. The purpose is to acquaint students with a broad range of classical and contemporary issues in public finance. The course will be divided into several topic areas; taxation; expenditure analysis; economics of political processes; control of externalities; regulation; and fiscal federalism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3410 - TOPICS IN LABOR ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This course covers topics in areas of labor economics such as: labor supply; household production and labor force participation; labor demand; minimum wages; schooling and earnings; human capital externalities; wage inequality, and skilled biased technological change. The purpose of the sequence (this course and econ 2410) is to familiarize students with the economic models and empirical strategies used in the labor economics literature, and teach them to critically analyze empirical research in preparation of doing their own applied work. By the end of the course, students should have the background necessary to start developing their own independent research interests in the field.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3420 - LABOR DEVELOPMENT SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ECON 3430 - TOPICS IN LABOR AND HEALTH ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This course will cover frontier applied work in labor and health economics with a particular focus on the economics of family, economic behavior related to children, child health and child economic and social well-being, and the economics of risky health behaviors. The first part of the course will be focused on the economics of family and children. The second part of the course will be focused on health capital emphasizing the long-run effects of health at birth, the economic models of determinants of health, and the economics of risky health behaviors. The course will cover a range of different methods from structural analysis of marriage markets and health investments to reduced-form analysis of policy interventions, and experimental work. We will also explore the recent use of machine learning methods in these domains. There will be data-intensive hands-on sessions devoted to the replication of some of the key studies in the literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3440 - TOPICS IN DEVELOPMENT ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This course introduces topics at the frontier of development economics. Lectures and readings will review empirical methods, some seminal papers and current open questions in the field. The goal is for students to learn how to (1) identify gaps in the existing literature, (2) design and implement valid identification strategies, and (3) interpret empirical findings. The first half of the course covers micro-based issues including health and education; credit and savings; labor markets; and behavioral development economics. The second half takes a micro-macro approach and studies long run persistence of bad and good institutions; the impact of social media in autocracies on growth and corruption; quantifying the value and impact of political connections; and the functioning and impact of state-owned firms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3440 - TOPICS IN DEVELOPMENT ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This course introduces topics at the frontier of development economics. Lectures and readings will review empirical methods, some seminal papers and current open questions in the field. The goal is for students to learn how to (1) identify gaps in the existing literature, (2) design and implement valid identification strategies, and (3) interpret empirical findings. The first half of the course covers micro-based issues including health and education; credit and savings; labor markets; and behavioral development economics. The second half takes a micro-macro approach and studies long run persistence of bad and good institutions; the impact of social media in autocracies on growth and corruption; quantifying the value and impact of political connections; and the functioning and impact of state-owned firms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3500 - INTERNATIONAL ECONOMICS SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The seminar will be used to promote student and faculty research, especially doctoral dissertations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

ECON 3520 - COMPARATIVE & DEVELP ECON SEM

Minimum Credits: 3
Maximum Credits: 3

The seminar will focus on the most recent theoretical and empirical studies that are being carried out by specialists in these areas. It will consist of presentations both by the university of Pittsburgh and outside faculty.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis

ECON 3610 - EXPERIMENTAL AND BEHAVIORAL ECONOMICS 1

Minimum Credits: 3
Maximum Credits: 3
The course is designed to familiarize the student with experimental methodology and the range of application of experimental methods in economics. Students will devise and execute (in consultation with the instructor) a "pilot" experiment in a substantive area of interest. This can be done in small groups of 2 or 3 or be a solo project. The object is to provide hands-on experience in conducting an economics experiment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3620 - EXPERIMENTAL AND BEHAVIORAL ECONOMICS 2

Minimum Credits: 3
Maximum Credits: 3
The course is designed to familiarize the student with current experimental research in various economic topics. Students will work together with the instructor on an experiment from design to implementation to data analysis to write. The objective is to provide hands-on experience with conducting economic experiments and writing a publishable paper.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3620 - EXPERIMENTAL AND BEHAVIORAL ECONOMICS 2

Minimum Credits: 3
Maximum Credits: 3
The course is designed to familiarize the student with current experimental research in various economic topics. Students will work together with the instructor on an experiment from design to implementation to data analysis to write. The objective is to provide hands-on experience with conducting economic experiments and writing a publishable paper.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3650 - ADVANCED ECONOMETRICS 1

Minimum Credits: 3
Maximum Credits: 3
This course is the first of two courses in the graduate advanced econometrics field. It consists of an introduction to the econometric analysis of time series. Topics include: Exogeneity and causality; Likelihood inference (estimation and testing); Monte Carlo simulation; Optimization; Stationarity; VAR, MA and ARMA processes; Dynamic equations; Multipliers; Unit roots; Cointegration; Error Correction Mechanisms (ECMs); Dynamic state-space models; Kalman filter, Sequential importance sampling and particle filters.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3660 - ADVANCED ECONOMETRICS 2

Minimum Credits: 3
Maximum Credits: 3
Covers qualitative choice models, censored and truncated models, duration models, time series models - univariate and multivariate, causality analysis, dynamic models, cointegration, time series macroeconometrics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3710 - TOPICS IN MICROECONOMIC THEORY

Minimum Credits: 3
Maximum Credits: 3
This is an advanced level course in microeconomic theory. It deals with a broad range of topics, some drawn from recent papers, chosen to prepare students to tackle the literature on their own.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3720 - POLITICAL ECONOMY

Minimum Credits: 3
Maximum Credits: 3
In this course, we will take a formal look at various environments where a group of individuals (committee, society, congress, etc) takes a binding decision through some institutional mechanism (consensus, elections, jury deliberations, legislative bargaining etc). The course will have a strong formal, positive focus on how the varied political, social and legal institutions that define the 'rules' of collective decision-making determine the nature of collective outcomes. On the normative side, the course would focus on certain 'desirable properties' (e.g. Respecting minority preference) of collective decision-making and analyze whether and to what extent the existing institutional arrangements satisfy such properties. While we shall start out using concepts of co-operative game theory, for most part of the course we will be in the realm of non-cooperative game theory. This course will provide a starting point for research in formal political theory and political economy. As such, it might be of interest to students of both economics and political science.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3750 - TOPICS IN MACROECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This course studies various dimensions of inequality from a macroeconomic perspective, covering topics in household finance, monetary economics, labor markets, technological change and modern business cycle research. The focus is on using empirically grounded quantitative aggregate models with heterogeneous agents or firms to tackle important questions in modern macroeconomics. The course will also provide an introduction to a variety of computational tools and methods, including structural estimation and machine learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

ECON 3830 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Current topics of particular interest to economics graduate students are discussed and analyzed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ECON 3900 - COMPREHENSIVE PREPARATION

Minimum Credits: 1
Maximum Credits: 12
Graduate students pursue study independently to prepare for comprehensive examinations.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

ECON 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
Students pursue study or research under the direct supervision of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ECON 3950 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
Students pursue study or research independently with minimal supervision by faculty.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

ECON 3990 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 12
Graduate students pursue study or research under the supervision of faculty.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Education

EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course focuses on those areas of development and learning which have relevance for educators. The course covers preschool through old age. For each age range, typical behaviors and competencies that are learned or developed are considered from a number of domains (cognitive, affective, psychomotor, social). Attention is also given to appropriate research methods. An interactionist perspective is utilized; the course may be team taught.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 2007 - HUMAN LEARNING

Minimum Credits: 3
Maximum Credits: 3
Presents an overview of theories and of kinds of learning that educational professionals should know. Also considered are recent developments in cognitive psychology, such as information processing and knowledge-based approaches in transition from novice to expert, and from poorly to well adjusted states.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 2008 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD

Minimum Credits: 3
Maximum Credits: 3
Focuses on developmental pathways from conception through early childhood within contexts of family, daycare/school, community and culture. Pathways are considered with regard to developmental changes in transactions between individuals and social life conditions, with focus on patterns of change in participation in social-cultural practices. Besides a review of current literature, students will be engaged in qualitative investigations of the social lives of young children.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Minimum Credits: 3
Maximum Credits: 3
Course focuses on developmental pathways from middle child hood through adolescence (ages 7-18) within the contexts of family, school, community and culture. Pathways are considered in regard to developmental changes in transactions between individuals and social life conditions, with regard to patterns of change in participation in social cultural practices. Students will be engaged in qualitative investigations of the social lives of children and adolescents.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 2100 - EDUCATION AND SOCIETY

Minimum Credits: 3
Maximum Credits: 3
The course focuses on the interaction between educational institutions and their social context. Situated in the field of study known as social foundations of education, the content reflects disciplinary methods in the examination of such policy issues as the role of the schools in social change, the influence and consequences of formal and non-formal educational forces, and the economics and politics of school reform efforts. Students are challenged to consider the relationships between culture and power and the value-laden character of all educational endeavors. Thus the role of schooling is considered in cultivating the habits necessary for democratic citizenship which include ongoing efforts to secure equitable and just social relations, and to advance the common good.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

EDUC 2105 - SOCIOLOGY OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
An analysis of the development of modern social institutions with special reference to the sociology of the schools. The school is studied as a social system and in the context of broad social organization.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 2110 - GENDER AND EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This seminar examines the role that gender plays in the lives as students, researchers, educators, and policy makers. Major topics may include: changing trends of participation and success in k-16 schooling; childhood and professional socialization; media and curricular bias; coming of age; embodiment, sexuality, and sexual harassment; gender and the educational professions; feminist and antibias teaching; leadership and transnational communities of practice; activism and engaged feminist scholarship.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Gender, Sexuality & Women's St

EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course surveys the perennial forces which have shaped the character of America's colleges and universities. Institutional control and governance. Curricular goals and organization, and faculty and student life are examined against the background of political, economic, religious, social, and intellectual developments in American culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 2200 - DISCIPLINED INQUIRY

Minimum Credits: 3
Maximum Credits: 3
This course deals both with methods used in educational research and with the underlying theories, assumptions, and limitations. Students will do various inquiry activities, including sampling, observation and other data collection activities, as well as critical analysis of literature relevant to an important educational problem. These inquiry activities and study provide a foundation for further study of epistemological issues on which educational research and theory are based.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY

Minimum Credits: 3
Maximum Credits: 3
Introduces basic language and concepts of empirical research with emphasis on the applicability of research methodology (statistics, measurement, design, and evaluation) for improvement of professional practice in education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

EDUC 2205 - FIELD METHODS

Minimum Credits: 3
Maximum Credits: 3
Designed to acquaint students with basic ethnographic field work techniques. Topics addressed include taking and managing field notes on

participant-observation and use of archival materials. There will also be some discussion of the relationship among research design, data collection, and data analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

EDUC 2250 - PARTNERING WITH PEERS

Minimum Credits: 3
Maximum Credits: 3
This course helps students in early care and education in developing their knowledge base of Infant Mental Health through guided lectures, community sharing and real-world applications. Overarching goals: Build and strengthen community among early care and education professionals, increase Infant Mental Health knowledge, and advance toward Infant Mental Health endorsement requirements.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

EDUC 2300 - DIGITAL MEDIA FOR LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course provides opportunities for graduate learners to explore, examine, reflect, and discuss critical learning theories that inform how we select and use digital media and technology. The course includes discussion and reflections on different digital integration models. It enables you to consider digital media based on four guiding principles "place, pedagogy, praxis, and possibility" (Bell, 2021). We will examine the digital media application and equity, accessibility, and criticality. You will have the opportunity to disseminate your strategies for and experiences using digital media and technology. You will create content using select digital media and technology, receive feedback from instructors and colleagues, and reflect on how you could revise your creations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 2301 - ONLINE PEDAGOGY AND PRAXIS

Minimum Credits: 3
Maximum Credits: 3
We will critically examine and discuss online pedagogical theories that inform instructional design, planning, activities, and assessment strategies. We will explore and discuss instructional design (ID) models and current shifts in the field toward criticality, equity, and justice-oriented praxes. We will ask critical questions about the role of instructional design (ID) in liberatory pedagogy and praxis; examine and reflect on different online learning engagement strategies. We use online pedagogies to guide the design and creation of online content using digital media and critically reflect on our creations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 2302 - CRITICAL DIGITAL LITERACIES, SCHOOLING, AND IDENTITY

Minimum Credits: 3
Maximum Credits: 3
This course will examine the relationship between digital literacies, schooling, and identity in relation to an evolving digital media landscape. We will consider what it means to read and write, the world and the word, in a digitally constructed reality. We will collaboratively explore the deictic, participatory, networked, global, and multimodal nature of digital literacies and the implications for classrooms and other educational contexts. To do so, we will critically examine how literacies are situated and how these sociocultural understandings illuminate issues of power and privilege. This course will be grounded in critical praxis, and therefore you will learn to compose and deconstruct a range of digital artifacts (e.g. digital stories, games, podcasts), engage in critical analysis of digital artifacts, and think about how to design digital experiences to nurture learning and literacy.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 2303 - TECHNOLOGY IN CONTEXT

Minimum Credits: 3
Maximum Credits: 3
In this course, we will engage in critical discourse about the historical roots, present-day manifestations, and speculative futures of technological innovations. We will explore and be in conversation with scholarly texts and media that provide a critical lens on the values, ideologies and social structures encoded in technological systems. Based on this foundation, we will interrogate applications of technology in our everyday lives and education spaces, and pursue lines of inquiry about the implications of these technologies on society. Our scholarship will build on the wealth of research conducted by women and people of color to analyze the implications of everyday technologies across race, gender, class, ability and other intersections of identity. We will explore a broad range of topics, including algorithms and artificial intelligence (AI), digital surveillance and science fiction. Our goals will be to follow our questions to find new questions, play with ideas, think deeply, and create scholarly artifacts that grapple with technology in the context of our collective humanity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 2304 - PROJECT-BASED INSTRUCTIONAL DESIGN

Minimum Credits: 3
Maximum Credits: 3
The project-based instructional design (ID) course explores project management strategies and tools to plan, coordinate, and monitor collaborative instructional design projects. Students will work in small teams to develop a project management plan for setting goals and milestones, allocating support and resources, budgeting, monitoring progress and completion, and considering pedagogical factors. Students will examine their commitments to equity and design justice as they collaborate on their instructional design case-based projects. The course will promote opportunities for students to focus on building relationships with their team members. Students will lead and navigate project design and development processes that include constructive peer-review feedback and multiple project iterations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3000 - ADVANCED APPLIED STATISTICAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course will focus on approaches to the analysis of qualitative data. It is designed for students who have some experience with qualitative field research methods (introductory coursework or project experience) and have a set of qualitative data they are interested in analyzing for their own research. The principal aims of the course are to: (1) enable you to make informed and well-documented choices regarding the analysis of qualitative data that is to "establish a transparent path of inference" in your analysis and writing; and (2) explore a range of analysis strategies, techniques and tools. The course has two primary strands. The reading strand will introduce readings about qualitative analysis that delve into methodological issues, technical aspects of various approaches to qualitative analysis, validity and reliability, and issues related to writing and presentation of qualitative research. We will also examine examples of published qualitative analysis for their methodological and presentation choices. The second strand will be a practicum segment included in each course session that will provide time for consultation on your own work in small groups.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3001 - PRACTITIONER INQUIRY 1: THE SCIENCE OF IMPROVEMENT

Minimum Credits: 3
Maximum Credits: 3
Foundations 1 and Practitioner 1 represent an integrated 6-credit experience that is designed to help you begin your doctoral adventure. The courses provide an understanding of becoming a Scholarly Practitioner and the tools to identify, frame, and consider ways to thoughtfully engage in systematic inquiry focused on important Problems of Practice in education. Practitioner Inquiry focuses on Improvement Science, our signature method in the EdD. At the center of practitioner inquiry is the ability to use data to understand the effects of innovations that seek to improve problems found in practice. It is the process of posing significant questions, using various research, theories, and professional wisdom, and designing innovative solutions to address complex problems of practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3002 - FOUNDATIONS 1: BECOMING A LEADER SCHOLAR PRACTITIONER

Minimum Credits: 3
Maximum Credits: 3
Foundations 1 and Practitioner 1 represent an integrated 6-credit experience that is designed to help you begin your doctoral adventure. The courses provide an understanding of becoming a Scholarly Practitioner and the tools to identify, frame, and consider ways to thoughtfully engage in systematic inquiry focused on important Problems of Practice in education. Foundations 1 will help you establish your identities as scholarly practitioners and leaders. Scholarly practitioner is defined by the Carnegie Project on the Education Doctorate as one who blends practical wisdom with professional skills and knowledge to name, frame, and solve problems of practice; uses practical research and applied theories as tools for change; addresses problems of practice by collaborating with key stakeholders, including the university, the educational institution, the community, and individuals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3003 - FOUNDATIONS: LEADERSHIP IN GROUPS AND ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the leadership of pre-20 institutions, and other educationally-related entities in an environment characterized by socioeconomic, political, technological, and demographic change. It examined the breadth of leadership theories and styles in education, including traditional, entrepreneurial, behavioral, and relationship-based models. Course participants will learn how to lead system- and institutional-level changes, drawing upon strategic, human resources, financial management, and quality assurance skills. Emphasis is given to leadership models that focus on student-centric solutions, sustainable excellence, equity and social justice within education institutions at all levels.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EDUC 3004 - FOUNDATIONS: CONTEXTS OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course is an overview of the structural relationships informing education and educational systems. We will examine the historical and philosophical roots of education and analyze the nature of power, culture, resources, and identity in educational contexts. Throughout this course, we will promote increased understanding and ability to articulate the role of structural and lived contexts in assessing and developing leadership, policy, practice, interventions, and outcomes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EDUC 3005 - FOUNDATIONS: POLICY AS A LEVER FOR CHANGE

Minimum Credits: 3
Maximum Credits: 3
Students in this core course will learn the principles of policy development; experience the views of decision-makers about how public policies are created; highlight notable examples of both effective and ineffective policies in education, human services, and healthcare; critically examine policies which are evident in local, national, and international realms for critical examination; and respond to problem-based learning scenarios to form and modify real-world examples of policies and regulations in education and related settings; and understand the links among effective policy, leadership, advocacy for children and families, and systems reform.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EDUC 3006 - PRACTITIONER INQUIRY 2

Minimum Credits: 3
Maximum Credits: 3
The course will introduce concepts, tools and methods of quantitative analysis commonly used in research. The course will emphasize real world applications, including data preparation and analysis. Some concepts include: variables and their measurement ' measures of central tendency and variability; sampling; tests of statistical significance; causal inference and research design; data reduction; bivariate relationships: correlation and cross-tabulation; multivariate relationships: inference using regression analysis
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3007 - PRACTITIONER INQUIRY 3

Minimum Credits: 3
Maximum Credits: 3
The course will introduce approaches, strategies, and practices commonly used in qualitative research. The course will emphasize real world contexts and phenomena. Key areas of study include: researcher perspective, stance and voice. Making use of observations, survey, interviews, focus groups, artifact analysis, and other forms of gathering and using 'data'. Applying various research and analytic strategies such as case study, action research, grounded theory, and thematic analysis. Considering emergent genre of research including narrative study, arts-based research and others.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Minimum Credits: 3
Maximum Credits: 3
This final course in the research series provides students the opportunity to engage in practice-based research with real-world issues and problems of practice. The seminar will begin with the opportunity to review a number of studies representing quantitative, qualitative, and mixed approaches. Students will then collaborate with colleagues pursuing the same and/or similar research methods and approaches through small workgroups. Each small group will be organized to support students in conducting pilot work in the methods/approaches they plan to use for their practice-based dissertation. Student groups will work with advanced PhD students who have expertise in the methods and who will act as a consultant. Students will be expected to finalize their dissertation overview proposal through this course (in conjunction with their Arco advisor and faculty).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Minimum Credits: 3
Maximum Credits: 3

Ed.D research seminar is a faculty-led inquiry group focused on developing deep knowledge in an area of interest.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

EDUC 3010 - INTRODUCTION TO THE HISTORY & SOCIAL CONTEXTS OF URBAN EDUCATION

Minimum Credits: 3
Maximum Credits: 3
In this course, students will develop an introductory and foundational understanding of the dynamics of urban education. The course will address the history of urban life, communities, and schools in the U.S., as well as provide an introduction to policy and practices in the field of urban education. Additionally, the course will take an interdisciplinary approach through readings and activities that are designed to help students establish a basis for lifelong learning through normative and critical reflection on urban education within its historical, philosophical, cultural and social contexts. This includes a focus on the history of cities, including 20th and 21st century urban transformation, the development and persistence of residential segregation, urban poverty, the criminalization of urban communities, and current trends in urban redevelopment, which may shape the future of urban education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EDUC 3011 - PEDAGOGIES AND PRACTICES IN URBAN EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to theory, research, and especially practice related to developing and enacting curriculum and instructional practices that respond to the social context in which they (will) work. The course covers general principles and approaches to culturally responsive teaching such as how teachers can develop meaningful relationships with students, how teachers can learn from and about the school and local community, how teachers can develop and implement culturally responsive classroom management, and how teachers can develop expectations for students that maximize their capacity. In addition, the course will assist students in learning about and developing culturally responsive curriculum and pedagogy in their different content/subject matter areas (such as Mathematics, Science, Art, Language Arts, and Social Studies). A recurrent and central question of the course is: How do teachers develop culturally responsive instructional practices in their particular disciplinary domain to maximize students' learning opportunities?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3012 - LABORATORY OF PRACTICE

Minimum Credits: 3
Maximum Credits: 3
Students may complete one of three internship experiences: Job-embedded internship: students already working in their field of choice may elect to have their current responsibilities reviewed for eligibility for a full-time job-embedded internship. If the advisor and student agree that the student's current responsibilities represent relevant and meaningful internship experiences, then a plan will be developed that will engage the student in analysis of practice and leadership activities. Aspirant internship: students will have an apprenticeship experience in which they shadow and collaborate with a trained mentor in their discipline. Global studies experience: students will have the opportunity to design an international experience that provides direct observation or experience with practice or policy in another country.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

EDUC 3013 - EDUCATION LAW, POLICY & SCHOOL REFORM

Minimum Credits: 3
Maximum Credits: 3
The United States is a country built on a foundation of laws, which are supposed to be a system of rules and procedures designed for the

common good of our society. Historically, however, the U.S. legal system has not always considered what is good or just for serving all members of society, particularly in education. This course examines the evolution of education laws and policies in the U.S., as well as their influence on school reform efforts pre- and post-Brown v. Board of Education from an equity and social justice perspective. In this course, students will learn to understand the interplay between the three branches of government - the legislative, executive, and judicial branches - how the U.S. Supreme Court selects education cases, interprets the law, and makes its decisions given the political and social climate of the country. Furthermore, this course studies how the Court's decisions influence school reform policies, with a particular emphasis on urban schools, stakeholders, and society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3013 - EDUCATION LAW, POLICY & SOCIAL REFORM

Minimum Credits: 3
Maximum Credits: 3
The United States is a country built on a foundation of laws, which are supposed to be a system of rules and procedures designed for the common good of our society. Historically, however, the U.S. legal system has not always considered what is good or just for serving all members of society, particularly in education. This course examines the evolution of education laws and policies in the U.S., as well as their influence on school reform efforts pre- and post-Brown v. Board of Education from an equity and social justice perspective. In this course, students will learn to understand the interplay between the three branches of government - the legislative, executive, and judicial branches - how the U.S. Supreme Court selects education cases, interprets the law, and makes its decisions given the political and social climate of the country. Furthermore, this course studies how the Court's decisions influence school reform policies, with a particular emphasis on urban schools, stakeholders, and society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3014 - URBAN SCHOOLS, LAW, & SOCIAL POLICY

Minimum Credits: 3
Maximum Credits: 3
This course examines the evolution of education laws and policies in the U.S., as well as their influence on school reform efforts, both pre- and post-Brown v. Board of Education, while also examining current empirical research on important topics in educational policy today. In this course, students examine the intersections of law and social policy in the context of contemporary education issues, including finance reform, accountability, school choice, and diversity plans. This course will also examine the effectiveness of specific social policy interventions (e.g., health care reforms, housing vouchers, income transfers, promise neighborhoods, expanded Pre-K) in lowering barriers to academic success in urban areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3014 - URBAN SCHOOLS, LAW, & SOCIAL POLICY

Minimum Credits: 3
Maximum Credits: 3
This course examines the evolution of education laws and policies in the U.S., as well as their influence on school reform efforts, both pre- and post-Brown v. Board of Education, while also examining current empirical research on important topics in educational policy today. In this course, students examine the intersections of law and social policy in the context of contemporary education issues, including finance reform, accountability, school choice, and diversity plans. This course will also examine the effectiveness of specific social policy interventions (e.g., health care reforms, housing vouchers, income transfers, promise neighborhoods, expanded Pre-K) in lowering barriers to academic success in urban areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3015 - CRITICAL PERSPECTIVES IN URBAN EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course examines major sociological, historical and philosophical ideas that together constitute the discourse known as an "Urbanized Education." The course will provide both an opportunity for rigorous engagement with philosophical and cultural issues in the study of an Urbanized education and society. Through course readings and class discussions, we explore the following: (1) the broader sociopolitical urban context of K-12 schools and the communities they are situated, (2) the possibilities of education as the practice of freedom; and (3) (re)form and (re)imagining urban education. It will also provide a space for personal encounters with the ways in which ideology and culture insinuate themselves into our lives, beliefs, values and emotional being.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EDUC 3015 - CRITICAL PERSPECTIVES IN URBAN EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course examines major sociological, historical and philosophical ideas that together constitute the discourse known as an "Urbanized Education." The course will provide both an opportunity for rigorous engagement with philosophical and cultural issues in the study of an Urbanized education and society. Through course readings and class discussions, we explore the following: (1) the broader sociopolitical urban context of K-12 schools and the communities they are situated, (2) the possibilities of education as the practice of freedom; and (3) (re)form and (re)imagining urban education. It will also provide a space for personal encounters with the ways in which ideology and culture insinuate themselves into our lives, beliefs, values and emotional being.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EDUC 3016 - URBAN SCHOOLS AND SOCIAL POLICY

Minimum Credits: 3
Maximum Credits: 3
The course examines current empirical research on important topics in educational policy today with an explicit focus on the improvement of urban schools. Students will first deepen their understanding of the ways socioeconomic circumstances contribute to persistent and growing gaps in academic outcomes along lines of race and income. Second, this course will evaluate the effectiveness of specific social policy interventions (e.g. healthcare reforms, housing vouchers, income transfers, promise neighborhoods, expanded pre-k) in lowering barriers to low-income children's academic success and narrowing inequities. Finally, students will examine the intersections of inequality, social policy, and contemporary education policy trends, including finance reform, accountability, and school choice and diversity plans.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3016 - URBAN SCHOOLS AND SOCIAL POLICY

Minimum Credits: 3
Maximum Credits: 3
The course examines current empirical research on important topics in educational policy today with an explicit focus on the improvement of urban schools. Students will first deepen their understanding of the ways socioeconomic circumstances contribute to persistent and growing gaps in academic outcomes along lines of race and income. Second, this course will evaluate the effectiveness of specific social policy interventions (e.g. healthcare reforms, housing vouchers, income transfers, promise neighborhoods, expanded pre-k) in lowering barriers to low-income children's academic success and narrowing inequities. Finally, students will examine the intersections of inequality, social policy, and contemporary education policy trends, including finance reform, accountability, and school choice and diversity plans.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3025 - ADVANCED APPLIED STATISTICAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3067 - FREEDOM SEMINAR

Minimum Credits: 1
Maximum Credits: 1
The Freedom Microseminar courses attend to a range of freedom projects, theories, pedagogies, and praxes. Each course is a focused engagement with a specific set of questions, ideas, and topics relevant for understanding education within social, cultural, and political movements, systems, and structures. Students study both the what and how of freedom through insurgent knowledge traditions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

EDUC 3087 - ADVANCED FREEDOM SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The Freedom Seminar courses attend to a range of freedom projects, theories, pedagogies, and praxes. Each course is focused on engagement with a specific set of questions, ideas, topics relevant for understanding education with a social, cultural, and political movements, systems, and structures. Students study both the what and the how of freedom through insurgent knowledge traditions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

EDUC 3089 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 12
An experimental course with a flexible curriculum oriented to special research topics or current issues of concern to educators. Topics vary.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3090 - PRACTITIONER INQUIRY 5: DISSERTATION-IN-PRACTICE OVERVIEW SEMINAR

Minimum Credits: 3
Maximum Credits: 3

This course guides EdD students through the process of developing a comprehensive overview document for the dissertation-in-practice. Students align, refine, and integrate previous milestone work (e.g., problem of practice, review of literature, theory of change, intervention plan) into a draft of their dissertation-in-practice overview. Students receive instructor and peer feedback on the overview draft and faculty support in gaining IRB approval, forming their dissertation committee, and practicing their overview presentation. By the end of the course, students have a well-developed proposal ready for committee review.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Minimum Credits: 1
Maximum Credits: 15
Students will enact an applied inquiry plan and write a report of the enactment under the supervision of a research advisor. The report becomes the basis for a culminating demonstrations of excellence for the doctor of education degree.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS

Minimum Credits: 3
Maximum Credits: 3
This seminar prepares students to conduct descriptive and inferential statistics about a population using data collected under complex survey design. The emphasis throughout the course is on real world data preparation and analysis using the SPSS/STRATA/SAS statistical software package.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3101 - FIRST YEAR PHD SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar for beginning Ph.D. students addresses professional issues germane to doctoral skills and competencies. Topics addressed in this seminar include guidelines for constructing a literature review, IRB requirements, preparing professional presentations, and research proposals.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3102 - FIRST YEAR SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
This seminar addresses professional issues Germane to doctoral skills and competencies. Topics addressed in the seminar include guidelines for constructing a literature review, IRB requirements, ethical and legal issues pertaining to conducting research, preparing professional presentations and research proposals.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3103 - QUANTITATIVE METHODS 2

Minimum Credits: 3
Maximum Credits: 3
The primary focus of this course is single predictor and multiple regression analysis for continuous and binary outcomes. The pedagogical strategy will be to learn statistical analysis by doing statistical analysis. We will rely primarily on the Stata statistical software package. Over the course of the semester, we will examine a variety of data sets, each of which can be used to address substantive research questions by fitting increasingly sophisticated regression models. As we build understanding about how to use these methods in practice, we will discuss the regression model's purpose, mathematical representation, assumptions, implementation, interpretation, presentation, relationship to other statistical methods, implications for research design, and limitations. Additional principles of research design will be incorporated throughout the semester. The course will also include introductory coverage of more advanced topics, such as: multi-level modeling, structural equation modeling, regression discontinuity and propensity score matching. Introduction to these topics is meant primarily to inform students about upper-level courses that they might consider and not necessarily to prepare students to execute these methods on their own.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
This seminar introduces students to the inquiry traditions (e.g. empirical, interpretive, critical) and modes of research (e.g. narrative, ethnographic, historical, rhetorical, linguistic) associated with qualitative research i the social sciences. Students will gain experience with various elements in the research process (formulation of questions; research design; data organization and reduction; data analysis; validity and reliability issues) and with research methods characteristic qualitative research. This course should be completed by the end of the students' second year.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3105 - FIRST YEAR SEMINAR 2

Minimum Credits: 2
Maximum Credits: 2
This seminar for beginning Ph.D. students addresses professional issues germane to doctoral skills and competencies. Topics addressed in this seminar include guidelines for constructing a literature review, IRB requirements, preparing professional presentations, and research proposals.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3106 - ADVANCED APPLIED QUALITATIVE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3107 - WAYS OF KNOWING

Minimum Credits: 3
Maximum Credits: 3
In making a distinction between ways of knowing and procedures for knowledge generating, students in this seminar will examine various epistemological, ontological and axiological schools of thought that are the basis for educational inquiry. The focus will include assumptions that form the logics of justification for truth claims embedded in educational research.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3109 - SOCIAL CONTEXT OF URBAN EDUCATION

Minimum Credits: 3
Maximum Credits: 3
Examines Urban Education with an emphasis on social context (e.g. red lining, gentrification, theories of home) and how communities are working toward empowering their respective neighborhoods. This course draws its theoretical and social action foundation from a spatial justice lens. As such, geography and space are sites of struggle and opportunity. Unjust geographies can contribute to language, policies, research, pedagogical constructs, and narratives that impact Urban Education.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

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Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

EDUC 3114 - BLACK EDUCATIONAL THOUGHT

Minimum Credits: 3
Maximum Credits: 3
The aim of this course is to engage Black education discourse critically, as a popular-cultural idea, and as an area of intellectual thought and scholarly study. Our course readings will include critical social and cultural theory drawing from such areas as Black feminisms, Black cultural studies, Afropessimisms, Critical Race Theory, Black literary studies, Black queer studies, Black education history and philosophy, and empirical analyses and policy studies related to Black educational opportunities, experiences and outcomes. Poetry, music, film and other arts forms will also serve as texts to help us in our attempt to more clearly articulate a critical Black studies in the field of education, and a critical engagement of education in Black studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3418 - CAUSAL MODERATION AND MEDIATION ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course is designed for graduate students who are interested in applying advanced quantitative methods to their research. Research questions regarding how, for whom, and where a treatment achieves its effect on an outcome are often key to the advancement of scientific knowledge and have become increasingly valued in various fields. Such questions can be answered by causal moderation and mediation analysis, which assesses the heterogeneity of the treatment effect across individual and contextual characteristics and uncovers the mediation mechanism underlying the treatment effect. This course introduces the theoretical concepts of moderated effects and mediated effects under the potential outcomes framework, cutting-edge methodological approaches, and how to implement the methods with user-friendly R packages. The course blends theory and applications -- avoiding the extremes of presenting unneeded theory in isolation, or of giving application tools without the foundation needed for practical understanding. Prerequisites of the course are Introduction to Statistics and Introduction to Causal Inference or their equivalents.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EDUC 3100 and EFOP 3472

EDUC 3501 - CRITICAL POLICY ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This seminar engages doctoral students and advanced master's students in the ways in which all policies are texts, framing some topics to be important and consequentially excluding others. In this course, students will deepen their understandings of power through various critical analyses of policy texts and how they are taken up, modified, and dismissed by those intended to enact them. Specific attention will be focused to education policies in K-12 and higher education contexts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3503 - HISTORICAL RESEARCH ANALYSIS AND ARCHIVAL METHODS

Minimum Credits: 3
Maximum Credits: 3
This course introduces graduate students to the diverse culture of historical research and methodologies that impact the processes of writing history, historical analysis, and the praxis of keeping memory. Students engage in the course aims and objectives of investigating who is constructing history and how history is being written by examining a diverse array of resources which include primary sources (i.e., diaries, letters, interviews, oral histories, newspaper articles, government documents), archival collection finding aids, digital history projects & exhibits, electronic records, photograph collections, and most importantly, archival collections. Students of the course are challenged to think critically about the multifaceted usages of history and meticulously study the fundamental methods of historical interpretation while developing the necessary skills of writing history and the cultural & political purposes of keeping memory. Most important, this course is driven by the significant functions of praxis in relation to archival research. Thus, students are provided with invaluable opportunities to actively engage in diverse field-based practicum data collection activities at various local and regional archival repositories. In conjunction with support from the course instructor, students apply the skills developed during the course by producing projects which align to their scholarly interests as prospective historians.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3505 - RESEARCH-PRACTICE PARTNERSHIPS: APPROACHES TO COLLABORATIVE DESIGN, INQUIRY & CHANGE

Minimum Credits: 3
Maximum Credits: 3
In this course, students learn principles and strategies for developing a research program that is place-based, community-engaged, and rooted in partnership. Through engagement with texts, colleagues, and experienced Research-Practice Partnership (RPP) members, students develop practical skills for navigating key RPP processes including building mutualistic relationships, negotiating research questions, applying design-based implementation research methods, and communicating about engaged research. Possibilities for RPP work are explored and contextualized within the greater Pittsburgh region, within larger historical and contemporary dynamics of exploitation and racism, and within multiple traditions of engaged scholarship and movements for educational justice.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EDUC 3506 - MIXED METHODS RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course to mixed methods research that is grounded in critical perspectives that address issues of power. We engage with the history and philosophy of mixed methods research and how it differs from single-method research. We also build our knowledge of the various types of mixed methods designs and methods for collecting, analyzing, integrating, and reporting data based on the designs. The pedagogical strategy of the course is to learn mixed methods by applying it to a research topic that seeks to disrupt and transform inequitable structures, with an emphasis on the educational system. To engage in these topics deeply, it is strongly recommended that students have taken at least one introductory course in either quantitative or qualitative methods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

Ed Foundations, Org, & Policy

EFOP 2054 - ORGANIZATION DEVELOPMENT & LEADING CHANGE

Minimum Credits: 3
Maximum Credits: 3
This is one of a two course series (ADMPS 2053 & 2054) for M.Ed. students in the higher education management specialization. The Organization development and Leading Change course explores the practical challenges of strategic planning and the role managers play in its implementation. In addition, the course builds students essential managerial skills in: people and process oversight, understanding and leading transformational change, building competencies through creating measurable performance objectives, developing staff accountability, human resource management and the role of technology as an agent of change.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2181 - DECONSTRUCTING THE UNIVERSITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Educational Foundations, Organization, and Policy

EFOP 2001 - INTRODUCTION TO RESEARCH METHODOLOGY

Minimum Credits: 3
Maximum Credits: 3
Introduces basic language and concepts of empirical research with emphasis on the applicability of research methodology (statistics, measurement, design, and evaluation) for improvement of professional practice in education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

EFOP 2004 - THEORIES OF EDUCATIONAL INEQUALITY

Minimum Credits: 3
Maximum Credits: 3
This course is the first of a required two-course sequence designed for students to explore the meaning and expectations of doctoral study in the department of administrative and policy studies. The doctoral core is planned with a curriculum for radical transition to doctoral

studies as students increasingly are called upon to take responsibility for their doctoral experience. Students have the opportunity to organize their own learning proclivities by managing resources such as study group and faculty-led deliberations, readings, computer-based technologies, individual research, and field activities. Students cultivate their identities as practitioner/scholar/citizens.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EFOP 2010 - EDUCATIONAL SYSTEMS, MACRO POLICY, AND POLITICS, MA

Minimum Credits: 3
Maximum Credits: 3
This course is based on theoretical and empirical insights on continuity and change in education policy and its impacts. Organizational theories provide a framework for understanding educational organizations - early childhood centers, K-12 schools, higher education institutions, and beyond - and over-arching approaches to educational reform. Students will employ a range of lenses to examine policy including equity, productivity and efficiency, choice, and international comparison. In so doing, the course attends to big issues and trends in education policy such as: (a) the ways that educational organizations are embedded within and shaped by a stratified society and occupational system; (b) how educational policies at the federal- and state-level and other macro-policy levers support and constrain education at the local level; (c) how policymaking processes occur within an inherently political process; and (d) how contemporary educational systems have been impacted by broader social movements including standardization, accountability, and consumer choice. For master's degree students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 2011 - EDUCATION POLICY IMPLEMENTATION: STUDENTS, FAMILIES, EDUCATORS, AND POLICYMAKERS, MA SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course is based on theoretical and empirical insights on continuity and change in education policy and its impacts. Economic, sociological, political and other theories provide a framework for understanding how key constituents - students, families, educators, administrators, policymakers and community members - act on or are influenced by education policies formulated and enacted at the local, state and federal levels. Students will employ a range of lenses to examine educational policy implementation including equity, productivity and efficiency, choice and international comparison. In doing so, the course attends to current issues and debates in education policy, such as: (a) What are the economic, educational and social consequences of providing universal access to early childhood education? (b) What policies and practices shape the training, recruitment and retention of teachers in the teacher labor force? (c) What influence do charter school policies and opportunities have on student learning outcomes? (d) How does federal and state higher education funding policy influence college access and success? (e) How do building level school discipline policies shape student and family relationships with their school? For master's degree students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS

Minimum Credits: 3
Maximum Credits: 3
Introduction to descriptive and inferential statistics. Topics include frequency distributions, graphs, stem-and-leaf displays, box plots, scatter diagrams, measures of central tendency, measures of variability, correlation, sampling distributions, point estimation, introduction to hypothesis testing, introduction to interval estimations, chi-square analysis, one-sample and two-sample tests of hypothesis for means, variances, proportions, and correlation coefficients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2019 - STATISTICS 2: ANALYSIS OF VARIANCE

Minimum Credits: 3
Maximum Credits: 3
Topics include one- and two-way analysis of variance, multiple comparisons for main effects and interactions, analysis of covariance, multiple comparisons for adjusted means, randomized block designs, nested designs, repeated measures designs, non-orthogonal designs and linear regression. SPSS for Windows will be used.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PSYED 2018 or EFOP 2018

EFOP 2030 - EXPERIMENTAL DESIGN

Minimum Credits: 3
Maximum Credits: 3
Topics include characteristics of experimental research, steps for implementing an experiment, internal and external validity, classification of experimental designs, and design techniques such as random sampling, random assignment, blocking, analysis of covariance, and gain scores.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: PSYED 2019 or EFOP 2019

EFOP 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY

Minimum Credits: 3
Maximum Credits: 3
This course focuses on issues of equity in education based upon the divisions of American society by social constructs of "race". The course is designed to expose students to conceptual frameworks of culture, society, race, class and gender from the social sciences and humanities for understanding the experiences of subordinated minority groups in school and society. The practical problems of social and school reform in American communities and schools will be addressed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: African Studies

EFOP 2051 - M.ED RESEARCH METHODS FOR HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
Assessment-based research is critical to effective practice in higher education and student affairs. This research methods course for students in the higher education MEd program is designed to provide students with the necessary introductory and foundational research skills they will need throughout their MEd program and in their early career. The class emphasizes the hands-on development of practical skills and competencies for conducting assessment-based research and interpreting data for educationally just decision making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2052 - M. ED INTERNSHIP IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course is a practicum experience for med in the higher education management. The internship course is unique in that students are

required to be working in an institution of higher education while enrolled. An on-site supervisor will provide learning opportunities to students in conjunction with the course instructor, while the instructor will enhance the experience through weekly activities and course assignments. The course is also an opportunity to combine research and practice and to develop the professional skills necessary for a fruitful career in academic or student affairs or management in higher education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2053 - MANAGEMENT & ORGANIZATION EFFECTIVENESS

Minimum Credits: 3
Maximum Credits: 3
This course provides students with a professional foundation of the practical application of managerial skills required of first and second-line supervisors in higher education. Course topics devote special attention to the mission and challenges of HE organizations, organization structures and environments, responsibilities and expectations of managers, financial management, budget development and oversight, time and resource management, process improvement, the role of technology, decision making, and communication strategy. In addition, the course considers the role of supervisors in fostering diversity, equity, and inclusion across functional and institutional contexts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2055 - STUDENT DEVELOPMENT THEORY

Minimum Credits: 3
Maximum Credits: 3
This course provides foundational knowledge about the nature and history of student development theory, focusing on both a solid overview of theory and the application of theory in the design of effective practice in academic and student services contexts. This course also explores developmental issues facing college students as well as factors that promote and impede development. An understanding of student development theory is integral to working in higher education and this course is designed for students pursuing both scholarly and practitioner focused careers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EFOP or ADMPS 2307 or EDUC 2112

EFOP 2056 - PROGRAM ASSESSMENT IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course introduces the subject of assessment and program evaluation in colleges and universities. Issues related to assessment theory, assessment and evaluation models and methodologies, as well as the political and social contexts of assessment are explored. Students complete a hands-on assessment project from start to finish as a part of the course. Students need to have completed student development theory or an equivalent course prior to enrolling in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ADMPS or EFOP 2055

EFOP 2059 - ADVISING AND SUPPORTING SKILLS FOR HIGHER EDUCATION PROFESSIONALS

Minimum Credits: 3
Maximum Credits: 3
This course offers an overview of the skills, strategies, and functions associated with advising and supporting college students. This foundational course regards advising and supporting skills as cultivated across functional areas and considers techniques and strategies applicable to a range of student services units, such as academic advising, career counseling, study abroad advising, student conduct

facilitation, and student organization group advising. Additionally, students engage with recent developments associated with advising and supporting students through the evolving technological, legal, and ethical landscapes of higher education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT

Minimum Credits: 3
Maximum Credits: 3
Introduction to basic principles of measurement and a survey of educational and psychological testing. Topics include the role of testing in decision-making, proper an improper uses of tests, test score interpretations (norm-referencing and criterion-referencing), ascertaining the validity and reliability of test scores and interpretations, classroom assessment and item analysis, and an overview of the different types of tests: standardized achievement and ability tests, intelligence tests, personality tests, and other non-cognitive tests (e.g. attitude surveys, interest inventories).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: PSYED 2001 or EFOP 2001 and (PSYED 2014 or PSYED 2018 or EFOP 2018)

EFOP 2085 - COMPARATIVE & INTERNATIONAL EDUCATION MASTER'S SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This seminar is for master's degree students interested in Comparative and International Education as a field of study to engage in mentoring activities and professional development with program faculty and build a mutually supportive community. Students in this seminar meet regularly to learn the latest debates and research developments in comparative and international education, to develop their scholarly writing, and to develop their program milestones. The seminar showcases careers and supports planning for professional conferences and publications.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

EFOP 2089 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course is for administrative and policy studies newly instituted and experimental courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EFOP 2090 - CAPSTONE SEMINAR IN EDUCATION POLICY

Minimum Credits: 3
Maximum Credits: 3
Final seminar for candidates for the master's degree in Education Policy in which each student completes an original capstone project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

EFOP 2096 - INTERNSHIP IN EDUCATIONAL FOUNDATIONS, ORGANIZATIONS & POLICY

Minimum Credits: 1
Maximum Credits: 6
Students work under the guidance of a faculty member in the Department of Educational Foundations, Organizations, and Policy to complete a professional and/or research-based internship.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis

EFOP 2098 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
Study approved and directed by an academic advisor.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

EFOP 2099 - GUIDANCE IN THE MASTER'S DEGREE

Minimum Credits: 1
Maximum Credits: 6
A registration unit for students preparing a master's overview and thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

EFOP 2104 - LATIN AMERICA SOCIAL & PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3
This seminar explores contemporary issues of social and public policy in Latin America through complexity, systems, gonadal, policy diffusion, comparative, and case-study approaches. In the first section participants review general policy concepts and theories, to be followed by the historical, economic and political context of public and social policy in the region. The second section examines several policy areas such as education, employment, poverty alleviation, public administration, social security, health, minorities, and violence. Using complexity and systems perspectives it is possible to understand how social and public policy influences the development and practice of fields like education and it could be also influenced by those fields. Disciplines such as economics, history, health, political science, anthropology, and sociology shape and help to make sense of educational issues and vice versa. This seminar is an opportunity for students in education and other disciplines to engage in interdisciplinary deliberation on policy issues in this region and fulfills the requirements for certificates in Latin American studies. Materials for the class include current news, scholarly publications, videos and other material published in English, Spanish, and possibly Portuguese (students must be able to read at least basic Spanish).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 2106 - INTERNATIONAL AND GLOBAL EDUCATION

Minimum Credits: 3
Maximum Credits: 3
The course introduces different perspectives of the world as well as various conceptions of global development. Students consider these issues in examining how formal and non-formal education programs, as well as the media, contribute to developing individual's views of and engagement in local, national, international, and global communities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: African Studies, Global Studies, Russian & East European Studies

EFOP 2120 - CAPSTONE SEMINAR IN STUDENT SERVICES

Minimum Credits: 3
Maximum Credits: 3
Students will learn about the knowledge & skills required of a college or University student services administrator. It is assumed students will have administrative responsibility in future aspect of student services. Responsibilities may include development of vision & mission statement, designing organizational structure & budget. Focus on strategies to effectively manage & administer student services of diverse college & University campuses. Explore how organizational theory can be applied to improve policy making, personnel management, resource allocation & organization of administrative units.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EFOP 2127 - THE COMMUNITY COLLEGE

Minimum Credits: 3
Maximum Credits: 3
This course explores the purposes, functions, and objectives of community colleges in the U.S., examining the social forces and political structures influencing their development. Students will analyze the characteristics and needs of community college student populations, educational programs, and learning strategies. Additionally, the course covers organizational structures, administration, finance, and leadership related to community college contexts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2128 - LEADERSHIP

Minimum Credits: 3
Maximum Credits: 3
This course is intended to provide a foundation of the various theories and models that inform leadership education and practice. Throughout the course, students draw from current leadership discourses to build toward a personal leadership praxis that connects their personal and professional development. Through this critical engagement, students also benefit from exposure to strategies and techniques that support and cultivate leadership in others through a range of functional areas within the college environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2129 - SOCIAL JUSTICE IN HIGHER EDUCATION SETTINGS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to expand students' understanding of their own privileged and minoritized identities around race, class, gender, socioeconomic status, sexual orientation, ability, and religion, while encouraging the development of a social justice orientation. This course draws on current theories and practical examples for addressing oppression and discrimination within postsecondary institutional contexts and challenges students to develop an orientation for praxis and liberation. Students are required to reflect critically and thoughtfully on their own social identities while incorporating current theories and practices for liberating subjugated students and communities within higher education contexts. Furthermore, students should aim to develop future programs, policies, and practices that promote social justice.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ADMPS or EFOP 2055

EFOP 2131 - HIGHER EDUCATION ADMINISTRATION

Minimum Credits: 3
Maximum Credits: 3
This course addresses major organizational theories and how they relate to higher education institutions. Students will develop conceptual frameworks that can be utilized as a generic base for the practice of administration and as a diagnostic tool that will assist in identifying organizational problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

EFOP 2133 - GENDER AND EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This seminar examines the role that gender plays in the lives as students, researchers, educators, and policy makers. Major topics may include: changing trends of participation and success in k-16 schooling; childhood and professional socialization; media and curricular bias; coming of age; embodiment, sexuality, and sexual harassment, gender and the educational professions; feminist and ant- bias teaching; leadership and transnational communities of practice; activism and engaged feminist scholarship.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: African Studies, Gender, Sexuality & Women's St

EFOP 2135 - PROFESSIONAL DEVELOPMENT SEMINAR IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course focuses on professional and personal development for careers in higher education. Through classroom activities and assignments, students engage with current critical perspectives in the field, reflect upon their identity as a practitioner, and build plans for future professional success. This course also enables students to assess their personal and professional growth in preparation for the advancement of their careers in higher education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ADMPS or EFOP 2055

EFOP 2140 - HIGHER EDUCATION CAPSTONE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course serves as the culminating experience for Higher Education M.Ed. students. As the capstone for the program, this course provides students with the opportunity to consider and apply theoretical and conceptual knowledge from this course as well as all Higher Education courses to practical situations. Through course content, classroom discussions, and the capstone project, students advance their development of essential higher education competencies gained throughout the M.Ed. curriculum.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 2305 - SOCIOLOGY OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course surveys the classic and contemporary literature on schools and socialization. The relevance of sociological theory and research to education policy debate is also highlighted. Students will increase their understanding of the forces shaping learning and development that are beyond the classroom and are embedded in the larger social context.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2306 - HISTORY OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
Both a chronological order and a thematic/conceptual investigation will constitute the structure of this course. The literature on past and contemporary historical developments will be compared. Emphasis will be placed on the ideas that prevailed in different time periods. Students will examine the conflicting organizational arrangements, competing theories, and growing external pressures on education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course surveys the perennial forces which have shaped the character of America's colleges and universities. In situational control and governance. Curricular goals and organization, and faculty and student life are examined against the background of political, economic, religious, social and intellectual developments in American culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2343 - EDUCATION AND CULTURE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2352 - ANTHROPOLOGY OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This introductory course provides an overview of anthropological approaches to the study of education. Ethnographic cases drawn from many cultures, knowledge systems, and time periods help to provide a broad, holistic view of education in diverse community and institutional contexts. Modules may include: nurturing a sense of place; comparing folk, popular, and elite cultures; understanding cultural continuity and change; celebrating rituals and holidays; fostering cultural resilience and responsive reform policies; framing multicultural education; and appreciating the sociolinguistics of schools and home. Students have opportunities to participate in authentic schooling activities, to draft public advocacy pieces, to create team presentations, and to refine a personalized synthesis of a topic of interest. Anthropological field research methods are discussed as a means to craft compelling analytical accounts, but research training is not part of this course
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: African Studies, Asian Studies, Global Studies, West European Studies

EFOP 2353 - APPLIED ANTHROPOLOGY OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This advanced seminar explores practical applications of anthropology to educational programs in varied cultural settings around the world. Topics may include: theories of development and social change, the role of schooling in cultural continuity and change, globalization and transnational influences on curriculum and policy; public advocacy and scholarship; school reform and social inequities. Authentic professional activities and meaningful case studies help students to see themselves in the field. Demonstrations of professional skills such as constructive criticism, teamwork, meeting methodological challenges, and critical analysis of texts help students to enhance their academic cv and engaged scholarship portfolio.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: African Studies

EFOP 2355 - ADVANCED QUALITATIVE RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 2357 - EDUCATIONAL TOPICS IN AFRICAN STUDIES

Minimum Credits: 3
Maximum Credits: 3
Rotating educational topics in African Studies are offered in this graduate seminar, with emphasis on current issues of concern, historical context, and comparative education.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 2359 - GENDER, EDUCATION, & INTERNATIONAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
In this course, we look at gendered dimensions of education and development in international contexts. We look cross-culturally, across space, and across "development" continua and paradigms. We examine gendered issues through three modules that represent diverse levels of educational practice - basic education, higher education, and non-formal and informal education. In order to provide focus in this rich and complex field, we hone in on key policy orientations that build sequentially, starting with the most fundamental issues of access and equity, continuing with capacity building, and extending to sustainability and creating social change. Since this class is feminist by design, we explicitly link policy with agency, theory with advocacy, and reflection with action. Each course section also contains a strand on advocacy and action, through which students are able to create a synthesis of module lessons through a personal, analytical standpoint piece.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: African Studies, Gender, Sexuality & Women's St

EFOP 2398 - ECONOMICS OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This class introduces students to the economic analysis of education in the U.S. And developing countries. Among the topics to be covered are: human capital theory, educational production functions. Rate of return analysis, various issues in educational policy and finance
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 2399 - POLITICAL ECONOMY OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
In this class students will continue (from "economics of education") to develop techniques for economic analysis. The subject is placed in a broader intellectual and political context. Particular attention is given to critique of neoclassical economic analysis, to alternative frameworks for economic analysis, including class-conflict and institutional approaches and the applications of economic analysis in the educational policy process. The course covers issues in industrialized and developing countries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

EFOP 2410 - APPLIED REGRESSION ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Study of topics related to simple and multiple linear regression, including model specification and assumptions, methods of estimation, significance tests of model parameters and various types of multiple regression and predictor-selection techniques. The relationship of partial and semi partial correlation to regression is covered as well as the use of interaction terms and dummy variables in regression. SPSS and SAS are used to illustrate the correct interpretation of regression results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

EFOP 2416 - APPLIED MULTIVARIATE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course will emphasize understanding, implementation, and interpretation of multivariate statistical methods. The course will involve both lecture and lab work. These methods are manova, mancova, profile analysis, doubly manova, discriminant function analysis, logistic regression, principal components and factor analysis. SPSS will be emphasized with an introduction to SAS.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: (PSYED 2410 or EFOP 2410) and (PSYED 2422 or EFOP 2422)

EFOP 2422 - DATA ANALYSIS USING COMPUTER PACKAGES

Minimum Credits: 3
Maximum Credits: 3
Introductory course in using SPSS and SAS for data analysis. The course focuses on quantitative methods where specific attributes or variables are measured according to different scales of measurement. Statistical procedures are then applied to study relationships between the variables. The course addresses all stages to data analysis: reviewing research questions and identifying variables of interest; reviewing protocols used to collect data; coding data and creating data codebooks; reading data, screening data, transforming data, and performing file manipulations; and analyzing data using descriptive and basic inferential methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

EFOP 2491 - SUPERVISED RESEARCH IN RES METH

Minimum Credits: 1
Maximum Credits: 9
The student demonstrates ability to apply research skills by planning and completing a research project under the guidance of an appropriate faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

EFOP 2494 - M.A. PROJECT IN RSRCH METHODLGY

Minimum Credits: 1
Maximum Credits: 9
Student prepares a library-based research paper that reviews, organizes, synthesizes, and critiques previously conducted research and scholarly discussion pertaining to quantitative research methodological issues and/or techniques in the areas of statistics, research design, and/or measurement.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

EFOP 2498 - DIRECTED STUDY IN RES METH

Minimum Credits: 1
Maximum Credits: 3
Student pursues study of various topics under the direction of faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

EFOP 2499 - THESIS RES IN RSRCH METHODOLOGY

Minimum Credits: 1
Maximum Credits: 9
Under the guidance of the thesis advisor, the student plans and completes a theoretical or empirical study on a quantitative research methodology topic and prepares a thesis in the form stipulated in the university style and form manual.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

EFOP 3001 - RESEARCH METHODS IN EDUCATION POLICY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
The disciplinary and methodological bases for knowledge and associated inquiry in educational administration and policy study are addressed. Examples of research from various paradigms, disciplines, and professional fields are used to show the relationship among theory, method, and knowledge. The relative importance of substantive and methodological concerns in doing research are emphasized. Positivistic, interpretive, and critical theory inquiry can be addressed by students in their required pilot study.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3003 - THEORIES OF EDUCATIONAL INEQUALITY

Minimum Credits: 3
Maximum Credits: 3

This course is the first of a required two-course sequence designed for students to explore the meaning and expectations of doctoral study in the department of administrative and policy studies. The doctoral core is planned with a curriculum for radical transition to doctoral studies as students increasingly are called upon to take responsibility for their doctoral experience. Students have the opportunity to organize their own learning proclivities by managing resources such as study group and faculty-led deliberations, readings, computer-based technologies, individual research, and field activities. Students cultivate their identities as practitioner/scholar/citizens.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EFOP 3006 - SOCIAL CHANGE IN LOCAL AND GLOBAL CONTEXTS

Minimum Credits: 3
Maximum Credits: 3
Today's rapid social changes affect the education policies embedded in our social systems. It is one way in which the past helps shape the present and future. In this course, comparative policy approaches are used to study how systems' policies are constructed and experienced locally, nationally, and globally, often all at the same time. Complex and often conflicted policy perspectives can help us better understand the effects of time, technology, history, politics, and culture. Multiple perspectives of these policies in systems can help us better describe, predict, give voice to, frame, interpret, and map their consequences.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies

EFOP 3007 - EDUCATION AND INTERNATIONAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course will explore a wide range of contemporary social issues and trends in educational development from historical as well as comparative perspective. We will read and analyze educational problems and seek to design policy that can have impact in solving the problems. A central focus of this course is social analysis emphasizing educational issues in schools and colleges not only in the United States, but in other global contexts as well. We will critically explore key themes, definitions and approaches to education in individuals' lives across the lifespan, and examine how education helps shape social life in urban/rural areas and other settings from a comparative perspective. We will interrogate theoretical approaches used to understand the problems and current debates in the field of education by all stakeholders including institutions involved with educational development in diverse global settings, such as the United Nations and the World Bank.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3008 - COMMUNITY ENGAGEMENT IN EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course explores a range of contemporary issues and trends in community engagement in education. It addresses educational issues in schools and colleges, not only in the United States but in global contexts as well. It explores critically key themes, definitions and approaches to community engagement in education in individuals' lives across the lifespan, and examines how education helps shape social life in urban/rural areas and other settings. It interrogates policy documents used to understand the problems and current debates related to community engagement in education by individual stakeholders and policymakers as well institutions involved with educational development in diverse local, national and global settings, including the UNESCO "Incheon Declaration." This course is designed to provide students with the grounding they need to perform confidently and competently in areas of their professional practice. It is an opportunity for the critical study of community engagement in education that is relevant to students' professional goals. The course provides tools to explore and assess the theories, ideologies and issues of education from multiple perspectives as well as to situate students' thinking about the issues in searching for policy and practice interventions. Students will frame the discussions within the contextual and practical realities of life in schools and other educational institutions through a range of conceptual lenses, exploring the debates over the meaning and nature of social justice in education, debates that intersect with questions about the person, society, education

and knowledge as they strive to understand the complex issues in the field of education. Goals and objectives are aligned with SCAE program commitments to developing in students: deep specialized knowledge; intellectual/practical skills in innovation; taking personal/social responsibility for change; applying/integrating knowledge/understanding to problems of practice; understanding/embracing a commitment to equity; active, intentional, and ongoing engagement with diversity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3010 - EDUCATIONAL SYSTEMS, MACRO POLICY, AND POLITICS, PHD

Minimum Credits: 3
Maximum Credits: 3
This course is based on theoretical and empirical insights on continuity and change in education policy and its impacts. Organizational theories provide a framework for understanding educational organizations - early childhood centers, K-12 schools, higher education institutions, and beyond - and over-arching approaches to educational reform. Students will employ a range of lenses to examine policy including equity, productivity and efficiency, choice, and international comparison. In so doing, the course attends to big issues and trends in education policy such as: (a) the ways that educational organizations are embedded within and shaped by a stratified society and occupational system; (b) how educational policies at the federal- and state-level and other macro-policy levers support and constrain education at the local level; (c) how policymaking processes occur within an inherently political process; and (d) how contemporary educational systems have been impacted by broader social movements including standardization, accountability, and consumer choice. For doctoral degree students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3011 - EDUCATION POLICY IMPLEMENTATION: STUDENTS, FAMILIES, EDUCATORS, AND POLICYMAKERS, PHD SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course is based on theoretical and empirical insights on continuity and change in education policy and its impacts. Economic, sociological, political and other theories provide a framework for understanding how key constituents - students, families, educators, administrators, policymakers and community members - act on or are influenced by education policies formulated and enacted at the local, state and federal levels. Students will employ a range of lenses to examine educational policy implementation including equity, productivity and efficiency, choice and international comparison. In doing so, the course attends to current issues and debates in education policy, such as: (a) What are the economic, educational and social consequences of providing universal access to early childhood education? (b) What policies and practices shape the training, recruitment and retention of teachers in the teacher labor force? (c) What influence do charter school policies and opportunities have on student learning outcomes? (d) How does federal and state higher education funding policy influence college access and success? (e) How do building level school discipline policies shape student and family relationships with their school? For doctoral degree students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3012 - QUALITATIVE DATA MANAGEMENT, ANALYSIS, AND PRESENTATION

Minimum Credits: 3
Maximum Credits: 3
This course introduces software and technological tools to organize, conceptualize, systematically analyze, and effectively present qualitative data of diverse kinds in varied media. Students work in teams with real data in this project-based lab course. Technological skills are paired with conceptual discussions of such key operations as coding, thematic analysis, reflexive and analytical notes, framing questions, and assessing significance. Critiques of core readings, demonstrations, and iterative formal presentations provide opportunities to model professional skills.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3015 - ETHICAL ISSUES IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
The ethical issues that present themselves in the educational setting are examined. Students are expected to recognize and evaluate these ethical issues in terms of their own value system as well as that of others. Each student is expected to prepare a case study that questions the ethical issues involved.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EFOP 3017 - ORGANIZATIONS, NETWORKS, AND EDUCATION POLICY

Minimum Credits: 3
Maximum Credits: 3
Understanding educational change requires taking a broad look at how learning environments (e.g. PreK-12, post-secondary, informal, or professional contexts) are influenced by their embeddedness in organizational and policy contexts. This course introduces concepts and frameworks that enable understanding and guide strategic decision-making about organizations that are active in the educational sector.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3018 - ECONOMICS-INFORMED POLICY ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Economics-informed policy analysis involves the consideration of short-term and long-term monetary and non-monetary benefits and costs of competing policy options. Analytical techniques such as cost-benefit analysis and cost-effectiveness analysis can help policymakers select the most socially desirable policy option(s).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3019 - EDUCATIONAL IMPLEMENTATION AND EVALUATION FOR SOCIAL CHANGE

Minimum Credits: 3
Maximum Credits: 3
Pursuit of organizational improvement, systemic transformation, and ultimately social change often begins with systematic approaches to planned change and the leadership actions necessary to support successful implementation and scaling. Thoughtful program evaluation supports implementation and systemic change. Understanding evaluation frameworks (formative, developmental, and summative evaluation) and corresponding methodological approaches will enable students to successfully identify and collaborate with program evaluators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3085 - COMPARATIVE & INTERNATIONAL EDUCATION PHD SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This seminar is for PhD degree students interested in Comparative and International Education as a field of study to engage in mentoring

activities and professional development with program faculty and build a mutually supportive community. Students in this seminar meet regularly to learn the latest debates and research developments in comparative and international education, to develop their scholarly writing, and to develop their program milestones. The seminar showcases careers and supports planning for professional conferences and publications.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

EFOP 3087 - WRITING SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students in this one credit seminar have the opportunity to concentrate their efforts on writing for publication. The seminar attends to editing and revising drafts for students ongoing writing projects (such as degree milestones, proposals, journal articles, and conference papers) and other professional writing (such as letters and vitae). Essentials of writing and publishing are addressed, and specific topics may include: authorship, voice, stance, narrative, epistemologies, evidence, audience, and synthesis. Class organization encourages ongoing revision through self-reflection, peer review, whole group discussion, and instructor review.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

EFOP 3089 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
A course listing for newly instituted and experimental courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EFOP 3090 - DISSERTATION RESEARCH SEMINAR

Minimum Credits: 3
Maximum Credits: 3
A seminar for doctoral students developing research prior to the preparation of a dissertation overview.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

EFOP 3092 - HIGHER EDUCATION INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
An internship in administration in higher education.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Admin and Policy Studies

EFOP 3095 - ORGANIZATINAL PERSPECTIVES ON EDUCATIONAL IMPROVEMENT

Minimum Credits: 3
Maximum Credits: 3
One way to see the act of education is that it is essentially about what occurs between teachers and learner. In other words the key unit of

analysis is the classroom or activity structure. The classroom is important, but teaching and learning are also shaped by their context. Individuals are situated in organizations, which are situated in broader social, cultural, and political environments. Consequently, reform and improvement efforts must not only take seriously individual factors, they must understand the ways in which individual action is enabled and constrained by organizational and environmental contexts. This seminar will focus on schools as organizations drawing on theoretical and empirical work grounded in organizational theory. We will interrogate the institutional, organizational, and day-to-day contexts of work in schools. We also explore how reform efforts targeting organizational features can intervene and perhaps, improve teaching and learning. In order to grapple with the concepts from the literature, students will analyze several cases or organizational improvement efforts and conduct a small study examining an improvement effort in a local educational organization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3097 - SUPERVISED RESEARCH

Minimum Credits: 1
Maximum Credits: 6
Doctoral study initiated by the student with advisor's approval and related to the student's program of study.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

EFOP 3098 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
Doctoral study approved and directed by an academic advisor.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

EFOP 3099 - GUIDANCE IN THE DOCTORAL DEGREE

Minimum Credits: 1
Maximum Credits: 18
A registration unit for students preparing a doctoral dissertation or dissertation overview.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

EFOP 3104 - INCLUSIVE LEADERSHIP AND STRATEGY IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course explores the interplay between inclusive leadership and strategic initiatives within higher education settings. Key topics include strategic planning, equity audits, developing as an inclusive leader, and administrative leadership for equity and justice. Students gain expertise in formulating effective strategies for institutional transformation through principles of strategic planning. Additionally, the course covers administrative leadership strategies needed to navigate challenges and implement inclusive strategic policies and plans, contributing to more equitable and just higher education environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EFOP 3128 - HIGHER EDUCATION BUDGET MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the sources of revenues available to colleges and universities and various methods for allocating these funds to academic and administrative functions. Specific attention will be given to topics of fund accounting, sources of revenue, the budget process, fiscal controls and monitoring.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EFOP 3129 - HIGHER EDUCATION RESOURCE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on essential aspects of higher education staff supervision and development through three central themes: human resources and equity, organizational finance, and organizational development. Through class conversations and activities, students explore the conceptual and practical knowledge needed for the effective management of organizational and staff dynamics within higher education institutions. The course also considers the complexities of human resources management specific to academia, covering recruitment, performance evaluation, and strategies for addressing diversity challenges. Throughout, students gain exposure to the ways higher education institutions develop as organizations that foster equitable and just change.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3130 - FACULTY, ADMINISTRATION, AND GOVERNANCE IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This seminar examines scholarship on faculty, administration, and governance in higher education, with particular attention to how institutional structures, roles, and power relations shape academic work and organizational life. Grounded in critical and equity-centered perspectives, the seminar engages research on faculty work, professional socialization, careers, and work environments, as well as the administrative and governance contexts within which faculty labor is organized and evaluated. Students will explore how faculty roles intersect with institutional leadership, governance arrangements, and policy environments, and how these dynamics influence teaching, research, service, and relationships with students and student outcomes. The seminar also attends to how faculty and administrative work are shaped by broader organizational and policy conditions, including (in)equity, stratification, accountability, and institutional change within higher education. This seminar emphasizes conceptual frameworks and research traditions that support scholarly inquiry into faculty, administration, and governance as interconnected sites of power, practice, and institutional transformation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3131 - STUDENT, CAMPUS, AND SOCIETY

Minimum Credits: 3
Maximum Credits: 3
A seminar focusing on current research dealing with the impact of campus environments, experiences on and off campus, and family background on achievement, values, personal development, and life goals of students in higher education.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3132 - THE IMPACTS OF COLLEGE ON STUDENTS

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on current research on the college experience. Covering issues from college access and choice to student outcomes,

this seminar is designed to assist students in developing an understanding of the impact of college on students and how the student experience and issues related to students and student outcomes are studied in the field of higher education and how in(equities) in student outcomes manifest within higher education systems. This seminar is designed for advanced master's students and doctoral students whose research interests are situated in higher education.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3133 - CONTEMPORARY ISSUES IN RACIALIZATION, CULTURE, AND IDENTITY IN US HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This seminar looks closely at the history of categories, assumptions, and ideas used to analyze educational inequality in US higher education. This course will guide students through scholarly thought on 1) the historical, political, and educational consequences of the labeling and emergence of racialized or "othered" groups in the context of higher education, and 2) critical, intellectual, and pragmatic interventions that have emerged from a range of disciplines and thinkers for imagining and building equitable higher education spaces beyond the constraints of hegemonic structures. This course draws from multiple disciplines to consider how identities are constructed in discourse and policy in order to differentially deliver benefits and burdens over time.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3134 - CONTEMPORARY LATINX ISSUES IN US HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course focuses on current issues for Latinx people within a higher education context. This includes a look at the overall ecology into and through higher education, from the K-12 setting into the postsecondary context. The course is taught through the perspective of leading Latinx scholars, theorists, and practitioners who are developing cutting edge solutions for best serving the fastest growing demographic in the United States. The course includes a look at the experiences of students, faculty, and staff within postsecondary contexts as well as a focus on understanding the colleges and universities enrolling a large percentage of the Latinx population, including community colleges and Hispanic-Serving Institutions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3135 - SEMINAR IN COLLEGE TEACHING

Minimum Credits: 3
Maximum Credits: 3
The course in intended to provide a practicum-like experience for graduate students in the professions and disciplines who are teaching or expect to teach in higher education. Challenging topics include: analyzing and critiquing current syllabuses of class members; structuring the curriculum; teaching for understanding; process and content; teaching and learning in groups; becoming a dialogic classroom; encountering and responding to contentious discussion; and evaluating learning. Although topics will be considered conceptually through readings, the primary curriculum will develop as members of the class present specific issues from their emergent work. Participants will have the opportunity to explore their beliefs in teaching and learning as they consider a web between themselves, their subject and their students, in order to help their students learn how to weave a world for themselves.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3136 - COMPARATIVE HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on contemporary problems in post-secondary education throughout the world. The seminar will begin with a brief historical introduction, followed by a review of case studies and other documents on higher education in the United States and other countries. Special attention will be given to an examination of comparative and contrasting policies and issues in higher education as they unfold in various developing regions and in the United States.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: African Studies, Asian Studies, Global Studies, Russian & East European Studies

EFOP 3137 - CULTURE, INNOVATION & ORGANIZATION PERFORMANCE

Minimum Credits: 3
Maximum Credits: 3
Whether leading a department of 50 people or a division of 500, leaders need to understand the concepts, skills and practices that build strong organizational cultures. This course explores the cultural facets of organizational life in universities with special emphasis on improvement opportunities such as values clarification, cultural norms, innovation, process and people integration, key performance indicators, the balanced scorecard and the alignment of human resources systems such as hiring, faculty and staff development, performance management and career development. Students are introduced to a variety of methods used to encourage creative problem solving in teams; diffusion of innovation is explored in depth. Students work in teams with an actual University client to implement a benchmarking project, an important tool in improving organizational performance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3138 - GENDER AND SEXUALITY STUDIES IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This seminar offers an in-depth exploration of contemporary theories and perspectives on gender and sexuality, focusing on their application to research and praxis aimed at cultivating inclusive and justice-oriented programs, policies, advising strategies, and environments in higher education. Adopting an intersectional critical lens, the course will investigate a range of pertinent topics, including Women of Color (WOC) feminisms, advanced gender and sexuality identity development for college students, the complexities surrounding LGBTQIA+ topics (Queer of Color Critique, Joteria Pedagogy, etc.), the experiences of trans* and gender non-binary individuals, the pervasive gender inequities that exist in higher education, as well as the intricate policy challenges related to gender and sexuality.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3139 - LEGAL ASPECTS OF HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
The focus of the course is on federal and state law and higher education in the United States. Although time will be devoted to historical issues pertaining to higher education, most of the time will be devoted to in-depth discussions of contemporary issues. Issues that will be discussed include promotion and tenure, academic freedom, faculty dismissal, sexual harassment, research integrity, campus violence, and student affairs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3141 - POLICY STUDIES IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This higher education PhD core course is designed to provide students with the foundational knowledge and skills needed to study higher education policy and to conduct, understand, and critique work in the higher education policy arena. The course examines the formation, design, implementation, and evaluation of public policy to introduce students to the nature of educational policy and policy making, and to equip students with a set of skills to build their capacity as independent and critical policy scholars. The course also exposes and engages students in learning about the major policy areas of concern in higher education, including the in-depth analysis of state cases as a way understand how the major policy areas of concern impend on one another and can work at cross-purposes. Designed for PhD students and advanced master's students who have an interest in policy or plan to pursue a PhD, the course assignments are designed to engage students in clearly and critically articulating current policy challenges, proposed solutions, and areas where continued scholarship is needed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3142 - CRITICAL ORGANIZATIONAL THEORY IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to major theories from organizational studies that can help explain how postsecondary institutions and fields maintain or transform their structures over time. Students will engage with both foundational literature in the field as well as work more critical of race- and power-evasive approaches to organizational analysis. This course is particularly concerned with how and why inequities in higher education persist even in the face of myriad attempts at the macro and micro level to eradicate them. Students will take up tools of the field to propose their own empirical study of organizational persistence and change.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3143 - STUDYING COMMUNITY COLLEGES IN SOCIETY

Minimum Credits: 3
Maximum Credits: 3
This course provides students with a comprehensive understanding of the issues facing community college stakeholders, inclusive of faculty, students, staff, administrators, community members, and constituents, and how researchers work to tell these individuals' stories and opportunities. Along the way, students will connect with leading community college scholars and centers that address contemporary challenges, as well as engage with foundational and novel scholarship. Ultimately, students will develop the necessary skills to conduct meaningful and thoughtfully designed studies on these postsecondary education institutions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3144 - FINANCE, FUNDING, AND EQUITY IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course examines the foundations of higher education finance and funding with particular attention to structures of stratification and (in)equality. We will consider the postsecondary funding ecosystem holistically to understand federal (e.g., student aid, research grants), state (e.g., public per-student appropriations), private (e.g., foundations, alumni giving), and local (e.g., contracts) funding streams and mechanisms and the public policy landscape and beliefs about higher education that shape them. By the end of the course, students will have a solid understanding of the current state of higher education funding and finance, the implications for local economies, equitable educational attainment, and intergenerational wealth that can inform student interests ranging from policy to institutional to student-level concerns.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3150 - FOUNDATIONS FOR THE STUDY OF HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course is the foundational course on the study of higher education designed to introduce PhD students to the social, political, philosophical and historical contexts that undergird higher education in the United States. Issues, ideas, and current arguments are explored as they relate to the structures and system of higher education, functions and purpose of higher education, and outcomes of higher education. Governance, administration, faculty, curriculum, finances, and students are covered as they relate to the areas of the course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3151 - THEORETICAL FRAMEWORKS FOR THE STUDY OF HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course provides doctoral and advanced master's students with a general understanding of theory and its application to the study of higher education. This includes an overview of major paradigms, schools of thought, and theoretical frameworks commonly used in the study of higher education. Through an examination of both conceptual and empirical work, students gain an understanding of important theoretical bodies of knowledge and how to apply them to their scholarship and practice. The course has an interdisciplinary orientation, drawing on sociology, psychology, anthropology, gender studies, cultural studies, and race studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3153 - RESEARCH PERSPECTIVES ON DIVERSITY, EQUITY, AND INCLUSION IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course addresses the key dimensions in the study of diversity, equity, and inclusion within the U.S. higher education system. In this doctoral level course, we focus on both theoretical and empirical bodies of literature that have been used to study racialized, gendered, and minoritized groups within higher education. Using a critical and socio-historical lens, we examine individual, structural, and societal dimensions of power and oppression to understand their pervasive implications for diverse groups within educational systems. Students gain a solid foundation for understanding both the historical progression of research on minoritized groups and contemporary approaches to the study of diversity, equity, and inclusion in higher education.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3201 - INTRODUCTION TO EDUCATIONAL EVALUATION

Minimum Credits: 3
Maximum Credits: 3
Provides a general overview of evaluation, which is defined as "providing information useful to decision-making". The various purposes of evaluation are identified, and the use of different types of information for each purpose are discussed. The variables that affect the usefulness of information are emphasized. Both evaluation theory and practical experience are utilized to prepare people who will be fulfilling an evaluation function, or using evaluation results for professional decision making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3208 - CASE STUDY METHODS IN EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the use of case study research methods in investigations of educational policy and practice. The limitations and possibilities of different approaches are considered. Knowledge and skills are acquired through field-based projects.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3209 - EQUITY-BASED ASSESSMENT IN HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course covers the design of assessments and the interpretation of data through an equity and justice lens, with a secondary focus on assessment for higher education learning, development, and engagement of students, employees, and campus partners. Students develop practical methodological and analysis skills for creating inclusive assessments that measure a range of outcomes. Topics covered include foundational principles of higher education student learning, advanced assessment design techniques, and interpreting data for equitable outcomes.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3210 - COMPLEX CASES FOR HIGHER EDUCATION LEADERS

Minimum Credits: 3
Maximum Credits: 3
Tailored for scholarly leaders, this advanced seminar examines contemporary issues and current events shaping the higher education landscape. This course delves into challenges faced by higher education leaders, and students participate in a hands-on approach by applying scholarly practice to generate innovative solutions for the complex and multifaceted issues in the field today. Real-world case studies and collaborative team-based learning provide engagement with equity-based decision-making frameworks in order to offer a holistic overview of various dilemmas in higher education. This course is thematic in nature and precise topics may shift but include policy, legal, budgetary, developmental, ethical, and diversity, equity, and inclusion perspectives.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3301 - SOCIAL THEORIES AND EDUCATION GLOBAL CONTEXT

Minimum Credits: 3
Maximum Credits: 3
Students will explore a range of social theories that may be helpful in informing how they understand and operate in educational institutions in local, national, and global economic, political, and cultural contexts. By examining and com paring a variety of theories and contexts, students will be encouraged to develop/refine their own theories of a) how and why society and education are organized as they are; b) how and why education and/or society have or have not changed; and c) how and why education and/or society should be changed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: African Studies

EFOP 3310 - PHILOSOPHY OF EDUCATION, EQUITY, AND JUSTICE

Minimum Credits: 3
Maximum Credits: 3
This course examines the meaning and value of education and its relation to equity and justice. Students gain a nuanced understanding of the varied philosophies that inform discussions about key contemporary issues in education, such as theories of knowledge, the self, the student/teacher relation, professional ethics, collective responsibility, and moral education. Philosophies and varied wisdom traditions are

considered to help students contribute to their own visions of education, equity, and justice. Methods of educational philosophy are studied, including close reading, conceptual analysis, and philosophical writing. No prior experience in philosophy or social theory is required. This course is for graduate students working or studying all forms of education, including early childhood education, K-12 education, higher education, and non-formal education settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EFOP 3314 - EDUCATIONAL REFORM

Minimum Credits: 3
Maximum Credits: 3
This course examines the recurrent phenomenon of educational reform in a variety of settings and from a variety of social scientific perspectives. Focus is placed on the analysis of competing explanations of educational reform and the investigation of case studies from a variety of countries and time periods. Emphasis is given to examining whether reform campaigns are structurally similar and whether a general theory of educational reform is possible.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3315 - EDUCATION POLITICS: POWER AND INEQUALITY IN K12 EDUCATION SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course examines the political systems that maintain inequality in U.S. primary and secondary schools, including the creation of rights, agenda setting, and policy solutions. The course also examines the ways in way various policy solutions that are intended to mitigate inequality have succeeded and failed (e.g., school finance reform, standards-based reform, "desegregation"). We study the politics of inequality in the context of primary and secondary schools. The goal of the course is to answer the following questions: (1) What are the political origins of U.S. systems that promote educational inequality? (2) What US systems contribute to educational inequality in K12 schools? (3) What changes can be made to systems to either mitigate inequality or promote inequality?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3343 - COMPARATIVE EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This seminar introduces participants to the complementary fields of comparative, international, and development education (CIDE). Emphasis is on social justice issues in CIDE and the comparative analysis of policies and practices that constitute the organization, content, processes of education systems and institutions. Selected topics of continuing interest to educational researchers, policy makers, and practitioners are examined in relation to national and global cultural, economic, and political dynamics. Historical and contemporary examples are used to highlight the contributions of and challenges for those involved in CIDE.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: African Studies, Global Studies

EFOP 3347 - INTERNATIONAL ORGANIZATION DEVELOPMENT EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This seminar reviews policies and practices of key international organizations and actors in the complementary fields of comparative, international, and development education (CIDE) and examines their impact on national and regional educational policies. Multilateral organizations (such as UNESCO, UNICEF, and the World Bank), bilateral organizations, nongovernmental organizations, faith-based

organizations, community-based organizations, and regional agencies (e.g., the inter-American development bank, the Asian development bank, and the European union) will be among the organizations and actors studied.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: African Studies, Global Studies, Latin American Studies, Russian & East European Studies

EFOP 3350 - ADVANCED SEMINAR IN COMPARATIVE AND INTERNATIONAL EDUCATION

Minimum Credits: 3
Maximum Credits: 3
In this course, students explore a topic or set of issues in Comparative and International Education in depth. Issues change in each iteration of the course, which can be repeated for credit.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3408 - HIERARCHICAL LINEAR MODELING

Minimum Credits: 3
Maximum Credits: 3
This course is on hierarchical models for continuous and discrete outcomes. Hierarchical models are used when the units of observation are grouped within clusters. Observations in a cluster typically are not mutually independent for given covariate values as required by conventional linear and logistic regression models. Longitudinal or repeated measures data can also be thought of as clustered data with measurement occasions clustered within subjects. The focus of the course is on hierarchical linear models and their assumptions, as well as practical aspects of developing models to address research questions and interpreting the findings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: PSYED 2410 or EFOP 2410 or PSYED 3410

EFOP 3417 - STRUCTURAL EQUATION MODELING

Minimum Credits: 3
Maximum Credits: 3
This course will introduce structural equation modeling (SEM). Some fundamental materials necessary for SEM will be reviewed; i.e. Matrix algebra, covariance algebra, multiple regression; and factor analysis. SEM is a family of techniques. Some of the different SEM techniques that will be discussed include path analysis, confirmatory factor analysis, general SEM, and mediation/moderation models. Advance SEM techniques will also be discussed, e.g. Mean and covariance SEM, latent growth curve models, multi-sample/multi-group SEM, dealing with missing and non-normal data, and mixture modeling.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PSYED 2410 or EFOP 2410 or PSYED 3410

EFOP 3420 - COMPUTER APPLICATIONS TO RESEARCH METHODOLOGY

Minimum Credits: 3
Maximum Credits: 3
Course in advanced computer-based applications. Topics include design and conducting Monte Carlo studies, computer adaptive testing, and application of Bayesian methods to education. Students will learn the required steps for conducting a monte Carlo study or a computerized experiment: how to design the study, how to simulate data, and how to evaluate results. Procedures in SAS as well as other programs will be considered. Students will also design and implement a small monte Carlo study. For the computer adaptive testing (CAT) component, students will be introduced to cat and issues related to cat assessments: developing and maintaining item pools, selecting items, estimating ability, and validity of scores from cat assessments. Students will be introduced to the theory of Bayesian methods, application

of Bayesian methods in educational measurement and statistics, and software that is available to implement Bayesian methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

EFOP 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS

Minimum Credits: 3
Maximum Credits: 3
Introductory course in survey research methodology. The course considers practical considerations in the construction of questionnaires including determining questionnaire content, selection of item types and wording of items, selection of an administration method, piloting questionnaires, and locating existing questionnaires. Discussion about conducting survey research considers sample selection, analyzing information obtained from questionnaires using SPSS, evaluating questionnaires, sources of error and how to reduce measurement error in survey research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: PSYED 2001or EFOP 2001 and (PSYED 2014 or PSYED 2018 or EFOP 2018)

EFOP 3472 - CAUSAL INFERENCE IN EDUCATIONAL RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Many key questions in the field of education are framed causally. Do investments in full-day kindergarten pay off in terms of improved school readiness? Does project-based learning in mathematics and science increase the pipeline of students into STEM-related fields? Does the introduction of a generous merit-based scholarship program improve students' motivation to prepare rigorously for postsecondary education? Despite this causal framing, analytic tools commonly applied to questions such as these allow for statements about relationships but not about causation. For example, we may observe correlational evidence that communities with full-day kindergarten also have higher levels of school readiness. These same communities, however, may also serve children from higher-income families. Given students' backgrounds, their levels of readiness may have been unchanged by participation in full-day kindergarten. In this course, we will focus on framing research questions with a causal lens and on research designs and analytic techniques that provide the tools for answering these key questions in a causal framework. Specifically, we will learn about research designs for drawing causal inferences, including randomized trials, regression discontinuity, differences-in-differences, instrumental variables, and propensity score and other matching techniques. Our learning will be grounded through the semester in reading scholarly articles in which these techniques are applied to questions in education. Assignments throughout the semester will include preparation for class participation, a referee report to critique the work of another scholar, and a final course project. At the start of the semester, students will be asked to identify an area of focus and potential sources of data for the final course project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

EFOP 3485 - ADV TOPICS IN RESEARCH DESIGN

Minimum Credits: 3
Maximum Credits: 3
Includes new strategies in research design, and application of mathematical and behavioral design models for educational research. Topics vary each term around interests of the students enrolled.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

EFOP 9257 - EAST ASIA: YESTERDAY AND TODAY

Minimum Credits: 3
Maximum Credits: 3

The course is designed for middle and high school teachers of world cultures, world history, geography, economics, and literature. This seminar will provide students with the content and resources needed to implement the study of East Asia into their curriculum in accordance with various approaches to "standards". The seminar will include an analysis of the recently posted Pennsylvania civics and government standards. It will also reference to the latest national geography, world history, as well as NCSS standards.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad HSU Basis
Course Attributes: Asian Studies

Electrical and Computer Engr

ECE 1115 - HIGH-PERFORMANCE COMPUTING

Minimum Credits: 3
Maximum Credits: 3
This course teaches high-performance computing as a complex system that sits at the intersection of algorithms, programming, systems, networks, and processors. Students are introduced to generalized abstractions of parallel programming via data and task parallelism. Topics include processor pipelining, instruction-level parallelism, superscalar instructions, multiprocessor parallelism with threading, cluster computing and interconnection networks. Students engage in several hands-on programming assignments using parallel programming standards, such as MPI.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: ECE 0202 and 0302; PLAN: Electrical Engineering or Computer Engineering

ECE 1157 - DATA SCIENCE AND SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course introduces data science and machine learning methods for securing modern systems, with emphasis on anomaly detection, adversarial machine learning, and data privacy. Students learn to identify unusual patterns in data and system behavior to detect unreliable data, rare events, and potential cyberattacks, while also examining how machine learning models can be attacked and how their robustness can be improved. The course covers extreme value analysis for modeling low-frequency, high-impact events; supervised, unsupervised, and semi-supervised machine learning approaches to anomaly detection; and privacy-preserving techniques, including data anonymization and differential privacy.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

ECE 1259 - ELECTROMAGNETICS

Minimum Credits: 3
Maximum Credits: 3
Vector calculus, gradient curl, divergence theorem and stokes' theorem, coulomb's law gauss's law, Laplace equation, poisson equation, dielectrics, BIOT-Savart Law, vector potentials, ampere's law, faraday's law, inductance, magnetic materials, Lorentz force, Maxwell's equation, electromagnetic radiation.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: MATH 0240 and (ECE 0401 or MATH 0290); PLAN: Electrical Engineering or Computer Engineering

ECE 1273 - EXTREME ENVIRONMENT ELECTRONICS

Minimum Credits: 3
Maximum Credits: 3
This course teaches the tools, techniques, and design methodologies for building microelectronic circuits that operate reliably in extreme environments, with an emphasis on high-radiation environments. Students first grasp the fundamentals of widely used digital and mixed-signal circuits tailored for standard settings, then delve into advanced versions engineered for challenging environments such as space, avionics, high-energy physics, medical, and nuclear applications. The course combines lectures, hands-on labs using professional CAD tools, case studies, and a culminating design project.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

ECE 1686 - SPACE ORBITAL MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This course presents rigorous treatment of classical mechanical systems pertaining to spaceflight and orbital dynamics. Students will be able to apply mathematical treatments to Newtonian systems and in the process appreciate both physical nature and engineering feats achieved in the successful completion of space missions.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

ECE 2073 - INTRODUCTION TO SPACE ENGINEERING

Minimum Credits: 4
Maximum Credits: 4
This course is a comprehensive overview of space engineering. Topics to be covered include: importance and applications of space, space environment, orbital mechanics, spacecraft dynamics, systems engineering, control systems, spacecraft subsystems (communication and data-handling subsystem, electrical power subsystem, environmental control and life-support subsystem, and structures), rocket propulsion, space operations, and space politics and economics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2095 - SPECIAL TOPICS: GRADUATE

Minimum Credits: 4
Maximum Credits: 4
A graduate-level course in special topics of current interest in electrical and computer engineering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2098 - MS PROJECT ON SPACE SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
MS Project on Space Systems is a special project course intended to provide practical experience that supplements theory-oriented, lecture-based courses. Possible topics include modeling/simulation, software development, design/development/fabrication of prototypes, or any other types of projects that will provide hands-on-experience and knowledge base that complements regular courses taken in the same subject area. Interested students should contact the ECE Graduate Program Office, a point-of-contact instructor is assigned to oversee each subject area and will provide guidance on determining project topics.
Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad Letter Grade

ECE 2156 - ADVANCED INFORMATION SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course covers information security at the computer system level, the network level, and the human level. Students will first learn general computer security technology and principles such as cryptographic tools, user authentication, access control, malicious software and attacks. Then, we will delve into the details of network attacks and defending techniques. The latter units of the course cover software and system security, including buffer overflow vulnerability, operating system security, and Cloud and IoT security as well as human factors and legal and ethical issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2157 - DATA SCIENCE AND SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course introduces data science and machine learning methods for securing modern systems, with emphasis on anomaly detection, adversarial machine learning, and data privacy. Students learn to identify unusual patterns in data and system behavior to detect unreliable data, rare events, and potential cyberattacks, while also examining how machine learning models can be attacked and how their robustness can be improved. The course covers extreme value analysis for modeling low-frequency, high-impact events; supervised, unsupervised, and semi-supervised machine learning approaches to anomaly detection; and privacy-preserving techniques, including data anonymization and differential privacy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ECE-PHD or ECE-MSECE

ECE 2160 - EMBEDDED COMPUTER SYSTEM DESIGN

Minimum Credits: 3
Maximum Credits: 3
Design and implementation of embedded microprocessor systems. Topics include 'C' language, top down iteration for assembly language programming, data structures, co-routines, I/O software structures and real time operating systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

ECE 2161 - EMBEDDED COMPUTER SYSTEM DESIGN 2

Minimum Credits: 3
Maximum Credits: 3
Organized as a full term project carried out by student design groups. A complex embedded system will be designed, implemented and tested using Altera and other cad tools. Grade will be based on project reviews and the final project report. Proper design process will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ECE 2160; PROG: Swanson School of Engineering

ECE 2162 - COMPUTER ARCHITECTURE 1

Minimum Credits: 3
Maximum Credits: 3
Review of basic architecture concepts, data representation, microprocessor and minicomputer architectures, memory and i/o subsystems, stack computers, parallel and pipelined computers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2165 - DEPENDABLE SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
The field of dependable computing has recently emerged as one of the most important areas of study in computer and electrical engineering. Modern computer systems are susceptible to a broad range of potential faults, errors, and failures, and increasing chip density and design complexity exacerbate the problem. Novel methods in hardware, information, network, software, and time redundancy are now available to mitigate these threats in the form of resilient computer architectures, apps, and systems. The focus of studies here is the design and analysis of dependable machines, from small embedded systems to space-based platforms to high-end supercomputers, in terms of reliability, availability, performability, testability, and safety metrics, and more.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2166 - PARALLEL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Introduction to fundamental and newly developing hardware and software topics in parallel computer architecture (PCA) including concepts, models, methods, metrics, systems, and applications. PCA has become one of the most challenging and important areas of ECE, and it is now a dominant theme throughout computer architecture, systems, and programming, from low-power embedded systems to high-end supercomputers, and featuring various forms of fixed-logic (e.g., CPU, DSP, GPU), reconfigurable-logic (e.g., FPGA), and hybrid (e.g., CPU+DSP, CPU+FPGA, CPU+GPU, CPU+FPGA+GPU) processing devices.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2168 - NEUROMORPHIC SYSTEMS DESIGN

Minimum Credits: 3
Maximum Credits: 3
Neuromorphic engineering is a promising frontier to usher in the next generation of AI systems. This course will teach principles, design methodology and applications of neuromorphic computing architectures and energy-efficient event-based sensors like Dynamic Vision Sensors (DVS) and silicon cochlea. By the end of the course, students should understand the steps needed to develop neuromorphic systems from an original concept to a working demo.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2180 - COMPUTING AND BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course explores the connections between engineering concepts (such as digital computation, circuit theory, synchronous and asynchronous circuits, distributed computing, simulation vs. emulation, computer architecture) and biological systems. The main theme of the course is applying engineering methods when studying biological systems, but also exploring how these methods can inform design of computing systems. Topics include: discrete and analog modeling of biological networks; model inference vs. model design; data-based vs. knowledge-based modeling in biology; modeling correlations vs. causality in biology; synchronous and asynchronous biological circuits, and stochasticity in biology; static vs. dynamic analysis of biological systems; role of feedback and feed-forward loops, timing analysis; sensitivity, robustness analysis, and model reduction in biological systems; hardware design for biology; role of advanced computer systems in medicine; design of synthetic biological circuits; biologically-inspired computing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2192 - INTRODUCTION TO VLSI DESIGN

Minimum Credits: 4
Maximum Credits: 4
Understand basic concepts and introductory techniques of modern integrated digital circuit design using Complementary Metal-Oxide-Semiconductor (CMOS) transistors. Learn how to design/simulate essential CMOS circuits for digital Very Large Scale Integration (VLSI) designs using state-of-the-art Computer Aided Design (CAD) tools.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2193 - ADVANCED VLSI DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course is organized as a full semester project in conjunction with a small amount of lecture material on advanced CMOS and bicmos digital design techniques, as well as the group design process itself. Students form groups that design and implement different VISI projects which are then fabricated by NSF Mosis facility and returned for testing. Focus is on group projects with written and oral/reviews and reports.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ECE 2192; PROG: Swanson School of Engineering

ECE 2195 - SPECIAL TOPICS: COMPUTERS

Minimum Credits: 3
Maximum Credits: 3
An MS level course in special topics of current interest in computer engineering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2198 - MS PROJECT ON SEMICONDUCTOR DESIGN

Minimum Credits: 3
Maximum Credits: 3
MS Project on Semiconductor Design is a special project course intended to provide practical experience that supplements theory-oriented,

lecture-based courses. Possible topics include modeling/simulation, software development, design/development/fabrication of prototypes, or any other types of projects that will provide hands-on-experience and knowledge base that complements regular courses taken in the same subject area. Interested students should contact the ECE Graduate Program Office, a point-of-contact instructor is assigned to oversee each subject area and will provide guidance on determining project topics.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ECE 2231 - FUNDAMENTALS OF SEMICONDUCTOR AND QUANTUM ELECTRONIC DEVICES

Minimum Credits: 3
Maximum Credits: 3
Fundamental quantum theory, electron in potential well, harmonic oscillator, band theory of solids, Kronig-Penny Model.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2233 - FOCUSED ION BEAM AND SCANNING ELECTRON MICROSCOPY

Minimum Credits: 3
Maximum Credits: 3
This course introduces the basic theory of FIB, SEM, X-EDS, and EBSD instrumentation, milling, deposition, and analytical capabilities. It discusses and presents the theory directly related to applications and techniques used in FIB/SEM dual beam platform instruments. Throughout the course, the students will be exposed to these methods and required to apply them to real research projects either provided by the instructor or from their research supervisors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2235 - MONOLITHIC INTEGRATED CIRCUITS

Minimum Credits: 3
Maximum Credits: 3
Fabrication of integrated silicon monolithic circuits, thermal oxidation, solid state diffusion, epitaxial growth, ion implantation, photo and electron lithography, design considerations, active and passive elements in monolithic blocks, surface effects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

ECE 2237 - ANALOG CIRCUIT DESIGN

Minimum Credits: 3
Maximum Credits: 3
The objectives of this course are: to understand the operation of essential CMOS analog circuits and learn how to design them. To design the analog circuits using a 45nm CMOS process and verify their performance by SPICE simulation using a commercial EDA tool (Cadence Spectre). Topics include: comparators; two-stage amplifiers; folded-cascade amplifiers; voltage and current references; oscillators; linear regulators; switched-capacitor circuits; digital-to-analog converters, analog-to-digital converters; SAR ADCs; delta-sigma ADCs; second order effects & noise assignment; sensor interfaces. Prerequisites: ECE 1286 or equivalent
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

ECE 2240 - NANO-OPTICS

Minimum Credits: 3
Maximum Credits: 3
A graduate level course designed for students who want to understand the mechanisms of interaction of light and matter at the nanometer scale, and become acquainted with nano-optics-based technologies. Topics include: electromagnetic theory of optical interaction with matter, optical waves in periodic media, photonic bandgap structures, surface plasmons, optical interaction with metal nanostructures (metal nanoapertures and arrays, and metal nanoparticles), surface plasmon resonance spectroscopy, plasmon coupling and concentration/funneling of electromagnetic energy, surface-enhanced raman scattering, near-field imaging and microscopy, and negative refraction. Prerequisite: junior or senior level em theory course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2250 - POWER ELECTRONICS

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to cover the fundamental concepts in the field in sufficient depth to allow students to analyze and design power electronics circuits. The course covers dc-dc converters and dc-ac converters.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2260 - SCANNING PROBE MICROSCOPY-BASED CHARACTERIZATION AND NANOFABRICATION

Minimum Credits: 3
Maximum Credits: 3
The course concentrates on both theoretical and practical issues of advanced scanning problem microscopy (SPM) techniques. It introduces concepts, theoretical backgrounds, and operation principles of varieties of scanning probe microscopies; addresses the fundamental physical phenomena underlying the SPM imaging mechanism; covers the practical aspects of SPM characterization of a wide range of materials as well as operation devices; discusses SPM-based approaches to nanofabrication and nanolithography such as dip-pen nanolithography and nano-robotic manipulation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ECE 2262 - LOW-DIMENSIONAL NANOELECTRONIC DEVICES

Minimum Credits: 3
Maximum Credits: 3
This graduate course discusses the electrical transport, electrothermal interactions, and power dissipation in emerging low-dimensional (1D and 2D) nanoelectronics. Topics include band structures, electronic transport in 1D nanowire and nanotubes as well as layered 2D materials (graphene, transition metal dichalcogenides, black phosphorus, and etc.), electrothermal interactions in nanoelectronics, power dissipation in nanoelectronics, thermometry, and system-level power dissipation issues (breakdown, heat sink, etc.). This course is intended to bridge a gap between device operations, solid-state physics, thermal transport, and materials science.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2263 - EMERGING MEMORY TECHNOLOGY FROM DEVICE TO APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
In today's big data era, trillions of sensors will connect every aspect of our lives to the Internet, constantly producing and processing an overwhelming amount of data. Conventional charge-based memory technology such as DRAM and Flash memory will not sustain the increasing demand for scalable, high-speed, energy-efficient and high density memory devices. In this special topic class, we will discuss the prospect and challenges of various emerging memory technology such as spin transfer torque random access memory (STT RAM), phase change memory (PCM), resistive random access memory (RRAM), conductive bridge random access memory (CBRAM) and possible applications in neuromorphic computing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2264 - FLEXIBLE ELECTRONICS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide an understanding of scientific and technical aspects of the flexible electronics and to enable students to contribute to the rapidly developing flexible electronics information. The course aims to introduce graduate level students to semiconductor devices, modern electronic devices on flexible substrate, and wearable and stretchable devices.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2270 - FUNDAMENTALS OF PHOTOVOLTAICS

Minimum Credits: 3
Maximum Credits: 3
The course introduces the basic principles of photovoltaics which covers the basic physics of semiconductors in photovoltaic devices, physical models of solar cell operation, characteristics and design of common types of solar cell, and approaches to increasing solar cell efficiency. Besides the first generation of photovoltaics (single crystal), the second generation of photovoltaics (amorphous Si, CdTe, dye-sensitized, organic) is also covered in the course. The topics on the third generation of photovoltaics (hot electron converter, multiple exciton generation, mid-band photovoltaics, quantum dot solar cells) are also discussed in the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Related

ECE 2272 - SIMULATION AND DESIGN OF SILICON PHOTONICS

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to enable students to design basic photonic integrated circuits by providing them with an intuitive understanding of core photonic components (e.g. waveguides, couplers, resonators, etc.) as well as a solid grasp of the tools needed to simulate multi-component designs. By the end of the course, students should understand the steps needed to take a PIC design from original concept to fabrication at a foundry. This includes such topics as: on-chip filtering/routing using ring resonators and Bragg gratings; methods for optimizing bandwidth and on/off-chip coupling efficiency using edge and grating couplers; integrated high-speed silicon PN modulator design and optimization; integrated high-speed germanium PIN photodetector design and optimization; full photonic circuit simulation using the S-parameter method. Prerequisites: an undergraduate course covering the fundamentals of electromagnetic waves.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2295 - SPECIAL TOPICS: ELECTRONICS

Minimum Credits: 3
Maximum Credits: 3
An MS level course in special topics of current interest in electronics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ECE 2298 - MS PROJECT ON SEMICONDUCTOR DEVICES

Minimum Credits: 1
Maximum Credits: 4
This MS special project course intends to provide practical experience that will supplement theory-oriented regular courses. Possible topics include modeling/simulation, learning/practicing software packages, design/development/fabrication of prototypes, or any other types of skillsets that will help expand hands-on experience in conjunction with regular courses taken in the same subject area. Interested students should contact the ECE Graduate Program Office: The point-of-contact instructors assigned for each area will provide guidance on determining project topics. As an alternative to ECE2998, students can take this project course (3cr) and use to fulfill 30-cr MS graduation requirements.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-MSECE

ECE 2372 - PATTERN RECOGNITION

Minimum Credits: 3
Maximum Credits: 3
Emphasis on machine pattern recognition and learning; Bayes decision theory, parameter estimation, Bayesian belief networks, discriminant functions, supervised learning, nonparametric techniques, feature extraction, principal component analysis, hidden Markov models, expectation-maximization, support vector machines, artificial neural networks, unsupervised learning, clustering, and syntactic pattern recognition.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2390 - IMAGE PROCESSING AND COMPUTER VISION

Minimum Credits: 3
Maximum Credits: 3
This first level graduate course covers essential elements of image processing for computer vision and introductory subjects in computer vision; image segmentation: region-based, edge detection, scale space, active contours ; shape description, deformable templates; textures ; perspective camera model and its parameters; geometry of multiple (2) views, fundamental matrix; scene planes and homographies; consistent labeling; locating objects in 3-d space; motion analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2521 - ANALYSIS STOCHASTIC PROCESSES

Minimum Credits: 3
Maximum Credits: 3
Probability theory, random variables, sums and limits of random variable sequences, time and frequency domain, modeling of continuous and discrete random signals, lease square estimation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2523 - DIGITAL SIGNAL PROCESSING

Minimum Credits: 3
Maximum Credits: 3
Discrete-time signal processing, discrete Fourier transform and FFT implementation, design and stability considerations of FIR and IIR filters, filter implementation and finite register effects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2525 - DETECTION AND ESTIMATION THEORY

Minimum Credits: 3
Maximum Credits: 3
A study of optimal techniques for extracting information from the observation of random variables or random signals. This includes hypothesis testing, estimation theory, optimal receiver design, wiener and Kalman-Bucy filtering, and applications such as digital communications and medical imaging.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ECE 2556 - NEURO-SIGNAL MODELING AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course will focus on statistical theory and practical application related to brain imaging analysis. The topics will include statistical inference, analysis of variance, Bayesian analysis, likelihood and factor analysis (exploratory and confirmatory).The content ranges from the traditional to the contemporary. While specific applications are not treated, this course is strongly motivated by bio applications, especially in computational neuroscience. This would be a graduate level course taught through hands-on examples and tutorial data sets and cover the theory and implementation of these methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2570 - ROBOTIC CONTROL

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the application of control theory in robotics. Topics to be covered include: review of classical and modern control design methods such as PID control, state feedback, optimal control, adaptive control, and hybrid system control; control of mobile robots; control of robot manipulators; and cognitive robotics.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2595 - SPEC TOPCS: SIGNL PROCSSNG/COM

Minimum Credits: 3
Maximum Credits: 3
An MS level course in special topics of current interest in signal processing/communications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ECE 2598 - MS PROJECT ON COMMUNICATIONS ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
MS Project on Communications Engineering is a special project course intended to provide practical experience that supplements theory-oriented, lecture-based courses. Possible topics include modeling/simulation, software development, design/development/fabrication of prototypes, or any other types of projects that will provide hands-on-experience and knowledge base that complements regular courses taken in the same subject area. Interested students should contact the ECE Graduate Program Office, a point-of-contact instructor is assigned to oversee each subject area and will provide guidance on determining project topics.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ECE 2646 - LINEAR SYSTEM THEORY

Minimum Credits: 3
Maximum Credits: 3
Linear spaces and operators, mathematical descriptions of linear systems, controllability and observability, irreducible realization of rational transfer-function matrices, canonical forms, state feedback, and state estimators, stability.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2654 - DIGITAL CONTROL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Transform domain approach to analysis and design of digital computer control systems, linear discrete dynamic systems analysis and the z-transform, discrete equivalents to continuous transfer functions, sampled data systems, design of digital control systems using transform techniques, quantization effects, sample rate selection. Prerequisite: Completion of an undergraduate course on linear control systems
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

ECE 2671 - OPTIMIZATION METHODS

Minimum Credits: 3
Maximum Credits: 3
Analytical and computational aspects of finite dimensional optimization, unconstrained and equality constrained problems, basic descent

methods, conjugate direction methods, nonlinear programming and the Kuhn-Tucker Theorem, linear programming, dynamic programming, multicriteria optimization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2680 - ADAPTIVE CONTROL

Minimum Credits: 3
Maximum Credits: 3
Adaptation and learning play an essential role in biological systems, and these characteristics have been widely incorporated in modern control systems. This course introduces the general principles of adaptive control and learning. Topics to be covered include: real-time parameter estimation, self-tuning regulators, model-reference adaptive systems, adaptive control of nonlinear systems, practical aspects and implementation of adaptive control systems, introduction to computational learning theory and learning in neural systems, and an example of adaptive control by the cerebellum.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ECE 2686 - SPACE ORBITAL MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This course presents rigorous treatment of classical mechanical systems pertaining to spaceflight and orbital dynamics. Students will be able to apply mathematical treatments to Newtonian systems and in the process appreciate both physical nature and engineering feats achieved in the successful completion of space missions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2695 - SPECIAL TOPICS: ADAPTIVE CONTROL

Minimum Credits: 3
Maximum Credits: 3
An MS level course in special topics of current interest in control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2698 - MS PROJECT ON CONTROL

Minimum Credits: 3
Maximum Credits: 3
MS Project on Control is a special project course intended to provide practical experience that supplements theory-oriented, lecture-based courses. Possible topics include modeling/simulation, software development, design/development/fabrication of prototypes, or any other types of projects that will provide hands-on-experience and knowledge base that complements regular courses taken in the same subject area. Interested students should contact the ECE Graduate Program Office, a point-of-contact instructor is assigned to oversee each subject area and will provide guidance on determining project topics.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ECE 2774 - COMPUTER ANALYSIS OF POWER SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Steady state phenomena, matrix transformations, system parameters, system unbalances, digital methods, and numerical analysis techniques applied to load flow, state estimators, and fault studies in the large power systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2775 - ADVANCED ELECTRIC MACHINES AND DRIVES

Minimum Credits: 3
Maximum Credits: 3
This is a course in electric machine and drive analysis and modeling, along with their control systems. The course will cover the dq0 transformation, reference frame theory, saturation, unbalanced operation and dynamics in electric machines. Then cover the converter topologies typically used in machine drives, power electronic device characteristics, pulse-width modulation techniques, current regulation, torque and speed control, and space vector control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2776 - MICROGRID CONCEPTS & DISTRIBUTED GENERATION TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
This course describes fundamental concepts related with the development of microgrids and the integration of distributed generation. Technical topics are divided into three modules. The first module introduces microgrid components and discusses the main types of microsources. The second focuses on energy storage technologies. The third includes system integration topics, such as power electronics interfaces; dc and ac architectures,; economics, operation, stabilization, and control; reliability aspects; grid interconnection, and microgrids as part of the "smart" grids. This course also aims at preparing students to conduct research or helping them improve their research skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE
Course Attributes: MCSI - Sustainability Related

ECE 2777 - POWER SYSTEMS TRANSIENTS 1

Minimum Credits: 3
Maximum Credits: 3
Lumped parameter analysis, switching transients in ac/dc systems, arc modeling, damping, current suppression, traveling wave phenomena, line discontinuities, Ferro resonance, transient recovery voltage.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2778 - FACTS AND HVDC TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
Advanced Power Electronics (FACTS and HVDC) is a comprehensive course in the area of large-scale power electronics systems, circuits,

devices, and the ever-advancing areas of applications. This course will provide graduate students with an understanding of the how the broad spectrum of power electronics is integrated into a wide variety of industries, with an emphasis on utility scale FACTS and HVDC technologies and applications, as well as how applications of power electronics circuits, devices, and systems are utilized for control and operation of various processes and business fields. The course will cover, from a ground-up approach, devices and their characteristics, conversion techniques and circuits, and applications of power electronics with an emphasis on power conversion fundamentals for FACTS and HVDC applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2780 - RENEWABLE AND ALTERNATIVE ENERGY

Minimum Credits: 3
Maximum Credits: 3
This course covers an in-depth analysis and understanding of various renewable and alternative energy technologies' including wind, solar, biomass, thermal, wave, hydro, and other sources and systems. Investigation of applications, integration, markets, policy, and other aspects of renewable development will be studied. Supporting technologies, such as energy storage, power electronics, and controls as applied to renewable and alternative energy applications are also explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Related

ECE 2781 - SMART GRID TECHNOLOGIES AND APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
This is a comprehensive course designed to introduce students to new technologies dedicated to reliably, efficiently and safely managing electric power across utility, commercial, industrial, and residential networks. The course will cover the application of smart grid technologies from power generation through power consumption including grid automation, smart meters, demand response, communication, electric vehicle integration, grid connectivity, renewable energy, cyber security, microgrids and the business processes. Students will gain an understanding of the how the broad spectrum of smart grid technologies is integrated into the electrical energy industry, with an emphasis on distribution systems within homes, buildings, factories, transportation systems, and the utilities serving them
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2783 - ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN MODERN POWER SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course aims to explore the use of big data, artificial intelligence (AI), and machine learning technology and tools on power system datasets to identify and improve existing knowledge and discover new insights and tools for better grid operation and management. We will learn about the basics of deep neural networks and their applications to different tasks in power grid operation and control. Students will be able to apply deep learning to a variety of artificial intelligence tasks pertinent to domains of data-driven problems in power systems. Deep learning applications in generation, transmission, and distribution systems will be discussed. The main goal of this course is to learn how to generate a dataset and use available datasets for specific objectives for detection, prediction, and anticipation in different time horizons of power system operation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2795 - SPECIAL TOPICS POWER

Minimum Credits: 3
Maximum Credits: 3
An MS level course in special topics of current interest in power.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 2798 - MS PROJECT ON POWER

Minimum Credits: 3
Maximum Credits: 3
MS Project on Communications Engineering is a special project course intended to provide practical experience that supplements theory-oriented, lecture-based courses. Possible topics include modeling/simulation, software development, design/development/fabrication of prototypes, or any other types of projects that will provide hands-on-experience and knowledge base that complements regular courses taken in the same subject area. Interested students should contact the ECE Graduate Program Office, a point-of-contact instructor is assigned to oversee each subject area and will provide guidance on determining project topics.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ECE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

ECE 2990 - MBA/MS GRADUATE PROJECTS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ECE 2997 - RESEARCH, MS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Electrical and Computer Engineering MS

ECE 2998 - GRADUATE PROJECTS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Electrical and Computer Engineering MS

ECE 2999 - MS THESIS

Minimum Credits: 1
Maximum Credits: 12
N/A
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

ECE 3000 - PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
For full-time graduate students interested in industrial internships as a means of gaining practical experience in their areas of research. Students are responsible for arranging practicum with industry. See practicum guidelines and application. Requires permission of graduate coordinator.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

ECE 3162 - ADVANCED COMPUTER MICROARCHITECTURE

Minimum Credits: 3
Maximum Credits: 3
This upper level graduate course aims to cover the state-of-the-art advances and hot topics in computer architecture research. Topics include emerging non-volatile memory technologies, massive parallel architectures (e.g. GPU), accelerators, optimizing architecture for data analytics, etc. Students are required to read contemporary research papers, and present them throughout a semester. One term project, done either individually or in a team, is required. Prerequisite: ECE 2162 or equivalent.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ECE 3182 - ADVANCED MACHINE LEARNING & DEEP LEARNING

Minimum Credits: 3
Maximum Credits: 3
In this course, we will study the cutting-edge advanced research topics in machine learning and deep learning by reading and discussing a set of recent research papers. The main objective of this course is to cover the underlying mathematical concepts and representative algorithms, paper reading, and implementation. The student learning outcomes include understanding the advanced machine learning and deep learning models, large-scale optimization algorithms, present and discuss newly published ICML, NeurIPS, KDD papers in classes. The class projects will include a set of emerging machine learning and deep learning research topics. The project reports will be competed to target for potential machine learning conference submissions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 3195 - ADVANCED TOPICS-COMPUTERS

Minimum Credits: 3
Maximum Credits: 3
A Ph.D. level course in advanced topics of current interest in the area of computer engineering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ECE 3235 - SEMICONDUCTOR LASERS

Minimum Credits: 3
Maximum Credits: 3
Properties of heterojunctions, stimulated emission in semiconductors, carrier and optical confinement, fabrication and operating characteristics of semiconductor lasers including double-heterostructure lasers, quantum well lasers, distributed feedback lasers, surface emitting lasers, various modulation techniques of semiconductor lasers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ECE 2231; PROG: Swanson School of Engineering

ECE 3526 - MODERN SPECTRAL ESTIMATION

Minimum Credits: 3
Maximum Credits: 3
An overview of concepts of modern spectral analysis covering traditional approaches and modern estimation methods. The properties, advantages and disadvantages of each estimator will be covered in detail and demonstrated using computer experiments. Also covered are applications of spectral estimation to signal detection and beam forming.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ECE 2521; PROG: Swanson School of Engineering

ECE 3650 - OPTIMAL CONTROL

Minimum Credits: 3
Maximum Credits: 3
Variation calculus and optimality conditions, linear quadratic problems, the Riccati equation, Pontryagin maximum principle, time optimal control, dynamic programming and the Hamilton-Jacobi equation, numerical methods, decentralized control, multicontroller-multiobjective systems, differential games.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ECE 2646; PROG: Swanson School of Engineering

ECE 3750 - ELECTRIC POWER GRIDS AND SYSTEMS RESILIENCE

Minimum Credits: 3
Maximum Credits: 3
This course discusses selected topics in resilience engineering. The focus is on power systems and on information and communication networks as a critical load for electric power grids. These two systems are also the focus of the discussion because they are those specifically identified as particularly important in President Obama's Presidential Policy Directive 21 about National Infrastructure Resilience and because of their increasing integration as part of smart grids. Discussed topics include both theoretical and applied concepts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 3779 - HIGH FREQUENCY POWER ELECTRONICS

Minimum Credits: 3
Maximum Credits: 3
This course addresses the motivations and inherent design issues associated with high frequency switched mode power supply design. Origins and dependencies of frequency dependent losses will be reviewed, with specific emphasis on potential design approaches which reduce energy loss and facilitate high frequency operation. Resonance and its application to power converters will be discussed. Students will learn steady-state and dynamic modeling techniques which allow the analysis and design of converters containing significant resonant intervals, for which traditional small ripple assumptions do not hold.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 3783 - MODERN CONTROL AND OPTIMIZATION FOR ENERGY AND COMPLEX ENGINEERING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
The main goal of this course is to help the student develop a working knowledge of convex and nonconvex optimizations, i.e., to develop the skills and background needed to recognize, formulate, and solve convex and nonconvex optimization problems in engineering problems. This course provides a fundamental understanding of the operation of complex engineering system problems including energy and power networks, and machine learning from a control and optimization perspective. Students will learn how mathematical tools and computational methods are used for the design, modeling, planning, and 2 real-time operation of engineering systems. They will also learn about the mathematical modeling and calculation engines of related problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ECE 2671 or ECE 2646; PLAN: ELECTRICAL AND COMPUTER ENGINEERING

ECE 3795 - ADVANCED TOPICS POWER

Minimum Credits: 3
Maximum Credits: 3
A Ph.D. level course in advanced topics of current interest in power.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering
Course Attributes: MCSI - Sustainability Related

ECE 3893 - GRADUATE SEMINAR

Minimum Credits: 1
Maximum Credits: 1
A weekly series of presentations by engineers and scientists, visiting researchers, faculty, and graduate students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: PLAN: ECE-PHD or ECE-MSECE

ECE 3995 - RESEARCH TOPICS IN ELECTRICAL AND COMPUTER ENGINEERING

Minimum Credits: 3
Maximum Credits: 15
A research course for PhD students that focuses on specific skills required by students to conduct original research in a particular area of Electrical and Computer Engineering. Students will complete a project, such as a full journal paper, a proposal for research funding, or a complete patent application, as specified by the faculty teaching the course. The project should be beyond material to be included in the student's dissertation. This course requires approval by the Program Conference Committee, based on a 1-2 page proposal citing the topic, rationale for the course, the professor, and the specific project to be completed.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

ECE 3997 - RESEARCH, PHD

Minimum Credits: 1
Maximum Credits: 15
Research, PHD
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Electrical and Computer Engineering PHD

ECE 3998 - PHD PROJECT

Minimum Credits: 3
Maximum Credits: 15
Independent study
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Electrical and Computer Engineering PHD

ECE 3999 - PHD DISSERTATION

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Emergency Medicine

EM 2252 - STRUCTURAL DRIVERS OF HEALTH

Minimum Credits: 3
Maximum Credits: 3
This course exposes students to the components of the Structural Drivers of Health and Social Ecology as it relates to health conditions and progression of maladies due to external factors. Topics include Health and Information Literacy, Social Support Mechanisms, Economic and Environmental effects on Health, Influence of Insurance coverage and benefits on care planning and compliance with health plans. Students will understand the correlation between intrinsic and extrinsic health drivers and their impact on both near- and long-term patient needs and outcomes. In addition, students will be asked to select a structural health driver of their choice and develop a strategy for mitigation in a community of their choice.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

EMED 5372 - SPECIALTY SELECTIVE

Minimum Credits: 0
Maximum Credits: 0
Specialty Care Clerkship is a two week experience that will run during week 7 and week 8 of the Surgical block. Students will select two options from a list of specialties to include Adult Emergency Medicine, Anesthesiology, ENT, Neurosurgery, Ophthalmology and Orthopedics. Students will complete 1 week of each assigned specialty. Attention will be given to student specialty preference but capacity limits may not allow students to get their top choices. Students will work with the teams in these departments to provide direct patient care in a variety of settings including outpatient clinics, inpatient wards and may include Operating Room experience depending on the specialty. In some cases, bedside learning will be augmented with online modules and simulation experiences. Grading for the course will be Pass/Fail.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

EMED 5376 - SPECIALTY CARE CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
The specialty care clerkship is a four (4) week rotation that includes a combination of one week experiences in the disciplines of ENT, ophthalmology, adult emergency medicine and pediatric emergency medicine. In addition to four weeks of clinical time, students will attend weekly lectures, workshops and lab activities. This required clerkship begins with orientation and a suturing and splinting session followed by a simulation-based session in phone communication (how to best communicate medical information over the telephone to patients). One morning each week there will be an ophthalmology lecture and an ENT lecture. Additional morning workshops include dermatology, EKG cases, dizziness and audiology, musculoskeletal exam and rehab and musculoskeletal radiology. The lecture will be followed by clinical responsibilities. Students are evaluated by each specialty area based on clinical performance and will take an on-line proctored examination. One grade will be assigned for the entire four week rotation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

EMED 5445 - COMMUNITY EMERGENCY MEDICINE ELECTIVE - UPMC HAMOT

Minimum Credits: 0
Maximum Credits: 0
This rotation is set up to give students opportunities to see and participate in a busy community-based, as opposed to University-based Emergency Department. Additionally, this rotation allows students to rotate and audition at a second UPMC hospital that has an fully ACGME-accredited Emergency Medicine residency. Students interested in EM will be provided with a ESLOE written at the end of rotation. UPSOM students interested in EM as a specialty MUST take the UPSOM home EM elective (EM5450) prior to taking this experience, which counts as a student's one away elective in EM. Students not going in to EM may take this elective without first taking EM5450. Students entering EM as a specialty will have priority for available slots. Logistics and Educational Methods: Rotations are held at UPMC Hamot Emergency Department. Students have approximately 14 10-hour clinical shifts over the 4 week rotation. The shifts vary in times including night and weekend coverage. There is protected time on Tuesday evenings/overnights as well as Wednesday mornings for educational conferences. Students take a 40 question end-of-rotation test and give a 10-minute presentation at Wednesday conference. Evaluations will be filled out per medical school requirements based on collective feedback from supervising residents and attendings.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

EMED 5446 - SCIENCE OF RESUSCITATION

Minimum Credits: 0
Maximum Credits: 0
This course goal is to learn to critique primary literature using standardized methodology and, in doing so, to be able to develop clinical guidelines from basic science, translational and human subject research. The course uses current issues in cardiopulmonary resuscitation (CPR) as a model for this exercise. The course will emphasize how research in acute resuscitation science has been translated into clinical guidelines and practice. Specifically, we will critically evaluate the primary evidence (original research) upon which the current Advanced Cardiac Life Support (ACLS) protocols are based, and identify gaps in current knowledge. The didactic portion will consist of journal-club style small-group sessions with the faculty five days per week. During these sessions, the group will critically evaluate practical actions advocated by ACLS using an evidence-based format. Additional small group simulation sessions will be used to reinforce and demonstrate particular concepts and equipment. Each student will round for 1 week with the UPMC Post Cardiac Arrest Service in order to apply knowledge gained in resuscitation to post cardiac arrest patients. Structured laboratory experiences in resuscitation research laboratories will emphasize how the physiological principles of resuscitation have been discovered. These laboratory experiences may involve direct participation in human subject and/or animal research. Each student will generate a written critique of an existing clinical problem, or propose a new clinical research project. This document must demonstrate attention to the basic science of resuscitation and deal with important confounding variables that plague resuscitation research. During the course, students will complete the required material for certification in ACLS.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

EMED 5450 - EMERGENCY MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective is designed for the student desiring added experience in acute care medicine as practiced both in and out of the hospital. Student will become part of mobile intensive care unit field team operating in the city of Pittsburgh's system. Students are responsible for gaining experience in initial on-scene assessment and intervention, rescue, extrication techniques and cases for follow-up and presentation. Module 2 is spent in emergency department with the goal of providing experience and supervision in the initial evaluation and treatment of wide variety of patient problems.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

EMED 5460 - MEDICAL TOXICOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four week clinical elective will provide students with experience in the assessment and treatment of toxicology patients. Students will spend time with toxicology faculty in consultation, examination, treatment, and follow-up of patients in the emergency, inpatient and outpatient settings. The clinical experience will include daily clinical rounds on inpatients, outpatient consults, and Pittsburgh poison center case review. Students will be on-call daily with the rotating residents and medical toxicology staff member and will be expected to join the resident and attending on cases presenting to UPMC Presbyterian and Children's Hospital of Pittsburgh. A portion of the rotation will be at the Pittsburgh poison center, where students will learn from current patient cases and summary case reviews. Daily teaching sessions will be provided by members of the medical toxicology service on the spectrum of toxicology subjects. Sample topics include: initial approach to the toxicology patient, decontamination, acetaminophen, salicylates, toxic alcohols, antidepressants, iron and digoxin. Students will also attend the medical toxicology service lectures. Additionally, the student will be encouraged to participate in on-going research projects if available (e.g. chart review). Students will also be encouraged to prepare interesting cases for scientific presentation and publication. The overall curriculum will help students develop their knowledge base in medical toxicology, and improve their ability to diagnose and treat a poisoned patient.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

EMED 5465 - POINT OF CARE ULTRASONOGRAPHY

Minimum Credits: 0
Maximum Credits: 0
This elective serves as an introduction to the use of point of care ultrasonography (POCUS) over the course of four weeks. The course will expose students to the use of focused, point of care ultrasonography to make bedside clinical decisions for the care of acutely ill patients. POCUS as serve as an extension of the physical exam to aid physicians narrow their differential diagnosis, provide direct visualization of pathophysiology as well as tracking changes to medical interventions, improve accuracy and safety in procedural skills and obtain direct visualization of pathology without the need for transportation to specialized suites or the use of radiation. These skills are essential in the present medical climate where pocus can aid in improved safety, cost-savings and even patient satisfaction. As the use of this technology expands, it is crucial for medical trainees to have exposure.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

EMED 5466 - POST CARDIAC ARREST SERVICE

Minimum Credits: 0
Maximum Credits: 0
This rotation is an elective experience with the Post Cardiac Arrest Service (PCAS) at the University of Pittsburgh/UPMC Presbyterian. The goal is for students to gain experience in managing post-cardiac arrest patients in the City of Pittsburgh and at UPMC Presbyterian. Students enrolled in the course will provide comprehensive treatment to patients who have suffered cardiac arrest and are seen at UPMC Presbyterian along side the physicians of the PCAS service. Specific therapies include critical care medicine; targeted temperature management; seizure evaluation, prevention, and treatment, neuroprognostication; and discharge planning. The PCAS service coordinates its care with cardiology, CCM, and PM&R services, allowing students to experience the disease of cardiac arrest in a multidisciplinary fashion. Students will be evaluated using the standard UPSOM Elective Evaluation form based on direct observation by attending physicians and housestaff, evaluation from nursing caregivers, as well as completion of didactics and readings. This course is graded Pass/Fail. This elective is available ONLY via permission of the course director and enrolled students must have completed the prerequisites successfully prior to enrollment.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

EMED 5468 - FUNDAMENTALS OF QUALITY EMPROVEMENT

Minimum Credits: 0
Maximum Credits: 0
This entirely remote course will introduce students to the fundamentals of quality improvement. Students will asynchronously complete a series of Wolfe Leaning modules to provide a foundation in interprofessional quality improvement techniques. There will be online group meetings with a facilitator Monday-Thursday mornings to review and extend upon the material presented in the modules. Students will attend (on Teams) one Patient Safety Committee meeting and one QI Meeting during each two-week block. Students will develop and present a sample Quality Improvement project based upon a scenario of their choosing (or sample scenarios provided).
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

EMED 5470 - SENIOR ELECTIVE IN QUALITY AND PATIENT SAFETY

Minimum Credits: 0
Maximum Credits: 0
The quality and patient safety elective is designed for the motivated learner with self-study modules and learning activities facilitated by preceptors remotely. The course complements busy months of interviewing and travel through the use of on-line media, case reviews, videos, podcasts and blog discussions. Instead of in-person meetings, course directors employ on-line meetings and electronic touch points to ensure progress throughout the course. Learning in this course is asynchronous, so timing is at the convenience of the individual learner.

Participants will spend at least 2 hours per day completing required on-line learning modules. In addition, students will work independently to research, understand and create a root cause analysis and a rapid process improvement plan. Students will review the RCA and QI plans of their peers, provide feedback and participate in discussion of their work.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis

EMED 5475 - EMERGENCY MEDICINE 2-WEEK ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This 2-week elective is designed to provide students with the opportunity to see patients in the emergency room setting. Students hone their skills in the performance of focused histories and physical examinations and participate in the development of a plan for the patients. Students work closely with residents and faculty, and participate as the first point of contact for many patient encounters. In addition, there are didactics in select areas, including interpretation of electrocardiograms.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

EMED 5600 - POCUS CERTIFICATE PROGRAM INDEPENDENT STUDY ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
An elective course in clinical point-of-care ultrasound that includes scanning shifts in the Emergency Department and in other inpatient and outpatient settings, participation in semi-weekly grand rounds, MS1 and MS2 POCUS education as instructors, and research/case presentations. Students may request a 2-week or 4-week elective period. This elective is specifically for students in the POCUS Longitudinal Certificate Program. Students interested in POCUS that are not in the Certificate Program may consider the EMED 5465 iPOCUS Elective. Objectives: 1. Understand the normal anatomy of the hollow and solid organs of the neck, thorax, abdomen and extremities. 2. Describe maneuvers in patient positioning that may help with image acquisition while maintaining patient dignity. 3. Describe the benefits and downfalls of ultrasound when compared to X-ray, CT, and MRI. 4. Describe the sonographic appearance of body structures including blood vessels, nerves, soft tissue, heart, lung, liver, spleen, kidneys, urinary bladder, uterus, and ovaries. 5. Understand the physics and appearance of ultrasound artifacts including posterior shadowing, posterior enhancement, edge artifact, mirror artifact, reverberation, and ring-down. 6. Develop a differential diagnosis for patients with abdominal pain. 7. Recognize sonographic signs of intra-abdominal fluid and its possible causes. 8. Develop a differential diagnosis for patients with chest pain. 9. Recognize sonographic signs of cardiac pathology including wall motion abnormality, hypertrophic cardiomyopathy, ventricular hypertrophy, heart failure, pericardial effusion, and tamponade 10. Recognize sonographic signs of pneumothorax, pulmonary edema, pleural effusion, and interstitial consolidation. 11. Describe the concept of ALARA as it pertains to point-of-care ultrasound. Develop professional interactions with physicians, advanced practice providers, nurses, technologists, other staff, and patients. 12. Perform medical literature searches for relevant topics. 13. Research and perform a case presentation. 14.Provide useful feedback at the end of the rotation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

EMED 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department of ophthalmology to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

EMED 5735 - SCIENCE OF RESUSCITATION (ILS)

Minimum Credits: 0
Maximum Credits: 0
This 4-week elective will satisfy requirement for integrated life science course of senior year. Course objectives: 1) identify major physiological influences affecting resuscitation and trace their implementation into clinical guidelines; 2) critique clinical study of resuscitation; 3) become confident conducting medical resuscitation, including use of relevant equipment; 4) appreciate practical/ethical issues surrounding research on emergency interventions. Small group sessions, live animal/simulator sessions and written research critique is required.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

EMED 5750 - GET READY FOR RESIDENCY BOOT CAMP

Minimum Credits: 0
Maximum Credits: 0
This elective is an intensive preparation for students who are about to enter residency. Students will be provided with a combination of general and specialty-specific, clinically relevant content in a variety of modalities. The focus will be on content that will prepare the student to function at the starting level of an intern (and meet the expected intern-level milestones) after graduation. Teaching modalities will include simulation, small group sessions, skills workshops, standardized patient cases, and a limited number of high-yield lectures.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

EMED 5788 - TOXICOLOGY: THE TOXICOLOGIST'S ROLE OUTSIDE THE HOSPITAL 2-WEEK ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This elective will focus on exposing medical students to the role of toxicology beyond inpatient clinical care. This will involve learning about and experiencing topics related to the poison center, environmental and occupational toxicology, public health and emerging drug surveillance.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

EMED 5898 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0
Maximum Credits: 0
This is a senior-level elective offering. This is a four week elective for the student interested in participating in clinical or basic science research in emergency medicine. The student will be offered the opportunity to choose a research project which interests him or her. The student will work closely with the emergency department attending staff as well as the clinical research coordinator for the department of emergency medicine. The coordinator will meet weekly with the student to provide guidance as well as education materials.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

EMED 5900 - EXTRAMURAL EMERGENCY MEDICINE

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in emergency medicine may be arranged at an institution other than the University of Pittsburgh school of medicine. Arrangements must be made in accordance with the process set out in the UPSOM course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Endodontics

ENDOD 2000 - GRADUATE ENDODONTICS

Minimum Credits: 6
Maximum Credits: 6
General studies of various clinical endodontic techniques and procedures.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2001 - CLINIC 1

Minimum Credits: 6
Maximum Credits: 6
This course will involve the actual treatment of patients. The resident will provide care to endodontic dental patients, including care to endodontic dental patients, including non-surgical treatment, non-surgical endodontic retreatment and endodontic microsurgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2004 - CLINIC 4

Minimum Credits: 6
Maximum Credits: 6
This course will involve the actual treatment of patients. The resident will provide care to endodontic dental patients, including non-surgical endodontic treatment, non-surgical endodontic retreatment and endodontic microsurgery.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2007 - CLINICAL ENDODONTICS

Minimum Credits: 12
Maximum Credits: 12
Through the treatment of patients in the graduate endodontic clinic, residents learn and master all aspects of nonsurgical and surgical endodontic treatment. Residents are required to maintain accurate clinical records and appropriately record informed consent, all clinical records, and photographic and videographic documentation of each case. Residents are encouraged to use various endodontic materials, techniques, and equipment, including Passive Ultrasonic Irrigation, GentleWave, EndoVac, and EdgePro Laser. To prepare residents for private practice, four handed dentistry as well as practice management will be taught. Residents will be instructed in inventory management and staffing requirements. Residents will utilize intra and extraoral radiographic imaging, including Limited Field of View (LFOV) cone beam computed tomography (CBCT). Evidence based treatment will be emphasized.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2011 - TEACHING/EMERGENCY CARE 1

Minimum Credits: 2
Maximum Credits: 2
This is a clinical course focused on rendering emergency endodontic care to dental student patients. This course is also focused on teaching and helping dental students with their own cases. This course includes rotation in the emergency clinic.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2014 - CLINICAL ENDODONTICS YEAR ONE

Minimum Credits: 12
Maximum Credits: 12
Through the treatment of patients in the graduate endodontic clinic, residents learn and master all aspects of nonsurgical and surgical endodontic treatment. Residents are required to maintain accurate clinical records and appropriately record informed consent, all clinical records, and photographic and videographic documentation of each case. Residents are encouraged to use various endodontic materials, techniques, and equipment, including Passive Ultrasonic Irrigation, GentleWave, EndoVac, and EdgePro Laser. To prepare residents for private practice, four handed dentistry as well as practice management will be taught. Residents will be instructed in inventory management and staffing requirements. Residents will utilize intra and extraoral radiographic imaging, including Limited Field of View (LFOV) cone beam computed tomography (CBCT). Evidence based treatment will be emphasized.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2015 - CLINICAL ENDODONTICS YEAR 2

Minimum Credits: 12
Maximum Credits: 12
Through the treatment of patients in the graduate endodontic clinic, residents learn and master all aspects of nonsurgical and surgical endodontic treatment. Residents are required to maintain accurate clinical records and appropriately record informed consent, all clinical records, and photographic and videographic documentation of each case. Residents are encouraged to use various endodontic materials, techniques, and equipment, including Passive Ultrasonic Irrigation, GentleWave, EndoVac, and EdgePro Laser. To prepare residents for private practice, four handed dentistry as well as practice management will be taught. Residents will be instructed in inventory management and staffing requirements. Residents will utilize intra and extraoral radiographic imaging, including Limited Field of View (LFOV) cone beam computed tomography (CBCT). Evidence based treatment will be emphasized.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2016 - PRE-CLINICAL ENDODONTIC WORKSHOP

Minimum Credits: 12
Maximum Credits: 12
In this pre-clinical course, first year residents learn all aspects of nonsurgical treatment. The course is designed to ensure that first year residents have sufficient clinical and basic didactic knowledge to effectively treat patients in the graduate clinic. Residents are instructed on how to maintain accurate clinical records and appropriately record informed consent, and photographic and videographic documentation of each case. Residents are taught how to use various endodontic materials, techniques, and equipment, including Passive Ultrasonic Irrigation, GentleWave, EndoVac, and EdgePro Laser. Residents are instructed on how to perform intra and extraoral radiographic imaging, including Limited Field of View (LFOV) cone beam computed tomography (CBCT).
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2017 - EVIDENCE BASED ENDODONTICS

Minimum Credits: 1
Maximum Credits: 1
The Evidence based Endodontics course is designed to teach students how to evaluate information from research and professional consensus statements. The program provides a comprehensive overview of evidence-based practice (EBP) and the components essential for implementation of EBP in a clinical setting.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2018 - PULP BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course will provide in-depth instruction in the biological principles concerning the dental pulp and periradicular tissues including: 1. Microscopic and ultrastructural anatomy of the soft and hard tissues of teeth and supporting structures. 2. Embryology, histology, and physiology of the pulpal/periradicular complex. 3. Microbiologic aspects of caries. 4. Pulpal and periradicular diseases. 5. Pathophysiology as it relates to diseases of the pulpal/periradicular complex and orofacial pain. Further, skills developed through this course should enable endodontic residents to use the best evidence-based science or practices to guide clinical decision-making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2022 - MULTIDISCIPLINARY SEMINARS

Minimum Credits: 1
Maximum Credits: 1
This course discusses evidence-based and multidisciplinary approach for patient care.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2023 - MULTIDISCIPLINARY SEMINARS

Minimum Credits: 2
Maximum Credits: 2
This course involves seminars with other disciplines.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2039 - ENDODONTIC MICROSURGERY

Minimum Credits: 1
Maximum Credits: 1
This course provides students with a solid foundation in surgical endodontics. The course focuses on evidence-based decision making regarding all components of endodontic microsurgery. Students will complete perform various endodontic surgeries using a manikin and typodont.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade

ENDOD 2060 - CASE PRESENTATION AND TREATMENT PLANNING

Minimum Credits: 3
Maximum Credits: 3
Through the presentation of recently completed cases from the graduate endodontic clinic, residents gain knowledge of nonsurgical and surgical endodontics through group discussion. Residents learn how medical and dental histories can affect endodontic treatment. They develop and demonstrate their ability to determine definitive and differential diagnoses, determine all treatment alternatives and which treatment plan would be considered optimal, determine the prognosis for each case and assess the likely outcomes. Through interaction between all the residents and their faculty, they learn to incorporate radiographic interpretation, diagnostic methods, professionalism and ethics into clinical practice. Evidence based treatment planning and clinical decision making are emphasized.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ENDOD 2070 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Hands-on teaching practicum course for endodontic residents to learn about university-level teaching. Topcis include endodontic diagnosis, theory, nonsurgical treatment procedures, outcome and prognosis for endodontically treated teeth, treatment planning, and jurisprudence.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2072 - PHARMACOLOGY AND MEDICALLY COMPROMISED PATIENT CARE FOR ENDODONTISTS

Minimum Credits: 0
Maximum Credits: 0
Endodontic residents will be instructed in the fundamentals of pharmacology and how it is interrelated with biological science. While the course will incorporate the discussion of pharmacological actions of various drug classes, the primary focus will be on the effective use of pharmacology in endodontic practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2113 - CLASSIC LITERATURE 1

Minimum Credits: 2
Maximum Credits: 2
The goal of this Classic Literature Review course is to review the history of endodontics. In this course, residents will discuss classic endodontic papers. Residents will also review endodontic textbooks and AAE position statements. Furthermore, knowledge and skills developed throughout this course will enable residents to use the best evidence-based science or practices to guide clinical decision-making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2115 - ENDODONTIC MICROSCOPE

Minimum Credits: 1
Maximum Credits: 1
In this course, residents will develop the necessary clinical skills for modern endodontic based on magnification, ideal illumination and ergonomics.
Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2122 - ENDODONTOLOGY 4

Minimum Credits: 2
Maximum Credits: 2
This course is the study of the scientific rational for endodontic treatment. The dental pulp and periapical tissues will be studied at the most basic cellular level. This course will include the embryological development of all related structures; a study of the pathologic/physiologic occurrences of the pulp and periapex; and an understanding of the biological basis for endodontic treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2123 - ABE BOARD PREPARATION 1

Minimum Credits: 2
Maximum Credits: 2
This course will provide a review of basic concepts in endodontics which will provide a framework for clinical treatment.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2124 - ABE BOARD PREPARATION 3

Minimum Credits: 2
Maximum Credits: 2
This course will provide a review of basic concepts in endodontics which will provide a framework for clinical treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2211 - CASE PRESENTATION 1

Minimum Credits: 2
Maximum Credits: 2
This course will involve the presentation of cases completed by the resident in the previous week. Treatment diagnosis, treatment planning and procedures will be discussed by the residents and faculties. Residents must present an evidence-based rationale for their endodontic treatment provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2221 - CASE PRESENTATION 2

Minimum Credits: 2
Maximum Credits: 2
This course will provide each resident with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rationale for the endodontic treatment provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2280 - CASE PRESENTATION

Minimum Credits: 2
Maximum Credits: 2
This course will provide each resident's with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rationale for the endodontic treatment provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2281 - CASE PRESENTATION

Minimum Credits: 2
Maximum Credits: 2
This course will provide each resident's with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rationale for the endodontic treatment provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2282 - CASE PRESENTATION

Minimum Credits: 2
Maximum Credits: 2
This course will provide each resident's with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rationale for the endodontic treatment provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2326 - PRACTICE MANAGEMENT 1

Minimum Credits: 1
Maximum Credits: 1
The Practice management course will involve discussion of several aspects of private practice and academia, including ethics, finance and business.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2327 - PRACTICE MANAGEMENT 2

Minimum Credits: 1
Maximum Credits: 1
The Practice management course will involve discussion of several aspects of private practice and academia, including ethics, finance and business
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2357 - CURRENT LITERATURE 2

Minimum Credits: 1
Maximum Credits: 1
The goal of this Current Literature Review course is to enable endodontic residents to develop an effective method for reading scientific articles peer-reviewed journals and the critical thinking skills necessary for appropriate interpretation of scientific methodology and results. Further, skills developed through this course should enable endodontic residents to use the best evidence-based science or practices to guide clinical decision-making.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ENDOD 2375 - ENDODONTIC CLINIC 5

Minimum Credits: 1
Maximum Credits: 1
Endodontic resident clinical patient care. This treatment will include all phases of endodontics, such as conventional surgical and emergency endodontic treatment.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2380 - TOPICAL LITERATURE 1

Minimum Credits: 2
Maximum Credits: 2
This class will cover specific areas of endodontics through the review of classic and current literature. The resident will be given reading assignments and will be required to present a narrative of the reading for further discussion in a small seminar format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2381 - CLASSIC LITERATURE 3

Minimum Credits: 2
Maximum Credits: 2
The goal of this Classic Literature Review course is to review the history of endodontics. In this course, residents will discuss classic endodontic papers. Residents will also review endodontic textbooks and AAE position statements. Furthermore, knowledge and skills developed throughout this course will enable residents to use the best evidence-based science or practices to guide clinical decision-making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2383 - TOPICAL LITERATURE 4

Minimum Credits: 2
Maximum Credits: 2
This class will cover specific areas of endodontics through the review of classic and current literature. The resident will be given reading assignments and will be required to present a narrative of the reading for further discussion in a small seminar format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2385 - CURRENT LITERATURE REVIEW

Minimum Credits: 1
Maximum Credits: 1
The Current Literature Review course provides residents with the opportunity to become familiar with the most recent endodontic and medical/dental research. Reading, writing abstracts for the articles reviewed, and discussing the literature reinforces the scientific method as well as expands the resident's knowledge base. The course facilitates critical thinking that enables endodontic residents to use the best evidence-based science or practices to guide their clinical decision-making.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ENDOD 2389 - CLASSIC LITERATURE REVIEW

Minimum Credits: 3
Maximum Credits: 3
The Classic Literature Review is the foundational course for endodontics. The course provides students with a critical appraisal of the history of endodontics and classic scientific studies that define the literature base and define the specialty. Students will utilize endodontic textbooks to provide the context to interpret classic literature base. Position statements from the American Dental Association and the American Association of Endodontists will all be reviewed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ENDOD 2390 - ENDODONTIC SEMINAR

Minimum Credits: 2
Maximum Credits: 2
This course is designed to solidify a student's understanding of the endodontic literature base. Each endodontic topic will be reviewed. Each student will be assigned a point of view and will have to defend his or her position using the best evidence-based research and clinical reasoning. The defense of opposing points view will provide students with a greater depth of understanding.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ENDOD 2395 - RESIDENT RESEARCH

Minimum Credits: 1
Maximum Credits: 1
Resident Research provides students with time to work on their individual research projects. Students will use this time to collect data, analyze data, and complete their manuscripts, which are required for graduation. Class time will also be utilized to allow students to prepare their research for presentations at local, regional, and national meetings.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

ENDOD 2410 - CURRENT LITERATURE

Minimum Credits: 2
Maximum Credits: 2
This class will entail the reading of current periodicals. The student will abstract assigned articles and then present the abstract for discussion in a round table format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2411 - CURRENT LITERATURE 1

Minimum Credits: 2
Maximum Credits: 2
This class will entail the reading of current periodicals. The students will abstract assigned articles and then present the abstract for discussion in a round table format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2412 - CURRENT LITERATURE 3

Minimum Credits: 2
Maximum Credits: 2
This class will entail the reading of current periodicals. The students will abstract assigned articles and then present the abstract for discussion in a round table format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2420 - CURRENT LITERATURE

Minimum Credits: 2
Maximum Credits: 2
This class will entail the reading of current periodicals. The student will abstract assigned articles and then present the abstract for discussion in a round table format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2421 - CURRENT LITERATURE 5

Minimum Credits: 2
Maximum Credits: 2
The goal of this Current Literature Review course is to enable endodontic residents to develop an effective method for reading scientific articles peer-reviewed journals and the critical thinking skills necessary for appropriate interpretation of scientific methodology and results. Further, skills developed through this course should enable endodontic residents to use the best evidence-based science or practices to guide clinical decision-making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2422 - CURRENT LITERATURE 4

Minimum Credits: 2
Maximum Credits: 2
This class will entail the reading of current periodicals. The student will abstract assigned articles and then present the abstract for discussion in a round table format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2430 - CURRENT LITERATURE

Minimum Credits: 2
Maximum Credits: 2
This class will entail the reading of current periodicals. The student will abstract assigned articles and then present the abstract for discussion in a round table format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2512 - CLINIC 3

Minimum Credits: 3
Maximum Credits: 3
This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical, as well as surgical proficiency in the field of endodontics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2513 - ENDODONTICS PRE-CLINIC 2

Minimum Credits: 3
Maximum Credits: 3
In this course, residents will develop the clinical skills for endodontic treatment in a simulation/laboratory environment. The resident will provide training in endodontic procedures, including non-surgical endodontic treatment, non-surgical endodontic retreatment.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2520 - CLINICAL TREATMENT

Minimum Credits: 3
Maximum Credits: 3
This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical as well as surgical proficiency in the field of endodontics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2522 - CLINIC 4

Minimum Credits: 3
Maximum Credits: 3
This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical, as well as surgical proficiency in the field of endodontics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2523 - RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course involves discussion of possible research projects. This course will also enable students to improve their scientific writing skills as well as grant application.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2524 - CLINIC 4

Minimum Credits: 6
Maximum Credits: 6
This course will involve the actual treatment of patients. The resident will provide care to endodontic dental patients, including non-surgical endodontic treatment, non-surgical endodontic retreatment and endodontic microsurgery.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2530 - CLINICAL TREATMENT

Minimum Credits: 3
Maximum Credits: 3
This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical as well as surgical proficiency in the field of endodontics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2610 - CLINICAL CONCEPTS IN ENDODONTICS

Minimum Credits: 1
Maximum Credits: 1
This course is the study of the scientific rational for endodontic treatment. The dental pulp and periapical tissues will be studied at the most basic cellular level. This course will include the embryological development of all related structures; a study of the pathologic/physiologic occurrences of the pulp and periapex; and an understanding of the biological basis for endodontic treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2612 - CLINICAL CONCEPTS 2

Minimum Credits: 1
Maximum Credits: 1
This course will provide the clinical aspect of endodontic treatment. By presenting various techniques used to diagnose and treat the patient in the endodontic practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2613 - CLINICAL CONCEPTS 3

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ENDOD 2620 - CLINICAL CONCEPTS IN ENDODONTICS

Minimum Credits: 1
Maximum Credits: 1
This course is the study of the scientific rationale for endodontic treatment. The dental pulp and periapical tissues will be studied at the most basic cellular level. This course will include the embryological development of all related structures; a study of the pathologic/physiologic occurrences of the pulp and periapex; and an understanding of the biological basis for endodontic treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2721 - TRAUMATOLGY

Minimum Credits: 1
Maximum Credits: 1
This course provides information regarding endodontic approaches to traumatic dental injury.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 5210 - ENDODONTICS 1

Minimum Credits: 1
Maximum Credits: 1
In this course, students will learn the morphology, physiology, and pathology of the human pulp and periapical tissues and the diagnosis, prevention and treatment (to include access preparation, instrumentation and temporization) of diseases and injuries related to these tissues. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

ENDOD 5216 - ENDODONTICS 1 LAB

Minimum Credits: 1
Maximum Credits: 1
In this course, students will develop clinical skills for endodontic treatment in a simulation/laboratory environment. This course includes small group simulation and laboratory sessions.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: ABCF

ENDOD 5247 - ENDODONTICS 2 LAB

Minimum Credits: 1
Maximum Credits: 1
In this course, students will develop clinical skills for endodontic treatment in a simulation/laboratory environment. This course includes small group simulation and laboratory sessions.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: ABCF

ENDOD 5252 - ENDODONTICS 2

Minimum Credits: 1
Maximum Credits: 1
The goal of this course is to provide preclinical experience in performing diagnosis, case selection and nonsurgical endodontic treatment on

uncomplicated anterior, premolar, and molar teeth. This course is designed to prepare the dental student for the management of patients with pulpal and periradicular disease through a series of classes and accompanying laboratory sessions, including various clinical simulation projects in Endodontics 2 Lab (ENDOD 5247). Problem-solving skills, critical-thinking, patient-simulation, treatment (to include rotary instrumentation, obturation techniques, preparations for restoring an endodontically treated tooth, referral, informed consent, patient education, isolation and rubber dam placement, endodontic anesthesia, endodontic emergencies, and geriatric endodontics), radiology and self-assessment criteria will be emphasized throughout the course. Furthermore, knowledge and skills developed throughout this course and the accompanying laboratory course will enable dental students to use the best evidence-based science or practices to guide clinical decision-making
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

ENDOD 5313 - ENDODONTICS 3

Minimum Credits: 1
Maximum Credits: 1
In this course, students will learn about endodontic microbiology, endodontic therapeutics, preventive endodontics, procedural accidents, evaluation of endodontic outcomes, nonsurgical retreatment, bleaching of discolored teeth, management of incompletely formed roots, management of traumatic dental injuries, longitudinal tooth fractures, endodontic and periodontal interrelationships, endodontic surgery and differential diagnosis of orofacial pain. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

ENDOD 5388 - CLINICAL ENDODONTICS 1

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in endodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to endodontic dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the endodontic patient.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ENDOD 5448 - CLINICAL ENDODONTICS 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of endodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to endodontic dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the endodontic patient.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ENDOD 5801 - ADVANCED TECHNIQUES IN ENDODONTICS

Minimum Credits: 1
Maximum Credits: 1
This course introduces students to more advanced concepts and techniques in endodontics, including use of different instrument systems, ultrasonics, microscope, CBCT and management of complex patient cases. This course will include a didactic component, a chair-side learning component, and individual hands-on sessions where students will be able to use different file systems for the instrumentation of molar extracted teeth.
Academic Career: Dental Medicine

Course Component: Clinical
Grade Component: Grad HSU Basis

ENDOD 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

ENDOD 5911 - ADVANCED ENDODONTICS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

Energy Resources

ENRES 2096 - INTERNSHIP

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: Swanson School of Engineering

ENRES 2097 - GRADUATE PROJECTS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

ENRES 2998 - CASE STUDY

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

ENRES 2999 - M. S. THESIS

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Engineering

ENGR 0712 - ADVANCED ENGINEERING APPLICATIONS FOR FRESHMAN

Minimum Credits: 3
Maximum Credits: 3
This is an honors course and a continuation of ENGR 0711. Students will be introduced to engineering research and various special topics.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: ENGR 0711; CREQ: ENGR 0082; PROG: Undergraduate Swanson School of Engineering

ENGR 2007 - SUSTAINABILITY CAPSTONE

Minimum Credits: 3
Maximum Credits: 3
Building upon students' previous experience and skills, this course will focus on enabling interdisciplinary student teams to synthesize comprehensive solutions to complex real-world Sustainability challenges. This is a project-based course. Project topics will be developed in consultation with instructors and sustainability stakeholders. Innovative solutions will require the application of critical thinking and collaboration to resolve. By the end of the course the students will have a deeper understanding of 1) the multi-faceted nature of Sustainability solutions 2) approaches to problem solving across fields and 3) how to communicate sustainable solutions and concepts in an interdisciplinary team environment. This course serves as a capstone course for the Sustainability certificate and M.S. in a Sustainable Engineering degree and is a required course for these two programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ENGR 1905 or 2905
Course Attributes: Capstone Course, MCSI - Sustainability Focused, MCSI - Sustainability Related

ENGR 2009 - SUSTAINABLE FOOD SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Our food system is a multifaceted network of interconnected systems and relationships. In order to be able to feed ourselves well into the future, it must be sustainable. A sustainable food system is a system in which healthy food is provided to people while balancing the environmental, social and economic impacts. These dynamics force stakeholders to confront synergies and tradeoffs in agricultural practices, harvesting, transportation, manufacturing and distribution, healthy diets, and a reduction in wasted food.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2017 - MANUFACTURING FOR THE FUTURE: FLEXIBLE, GREEN, AND DIGITAL

Minimum Credits: 3
Maximum Credits: 3
What is flexible device manufacturing? What is green manufacturing? What is cybermanufacturing? Importantly, how do these emerging "types" of manufacturing differ from traditional manufacturing? It is important to recognize that global manufacturing is undergoing major transformations nowadays. The confluence of new advanced materials, emerging fabrication technologies, and connected cyber-physical systems is creating paradigm shifts for the ways products are conceived, made, distributed, used, and disposed. In the ever-increasing competition of "making things" of value to consumers, many industries are now reinventing themselves to cope with this new reality. This class covers the fundamentals behind major global trends, and their implication for the future of manufacturing from an engineering perspective. Topics covered include the following: (1) How the need for flexible and wearable devices is driving innovation in new materials and fabrication processes beyond the traditional microfabrication techniques adopted in the semiconductor industry. (2) How protein-based materials, degradable polymers, and novel recycling technologies are paving the way for more sustainable manufacturing of

consumer products. (3) How data analytics and internet of things (IoT) technologies are enabling a new generation of digital manufacturing systems referred to as Industry 4.0, and beyond.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2050 - TECHNICAL WRITING

Minimum Credits: 3
Maximum Credits: 3
This course is designed for non-native English speaking advanced graduate students preparing to write thesis or dissertation proposals in engineering. Topics covered include: format and content of reports needed in technical writing, abstracts and summaries, project proposals and research reports; correcting language problems encountered by non-native English writers and technical writers in particular.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

ENGR 2051 - PRODUCT REALIZATION

Minimum Credits: 3
Maximum Credits: 3
This interdisciplinary course considers diverse aspects of product realization process. Aspects, include defining user requirements, creation of computer based model and designs of a product from an existing product, rapid prototyping techniques and development of a manufacturing plan. Teams of 3-4 students from engineering and business will take a product with a microsystem or mems technology feature from concept to working prototype. In doing this students will address issues of market analysis, design, manufacturing design and product planning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2060 - SOCIAL ENTREPRENEURSHIP- ENGINEERING FOR HUMANITY

Minimum Credits: 3
Maximum Credits: 3
The course will explore the concepts of social entrepreneurship through the three tenets of sustainability: environment, economy, and equity in the context of complex or `wicked' problems. An introduction will provide a foundation in sustainability and social entrepreneurship while exploring the impact of innovative business models, such as disruptive innovation and Prahalad and Hart's fortune at the bottom of the pyramid. Additional class time will explore different examples and challenges in the developed and developing worlds. Through weekly readings, the course will focus on classroom discussions about the tenets of sustainability and the relevance of engineering in crafting `solutions'. The course project will provide students with an opportunity to work with a multi-disciplinary team to design an engineering-based business plan targeting a specific challenge either locally or in the developing world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2073 - INTRODUCTION TO SPACE ENGINEERING

Minimum Credits: 4
Maximum Credits: 4
This course is a comprehensive overview of space engineering. Topics to be covered include: importance and applications of space, space environment, orbital mechanics, spacecraft dynamics, systems engineering, control systems, spacecraft subsystems (communication and data-handling subsystem, electrical power subsystem, environmental control and life-support subsystem, and structures), rocket propulsion, space operations, and space politics and economics.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2078 - SPACE ENGINEERING PROJECT

Minimum Credits: 3
Maximum Credits: 3
In this course, students work in teams to solve real-world engineering problems in space technologies through a mentored design project. Students are provided with mission-driven design requirements and are charged with the development and testing of a functional prototype or system component. In addition to technical skills, students develop professional competencies, including communication and teamwork, through regular interaction and meetings with industry or research mentors.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ENGR 2080 - INNOVATING FOR COMMERCIAL IMPACT

Minimum Credits: 3
Maximum Credits: 3
Conventional wisdom regarding starting a business is dead wrong. This conclusion led Steve Blank and others to develop the lean startup method, an approach for systematically exploring the business model needed to make an idea into a success. In Blank's own words: 'existing companies execute a business model, startups search for one. This distinction shapes the lean definition of a startup: a temporary organization designed to search for a repeatable and scalable business model.' In this course, we discuss the basic elements of the lean startup method and apply them to the domain of engineering product and customer development. Students are expected to come to the class with their own idea(s) for potential product offering(s), which they will then test using the lean startup approach over the course of the term. *This course was formerly titled LEAN LAUNCHPAD: EVIDENCE-BASED ENTREPRENEURSHIP
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2090 - GRADUATE ENGINEERING COOPERATIVE PROGRAM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

ENGR 2092 - GRADUATE ENGINEERING INTERNATIONAL COOPERATIVE PROGRAM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

ENGR 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Provides an introduction to application of theory to practical aspects of nuclear science and technology. It is intended as a ramp-up course

for non-nuclear engineers who wish to pursue additional graduate level courses in nuclear engineering at the University of Pittsburgh. Graduate level content will be assured by the use of rigorous quantitative homework assignments, take-home exams, and an individual research project to be presented at the end of the semester. This course is designed to accommodate working adults who must travel from time to time though it is not designed to be taken completely asynchronously. Topics will include: atomic and nuclear physics, nuclear reactions and radiation, radiation protection, fission reactor basics, neutron diffusion, time-dependent reactors, reactor thermal-hydraulics including nuclear heat generation, conductive and convective heat transfer, ideal and non-ideal fuel rod analysis, thermodynamics, and a review of major nuclear criticality and power plant accidents.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: School of Engineering (PENGR)

ENGR 2101 - NUCLEAR CORE DYNAMICS

Minimum Credits: 3
Maximum Credits: 3
This course reviews the mathematics of nuclear reactor kinetics. Linear systems of ordinary differential equations are solved by state vector techniques, Laplace transform techniques, or finite difference techniques including the treatment of discretization errors resulting from various finite differencing approximations. A review of the physics of nuclear kinetics is followed by treatments of the kinetics equation including the effect of uncertainties, approximate solutions, and the interpretation of experiments to measure kinetics parameters. Representations and the physical basis of reactivity feedback mechanisms are treated. Lumped and distributed parameter models of fuel, coolant, fission products, and selected plant components are derived and applied to develop quantitative static relationships and qualitative dynamic results for transient conditions. The course provides an introduction to reactor protection and safety analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL

Minimum Credits: 3
Maximum Credits: 3
This course provides an integrated engineering examination of a nuclear power plant from the perspective of instrumentation and control systems used to infer the condition of the nuclear plants and its systems, control its normal operation, and provide protection during transient situations as well as assess core damage during severe accident situations. Students will apply previous knowledge of analog, digital, and microprocessor electronics techniques to nuclear power plant design and operation and reactor protection and safety considerations that influence the design of the reactor plant. A major outcome of this course will be an integrated understanding of the interaction between the physics of nuclear plant control (reactivity and heat balance) and the control and protection systems. This integrated plant understanding will be essential for the successful completion of the integrated nuclear power plant operations course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE

Minimum Credits: 3
Maximum Credits: 3
This course examines design bases for major systems and components in a nuclear plant and evaluates how the systems function in an integrated fashion. The student will examine a typical nuclear power plant and those components and systems of the nuclear plant complex that have the potential for affecting core power, and whose failure could be an initiating event for a plant transient. Dynamic relationships for the systems developed in the companion nuclear courses will be transformed into stable, numerical algorithms for computer solutions and system interactions will be illustrated using a major industry transient analysis code. Emphasis is on how operations of and faults in systems and components can influence reactivity and core behavior. Through classroom discussions the students will assess engineering problems and operational problems that have been experienced in historical nuclear plant operations. The intended outcome is an aptitude

for predicting complex transient behavior of the integrated nuclear plant considering factors that are important for safe and efficient operation: reactivity management and control, coolant inventory control, and core heat removal.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2104 - NUCLEAR OPERATIONS AND SAFETY

Minimum Credits: 3
Maximum Credits: 3
Nuclear power is an abundant and renewable power source with unique characteristics which require special attention in its design, licensing and operation. This course explains the fundamental plant processes: nuclear fission, neutron kinetics, heat transfer, chemistry and feedback mechanisms, showing how variations in one plant parameter can propagate effects in the others in ways not seen in fossil, solar, wind, or other systems. The student will also learn methods for analyzing these processes, and the relationship of their features to normal and off-normal plant operations, up to and including postulated severe accidents. Both deterministic analysis and Probabilistic Risk Assessment (PRA) will be employed, with exercises provided in both approaches. Similar concepts will also be applied to the design, manufacture and utilization of nuclear fuel. Stress is placed throughout on the defense in depth concept, and the nuclear safety cultural approach - a necessary point of view regarding how tasks are approached and conducted, whether they be analytical or operational.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2108 - CYBERSECURITY-BY-DESIGN FOR OPERATIONAL TECHNOLOGY SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to cybersecurity-by-design practices for operational technology (OT) systems. An OT system is the hardware and software used to monitor, control, and automate physical processes in industrial environments. OT systems were traditionally designed for reliability and safety, not cybersecurity; however, the increasing digitization and connectivity of these systems have exposed them to sophisticated cyber threats. Students will learn to integrate cybersecurity engineering with other aspects of OT system design to achieve "security-by-design". Students will learn the fundamental principles of OT systems and OT cybersecurity, then apply those principles through a series of hands-on research projects aligned with the design of a high-stakes OT system. Topics include threat modeling, risk assessment, consequence analysis, defensive cybersecurity architecture design, and adversary task analysis. Cybersecurity-by-design is a multi-disciplinary challenge - students of all engineering disciplines are encouraged to participate.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2110 - NUCLEAR MATERIALS

Minimum Credits: 3
Maximum Credits: 3
In this course, materials principles are taught in the initial lectures; students do not need to have prior understanding of them. The course will cover the metallurgy and phase diagrams of alloy systems important in the design of commercial nuclear power plants. The micro-structural changes that result from reactor exposure (including radiation damage and defect cluster evolution) are discussed in detail. The aim is to create a linkage between changes in the material microstructure and changes in the macroscopic behavior of the material. Also discussed is the corrosion of cladding materials as well as the effects of irradiation on corrosion performance, and the effects of primary and secondary coolant chemistry on corrosion. Both mathematical methods and experimental techniques are emphasized so that theoretical modeling is guided by experimental data. Materials issues in current commercial nuclear reactors and materials issues in future core and plant designs are covered.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2113 - RADIATION DETECTION AND MEASUREMENT

Minimum Credits: 3
Maximum Credits: 3
This combined lecture and laboratory course will provide students with an introduction to the principles of radiation detection and measurement and experimental techniques. The lecture material will provide students with an understanding of the theoretical basis of detector operation, radiation interactions with matter, signal conditioning and processing electronics, measurement techniques, and statistical considerations. Laboratory work will emphasize the practical aspects of radiation detection using an array of radioactive sources, detectors, and associated signal processing electronics. Through a series of laboratory experiments, students will learn to configure and operate instrumentation used in a wide range of radiation detection applications that are of interest to nuclear power, nuclear medicine, radiochemistry, and other scientific disciplines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ME 2100 or ENGR 2100; PROG: Swanson School of Engineering

ENGR 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS

Minimum Credits: 3
Maximum Credits: 3
This course provides advanced knowledge to promote understanding and application of thermal and hydraulic tools and procedures used in reactor plant design and analysis. It assumes that the student has a fundamental knowledge base in fluid mechanics, thermodynamics, heat transfer and reactor thermal analysis. The focus of the course is on physical and mathematical concepts useful for design and analysis of light water nuclear reactor plants. Applications of mass, momentum, and energy balances are combined with use of water properties to analyze the entire reactor plant complex as a whole.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2120 - MATHEMATICAL MODELING OF NUCLEAR PLANTS

Minimum Credits: 3
Maximum Credits: 3
Graduate students will develop the graphics/simulation framework and the underlying mathematical models for simulating nuclear power plants in ME/ENGR 2120 mathematical modeling of nuclear plants. Models will be developed in Matlab/Simulink(tm) and configured to run on a PC so that students can both examine the mathematical models on which the simulation is based and use the simulation program in laboratory-like sessions to study the effect of design changes on plant behavior. The simulation model fidelity developed is suitable for educational purposes and provides students with a desktop tool to realistically model and better understand reactor performance under various conditions. While it would not be intended to replace or duplicate the high-fidelity dynamic simulation used in major accident analysis codes such as Relap, Trac, and Trace, the course will provide the student with an introduction and a working knowledge what is embodied in these industry standard codes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER

Minimum Credits: 3
Maximum Credits: 3
This course will teach management theory and best practices associated for a successful manager in the nuclear industry. The following

topics presented and discussed: management theory and practice; ethics; generation economics across the U.S.; dispatch curves; implications of economic factors for existing and new nuclear plants and likely future changes; compensation theory and best practices; labor law issues and challenges common to the nuclear industry; contract law issues and challenges in the nuclear industry; management techniques for dealing with the diverse age groups; change management techniques and best practices in corporations; ethics challenges and issues in the nuclear field; management interactions with inpo and the nrc; project management techniques and practices; management's role in nuclear safety and security culture. Case studies of actual business situations will be studied.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS

Minimum Credits: 3
Maximum Credits: 3
Presentation of major issues associated with systems and component engineering relative to the nuclear power industry and the industry's consensus codes and standards. The course provides an explanation of the necessity of consensus codes and standards, a high-level view of codes and standards organizations, and shows how codes and standards promotes the safe operation of nuclear power plants. The course discusses how the NRC adopts and makes use of consensus codes and standards. It covers codes and standards for current, advanced and next generation, and high-temperature reactors, including global conformity assessment requirements. Relevant codes and standards from other communities, including nuclear quality assurance, are also summarized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2130 - THE NUCLEAR FUEL CYCLE

Minimum Credits: 3
Maximum Credits: 3
Studies the entire nuclear fuel cycle, beginning with the mining of uranium ores and progressing through the chemical and physical processes supporting enrichment, subsequent chemical conversion to uranium dioxide, and design and fabrication of fuel assemblies for use in a power reactor core. Aspects associated with fuel core management, operation and utilization in the reactor core along with the regulatory licensing requirements are presented. Following fuel operation the areas of fuel onsite handling, transportation of spent nuclear fuel and options for diverse long term secure storage are reviewed and evaluated. Reprocessing and recycling are discussed which includes fuel resource utilization, proliferation control, and waste volume minimization. Discussion of regulatory issues completes the picture, enabling the student to understand not only the processes, economics and industry drivers, but also the benefits and issues that have been addressed with nuclear power generation. In all phases of the cycle, the student is acquainted with the quantitative techniques and methods employed in the nuclear fuel cycle.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (ENGR 2100) or (ME 2100); PROG: Swanson School of Engineering (PENGR)

ENGR 2131 - SPECIAL TOPICS IN NUCLEAR ENGINEERING, METAL COOLED REACTORS

Minimum Credits: 3
Maximum Credits: 3
This course is intended to provide you with an understanding of the technology associated with high-energy neutron reactors (most often called fast reactors). The course materials consist primarily of archival papers from literature, the GENIV International Forum materials, my slides, and the time we spend together during lectures; a bibliography of papers relevant to these reactors is provided in the course syllabus. Although many nations' sodium-cooled reactor programs continue to be based on oxide fuel, there is a better way metal fuel. In this course, the student will become more aware of the state of high-energy neutron reactor technology. Moving nuclear power from low-energy neutron fission (water-cooled reactors) to high-energy neutron fission (metal-, salt-, or gas-cooled reactors) will revolutionize fission, just as jet engines and fracking revolutionized commercial air transportation and oil/gas production, respectively. We will focus on

metal-cooled high-energy neutron reactors, but you can easily transpose this knowledge to salt or gas systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2132 - BOILING WATER REACTOR SYSTEMS AND SAFETY

Minimum Credits: 3
Maximum Credits: 3
This course will review the fundamentals of boiling water reactor systems and operations as they apply to analysis, design, selection and application of power generation. The course will cover the evolution of BWR systems including BWR features and characteristics and containment configurations. With successful completion of the class students will understand how BWRs operate through the fundamental principals of reactor power flows and core flow."
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2210 - UNDERSTANDING BRAZIL-PREPARATIONS FOR RESEARCH AND STUDY IN BRAZIL

Minimum Credits: 2
Maximum Credits: 2
This seminar is specifically designed for students who will be doing research and/or studying in Brazil. It introduces the economic, political, social, and cultural aspects of Latin America in general and brazil in particular. The seminar is organized and conducted by the center for Latin American studies, and features guest lectures from on brazil, readings from current popular literature and news sources (available from the Eduardo Lozano Latin American collection, a library resource of over 340,000 volumes spanning 30 years), and contemporary films (such as decade of destruction: killing for land and Brazilian populations: stories and myths). The first half of the course will introduce students to day-to-day life in brazil, as well as its current socio-economic situation, the influence of politics and ethnic relations, and the many aspects of Brazilian culture. The second half will focus on disciplinary perspectives that allow students to explore regional issues from a variety of viewpoints. The final seminars in the semester will be used for the presentation of individual student reports on a topic related to Brazilian life, such as the governmental structure, university system, or integration of technology with indigenous lifestyles and traditions. This course is required for all Igert fellows.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2230 - PORTUGUESE 3 FOR ENGINEERS

Minimum Credits: 3
Maximum Credits: 3
This third semester of Brazilian Portuguese is specifically designed for engineering students who will be doing research and/or studying in brazil. The course covers technical and educational terminology through examination of Brazilian sustainable engineering case studies while further advancing the students' knowledge and ability in Brazilian Portuguese. The course will further enhance the cognitive skills of engineering students, and give them an appreciation of the interrelation of career paths, language skills, and cultural awareness. This course is required for all fellows.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2232 - MATHEMATICS OF DATA-ENABLED SCIENCE AND ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Fundamental mathematical skills as required for data-enabled science and engineering. Topics covered encompass linear algebra, probability theory, convex and nonconvex optimization, multi-variable calculus, linear and non-linear regression, kernel regression, neural networks and multi-layer perception. Applications will be drawn from basic problems in dynamical systems, including electrical circuits, hydraulics, thermal systems, and vibrations. Basic knowledge of computer programming is necessary.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2276 - ENGINEERING DESIGN FOR SOCIAL CHANGE: SOUTH AFRICA GR

Minimum Credits: 3
Maximum Credits: 3
Engineering Design for Social Change: South Africa GR
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

ENGR 2281 - CLEAN ENERGY GRID ENGINEERING: SCANDINAVIA GRAD

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

ENGR 2283 - EXPLORATION ENERGY AND ELECTRIFICATION- GRAD

Minimum Credits: 3
Maximum Credits: 3
This international GRADUATE experience course will explore energy conversion, conservation, delivery, and end-use in Brazil. Students will learn about the history of Brazilian energy infrastructure, and how it has driven Brazil's strategy to generate and use renewable energy. There will be a heavy focus on hydropower which makes up the largest percentage of Brazil's energy generation. In addition, students will explore new and emerging technologies which take advantage of other means of renewable energy. Additionally, the concept of electrification in Brazil will be explored. Electrification is the conversion of devices which classically use fossil fuels or other non-electrical energy sources to devices which use electricity as their source of energy. This phenomenon is taking place all over the world at different rates and Brazil is no exception to that. Students will visit companies who are active in electrification to study electrification in Brazil. Students will make comparisons of electrification Brazil and the United States.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

ENGR 2300 - INTRODUCTION TO MACHINE LEARNING FOR ENGINEERS

Minimum Credits: 3
Maximum Credits: 3
This course will provide an introduction to Machine learning (ML). Emphasis will be on understanding the high-level theoretical intuitions and principles underlying the ML algorithms that we discuss, as well as developing a concrete understanding of how to implement and apply ML algorithms to engineering applications. The course will first review core concepts of linear algebra and probability theory that are key for understanding and creating ML algorithms. Then we will build a toolbox by discussing essential unsupervised and supervised machine learning algorithms. Topics include modern regression and classification techniques, dimension reduction, techniques for scalable data processing, compressive sensing, stochastic optimization, and deep neural networks. Evaluation will consist of mathematical problem sets and programming projects. This course is intended for graduate students and qualified undergraduate students with a strong mathematical and programming background. While the aim is to make this class widely accessible, we require the following (or equivalent)

prerequisites: (i) Programming: Background in python programming (e.g., for loops, lambdas, debugging, and complexity) that will enable us to focus more on the concepts of Machine Learning and less on the details of programming in python. (ii) Math: Background in linear algebra and multivariable calculus (e.g., basic concepts like linear operators, norms, orthogonality, projections, eigenvectors, derivatives, and integrals).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2300 - LINEAR ALGEBRA FOR MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
Core concepts from linear algebra that are key for understanding and creating applied machine learning algorithms. Topics include least square approximation, neural networks, and matrix factorization for dimension reduction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2450 - ENGINEERING- THE GERMAN WAY

Minimum Credits: 1
Maximum Credits: 18
This course highlights the German approach to engineering from various perspectives. It is designed as mixture of in-class lectures and industrial experience in the form of factory tours. Four broad topics are addressed from the German perspective: (1) R&D management, (2) production and manufacturing systems, (3) digital factory layout and factory simulation, and (4) product-ergonomics and ergonomic aspects in manufacturing. In addition students select one of two additional options dealing with unique aspects of the German business economy: (1) the nature of cooperation between trade unions and employers or (2) the impact on technology law and harmonization on engineering in Europe.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Attributes: Pitt Class

ENGR 2451 - EXPLORATORY DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
In this course, we will learn data science and analysis approaches to identify statistically significance relationships and better model and predict the behavior of these systems. We will assemble and explore real-world datasets, perform clustering and pair plot analyses to investigate correlations, and logistic regression will be employed to develop associated predictive models. Results will be interpreted, visualized and discussed. We will introduce basic elements of statistical analysis using R Project open source software for exploratory data analysis and model development. R is an open-source software project with broad abilities to access machine-readable open-data resources, data cleaning and munging functions, and a rich selection of statistical packages, used for data analytics, model development and prediction. This will include an introduction to R data types, reading and writing data, looping, plotting and regular expressions, so that one can start performing variable transformations for linear fitting and developing structural equation models, while exploring for statistically significant relationships.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2453 - DATA SCIENCE: STATISTICAL LEARNING, MODELING & PREDICTION

Minimum Credits: 3
Maximum Credits: 3
In this course, we will use an open data science tool chain to develop reproducible data analyses useful for inference, modeling and

prediction of the behavior of complex systems. In addition to the standard data cleaning, assembly and exploratory data analysis steps essential to all data analyses, we will identify statistically significant relationships from datasets derived from population samples, and infer the reliability of these findings. We will use regression methods to model a number of both real-world and lab-based systems producing predictive models applicable in comparable populations. We will assemble and explore real-world datasets, use pair-wise plots to explore correlations, perform clustering, self-similarity, and logistic regression develop both fixed-effect and mixed-effect predictive models. We will introduce machine-learning approaches for classification and tree-based methods. Results will be interpreted, visualized and discussed. We will introduce the basic elements of data science and analytics using R Project open source software. R is an open-source software project with broad abilities to access machine-readable open-data resources, data cleaning and assembly functions, and a rich selection of statistical packages, used for data analytics, model development, prediction, inference and clustering. With this background, it becomes possible to start performing variable transformations for linear regression fitting and developing structural equation models, fixed-effects and mixed-effects models along with other statistical learning techniques, while exploring for statistically significant relationships. The class will be structured to have a balance of theory and practice. We'll split class into Foundation and Practicum a) Foundation: lectures, presentations, discussion b) Practicum: coding, demonstrations and hands-on data science work.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2460 - ADVANCED SCIENTIFIC VISUAL COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
This fast-paced course will train students to produce professional scientific visual work, suitable for publications, presentations, and communicating to the public. Advanced topics, such as 3d modeling & animation, handling and visualizing large datasets, interactive displays, and 3d printing will be covered. The course will emphasize the importance of producing high quality artwork in scientific communication. The primary tools used will be gimp, inkscape, and blender, all of which are open source, and the python programming language for large dataset visualization. PowerPoint for presentations and limited figure production will also be used.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ENGR 2600 - GLOBAL ENGINEERING TECHNOLOGY: INNOVATION AND LEADERSHIP

Minimum Credits: 3
Maximum Credits: 3
Globalization and innovation will be studied with a particular emphasis on china in conjunction with the Innovate 2011 conference. As such the course provides both the preparation for the conference and the post-conference synthesis of what was learned during the conference. The course will be jointly taught by University of Pittsburgh and rice University faculty exclusively for those students who will be delegates to the innovate conference. Guest lecturers will be invited from the two participating universities who will discuss the history, government, religion, business climate and culture of china. This course requires participation in the Innovate 2011 symposium that will visit Beijing, Suzhou, Hangzhou and Shanghai China from March 3 - 13.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2607 - SUSTAINABLE ENGINEERING IN ICELAND: CULTURE, HISTORY, AND INNOVATION

Minimum Credits: 3
Maximum Credits: 3
Sustainable Engineering in Iceland: Culture, History and Innovation (Grad). Study abroad course.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

ENGR 2625 - ENGINEERING BUSINESS COLLABORATIONS IN INDIA

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the studying modern engineering and business principles, methods, and tools, within the context of the Indian environment. The three focal areas of study are: manufacturing systems, service engineering operations, and call centers. A visit to India will showcase challenges and opportunities available at the corporate level and at the individual level in this rapidly growing economy. It will also focus on the societal impacts of new technologies and rapid expansion of engineering industries in India. Students can utilize this forum to analyze and visualize service manufacturing engineering challenges and opportunities around the world. Plant visits and interfaces with engineering students and practicing engineers will allow students to appreciate the following professional characteristics: ethics, the ability to work with others, an appreciation for other disciplines, adaptability, and an appreciation for life-long learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2630 - DESIGN FOR CIRCULAR ECONOMY

Minimum Credits: 3
Maximum Credits: 3
The current linear consumption model of raw material extraction, production, use, and disposal has dominated the global economy for hundreds of years. While an extremely wasteful approach to resource management, the linear model was tractable so long as it was employed by a small fraction of the global population, namely the developed world, so that both raw material acquisition and waste management remained economically viable. Today, we clearly see that this linear model has led to serious unintended global consequences. Circular economy (CE) offers promising solutions. CE principles are based on efficient use of resources and eliminating waste from product life cycles through clever design. Valuable material either moves in loops through the economy, or, if biologically derived, returns to the ecosystem to serve as nutrients; a truly circular economy thus keeps material in continuous use by design. The goal of this course is to provide students a thorough introduction to circular economy, along with integrating design. This course will provide students with skills and knowledge related to CE. Through experiential and project-based learning, the students will develop circular economy affinity groups that will tackle a pressing challenge including design for degradation solutions for ocean plastics and design for reuse of construction materials.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2631 - INTRODUCTION TO MINING ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
The course introduces students to: 1) the history and importance of mining, 2) the exploration and development of surface and underground mines, 3) modern mining methods and operations, 4) common mining equipment, 5) fundamentals of mine ground control and ventilation, 6) elements of coal preparation and mineral processing plants, and 7) mine health and safety management. It is designed to provide students with basic understanding of the primary elements of a mining operation and the engineering issues associated with operating a mine in a safe, effective, and sustainable manner. The mining industry is replete with technical jargon and specialized processes and machinery that require mastery by students prior to exploration of more technically complex engineering coursework. Introductory lectures and field trips help to prepare students for the rigos of studying the other mining engineering courses offered within the Swanson School of Engineering. The course introduces students to: 1) the history and importance of mining, 2) the exploration and development of surface and underground mines, 3) modern mining methods and operations, 4) common mining equipment, 5) fundamentals of mine ground control and ventilation, 6) elements of coal preparation and mineral processing plants, and 7) mine health and safety management. It is designed to provide students with basic understanding of the primary elements of a mining operation and the engineering issues associated with operating a mine in a safe, effective, and sustainable manner. The mining industry is replete with technical jargon and specialized processes and machinery that require mastery by students prior to exploration of more technically complex engineering coursework. Introductory lectures and field trips help to prepare students for the rigors of studying the other mining engineering courses offered within the Swanson School of Engineering. The course introduces students to: 1) the history and importance of mining, 2) the exploration and development of surface and underground mines, 3) modern mining methods and operations, 4) common mining equipment, 5) fundamentals of mine ground control and ventilation, 6) elements of coal preparation and mineral processing plants, and 7) mine health and safety management. It is designed to provide students

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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: (PROG: Swanson School of Engineering) or (PLAN: Geology (BS or BPH))

ENGR 2634 - ENVIROMENTAL CONTROLS IN MINING

Minimum Credits: 3
Maximum Credits: 3
The course is designed to study the environmental impact of coal, stone, and other mining operation and examine the engineering controls used to mitigate these impacts. The examination begins with the exploration and permitting of the mine site, emphasizing important environmental issues. Next, the impacts of active mining on land and water use are outlined. Most of these issues are related to subsidence impacting surface structures and water movement both at the surface and underground. To complete the mine's life cycle, closure and remediation issues are investigated. Lastly, a detailed examination of the issues associated with abandoned mined-lands, i.e. Acid-mine drainage, mass-wasting, fires, etc., Are studied. Throughout the course, engineering controls that focus on mitigating the environmental impacts of mining are acknowledged and assessed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering
Course Attributes: MCSI - Sustainability Related

ENGR 2686 - SPACE ORBITAL MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This course presents rigorous treatment of classical mechanical systems pertaining to spaceflight and orbital dynamics. Students will be able to apply mathematical treatments to Newtonian systems and in the process appreciate both physical nature and engineering feats achieved in the successful completion of space missions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2811 - INNOVATING FOR PUBLIC IMPACT

Minimum Credits: 3
Maximum Credits: 3
This course will teach students how to build products and services using lean methods. This will be done by solving real-world military and intelligence community problems. The course uses the lean launchpad platform for entrepreneurship. This is a highly customer-centered hypothesis-test approach to developing a mission modes, and is particularly well-suited for technology startups. It incorporates customer needs and user testing to build a minimum viable prototype. At the conclusion of the course, students will be able to understand the problems/needs of searching for product-market fit; understand all the stakeholders, deployment issues, costs, resources, and ultimate mission value; deliver minimum viable products that match customer needs in an extremely short time; produce a repeatable model that can be used to launch other potential technology solutions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2870 - SOLIDS PROCESSING AND TRANSPORT

Minimum Credits: 3
Maximum Credits: 3
Particle technology affects as much as 80% of the chemical process industry, yet is often omitted from the undergraduate curriculum of chemical engineers. This course is designed to give advanced undergraduates as well as early-term graduate students an introduction to this rich and diverse field. Topics will range from fundamentals (particle classification, properties, and flow) to applied (hopper design, mixing, etc. Industry related examples and designs with be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 2901 - INTRODUCTION TO ENGINEERING COMMUNICATION

Minimum Credits: 1
Maximum Credits: 1
in this course, students will learn the fundamental tools and skills for effective technical communication at the graduate level. Students will be introduced to citation tools (e.g. Mendeley, EndNote) and paper-writing tools (e.g. Word, LaTeX) during this course. Students will also learn how to produce high-quality graphics, conduct a literature review, and give a qualifying exam presentation. This course will be one credit, the old course is three credits.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

ENGR 2905 - CURRENT ISSUES IN SUSTAINABILITY

Minimum Credits: 3
Maximum Credits: 3
This course will introduce the core principles of sustainability (i.e. Social, economic, and environmental) from the perspective of several disciplines and research fields. Covering a variety of topics such as urban infrastructure, energy policy and the environment, sustainable water-use, habitat sustainability and biodiversity, the curriculum and schedule are updated annually to reflect advancements in the field of sustainable engineering and science, and to continually incorporate current topics. While the course is primarily taught by the sustainability faculty fellows it will also consist of various guest lectures by sustainability faculty and senior practitioners working throughout the Pittsburgh region. Course assignments will consist of a series of essays and assignments and culminate in a team term project. This is a required course for the undergraduate sustainability certificate and the M.S. in Sustainable Engineering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Focused, MCSI - Sustainability Related

ENGR 3000 - PREPARATION FOR AN ACADEMIC CAREER

Minimum Credits: 1
Maximum Credits: 1
This is seminar series designed for Ph.D. students interested in pursuing an academic career and within 1.5 years of graduating. Experienced faculty provide seminars and discussions on two areas: getting the desired academic position and how to be successful during the early years. Topics include, but not limited to: how to apply for academic positions, preparing for the interview, supervising graduate research, balancing service obligations, the promotion and tenure process, funding avenues, publishing and intellectual property, teaching expectations, and balancing work-life issues.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

ENGR 3001 - PREPARATION FOR THE STEM CLASSROOM

Minimum Credits: 1
Maximum Credits: 1
This seminar series is designed for Ph.D. students and post-doctorate fellows interested in pursuing an academic career and wish to gain didactic knowledge and skills related to teaching in a science, technology, engineering and mathematics (STEM) classroom. Experienced faculty provide topics and discussion based seminars.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: Swanson School of Engineering

ENGR 3002 - ADVANCED LEARNING THROUGH EVIDENCE-BASED STEM TEACHING

Minimum Credits: 1
Maximum Credits: 1
Designed for graduate students and postdocs preparing for academic careers in the stem disciplines, this course provides an introduction to the scholarship of teaching and learning (SOLT). This is the second course in a series; however, the former course (3001) is not a required prerequisite. The course will utilize material presented in a massive open online course (MOOC) available through coursera.org and sponsored by the center for the integration of research, teaching and learning (CIRTL). Participants will learn about effective teaching strategies and the research that supports them in addition to learning how to collect, analyze, and act upon their own evidence of student teaching. Topics include but are not limited to: 1. Learning through diversity, 2. Cooperative learning/peer instruction, 3. Inquiry-based labs, 4. Problem-based learning, 5. Flipped classroom pedagogy. Further, participants will learn the process for developing a teaching as research plan as well as the role of human subjects consent for classroom based research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering
Course Attributes: Hybrid

ENGR 3004 - ADVANCED PREPARATION FOR FUTURE STEM FACULTY

Minimum Credits: 1
Maximum Credits: 1
This seminar series is designed for Ph.D. students and post-doctorate fellows interested in pursuing an academic career. Specific topics can vary depending on interest, but may include preparing for faculty job applications and interviews, research mentoring practices, and advanced best practices and pedagogy in STEM teaching. Experienced faculty provide topics and discussion based seminars.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: PREQ: ENGR 3001 and ENGR 3002 or EQUIVALENT; PROG: PENGR

ENGR 3100 - ENGINEERING RESEARCH LEADERSHIP AND MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course teaches the necessary skills to be a successful researcher including skills in research formulation, funding, proposal writing, peer-review, and research management. Topics include project management, team leadership, professional communication, and professional expectations for independent researchers. A peer-review aspect of the course actively teaches the editorial and review process, and how to take a critical view of writing. This course is intended for students who intend to be independent researchers and engineering research leaders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGR 3210 - ENGINEERING SUSTAINABILITY CAPSTONE REALIZATION

Minimum Credits: 3
Maximum Credits: 3
A two-semester, interdisciplinary, team-based Ph.D.-Level capstone design course sequence required by IGERT students and other interested graduate students. The courses will require the application of rigorous analytical thinking and research investigation techniques in order to address a real-world, complex problem. The first term of the course will be at Pitt with the second term at unicamp. Project topics will be developed in combination with recommendations from various stakeholders. Research will be firmly rooted in industrial needs. The problem will build upon the combined students' acquired engineering knowledge and will require collaboration to resolve. The capstone courses will reinforce the community-building aspect of the IGERT, since students will work in teams both at Pitt and unicamp.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Related

English Composition

ENGCMP 0510 - NARRATIVES OF THE WORKPLACE

Minimum Credits: 3
Maximum Credits: 3
What do you want to be when you grow up? This course takes the cliche "You are what you do" as a starting point to investigate the intersection of narrative, work, identity, and social structure. We will read and respond to academic and literary writing and media representations of forms of labor ranging from truck driving to housekeeping to managing nuclear power plants. Along the way, we will explore questions such as, What counts as meaningful work, to whom, and why?, How do new technologies influence the organizing of work and professional identity?, and How are forms of labor intertwined with cultural ideas about gender, race, class, ability, sexuality, and age? The course also invites students to study the kinds of work and workplace cultures they hope to enter when they graduate, and to explore the connections between education and the professions.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212 or 0213 or 0214) or FP (0003 or 0006) *Applies to all WRIT Courses*

ENGCMP 0515 - PERSAUSIVE WRITING IN ADVERTISING

Minimum Credits: 3
Maximum Credits: 3
Advertising is everywhere and producing ads that are successful, memorable, and persuasive requires a specific set of tools and no small amount of creativity. This course introduces students to the art and science of persuasive writing in advertising contexts. Students will explore foundational theories of persuasion and rhetorical strategy, analyze real-world advertising campaigns across a range of media, and develop practical writing skills for print, broadcast, digital, and social media platforms. Working from an understanding of brand identity and target audiences, students will learn to craft compelling copy tailored to specific rhetorical contexts and client needs. The course balances theory with hands-on practice, culminating in an original advertising campaign.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212) or ENGCMP 0213 or ENGCMP 0214 or ENGFLM 0210 or FP (0003 or 0006) or (ENGR 0012 or 0712 or 0715 or 0716 or 0718)

ENGCMP 1906 - PROFESSIONAL EXPERIENCE: WRITING, EDITING, OR PR

Minimum Credits: 3
Maximum Credits: 3
This course offers an exciting opportunity for students who have taken at least a couple of PPW or Writing courses: Professional Experience at Sampsonia Way, the literary journal of City of Asylum/Pittsburgh. http://www.sampsoniaway.org The PPW program is

teaming up with City of Asylum to produce the magazine. The course is for responsible students who are interested in writing for this journal or running social media to promote the journal. The team will work with a teacher who will serve as managing editor and also faculty member in charge of the project. The group will learn about writing, editing, and PR while producing the online literary magazine. You can also expect to learn more about free speech and social justice while working with writers who are under threat in their home countries. Weekly meetings on campus will focus on learning about the context for the work, learning good practices for professional writing, editing, and PR, reading work by writers in exile, and workshopping your articles for publication. Interviews for articles will be in-person or via Skype. Expect to spend 10-12 hours a week working on this project. You will also need to attend class. A monthly meeting will be held at City of Asylum on the Northside (easily accessible by bus).
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212 or 0213 or 0214) or FP (0003 or 0006) *Applies to all WRIT Courses*

English Film Studies

ENGFLM 1190 - BRITISH FILM

Minimum Credits: 3
Maximum Credits: 3
This course explores the status of British film as a national cinema. It examines the forms and styles indigenous to British cinema; the relationship of British cinema to British social reality; the changes in film language, production and forms as they relate to the development of British cinema. This is a Critical Studies course and counts for Category I towards the Film and Media Studies major and minor.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis

ENGFLM 2000 - CREATIVE SCHOLARSHIP: THE FILM ESSAY

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the film and video essay as a form of both creative expression and critical inquiry. Through a series of short video projects, students will develop foundational production skills while experimenting with diverse audiovisual styles, strategies, and modes of address. The course invites students to approach their scholarship and research in ways that are more expansive and imaginative than traditional written work, encouraging them to explore diverse modes for expressing ideas and engaging theoretical questions. The course engages a wide range of practices, drawing on the work of filmmakers such as Agnes Varda, Chris Marker, Harun Farocki, Trinh T. Minh-ha, John Akomfrah, Arthur Jafa, and Larissa Sansour, as well as more recent critics and scholars who use the audiovisual to expand/challenge text-based scholarship.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGFLM 2425 - BLACK TIME: AFROFUTURISM, AFROPESSIMISM, AND BEYOND

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

ENGFLM 2451 - FILM HISTORY/THEORY

Minimum Credits: 3
Maximum Credits: 3
This course will explore issues relating to film theory, history and research methodology. We will discuss dominant modes of film criticism and explore the creation of "cinema history". We will examine different formulations of this history, tracing how certain explanations of events in cinema have come to prevail, and how certain methods of writing about film have become institutionalized.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies, Global Studies

ENGFLM 2452 - FILM HISTORY/THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This seminar will focus on the history and theory of cinema from 1960 to the present. While individual theorists and historians will be discussed (e.g. Cavell, Deleuze, Frampton, Kluge, Gunning, Mulvey), there will be special attention paid to historical and theoretical arguments within film studies, such as: psychoanalysis and theories of spectatorship; apparatus theory; historicism and archival research; film and philosophy; theories of genre, adaptation, and performance; neo-formalism and cognitive theory; and the rise of new media, from television to digital cinema and from Imax to video games. These arguments will be explored through major film movements and film-makers, taking up topics such as international art cinema, the changing Hollywood studio system, the role of political cinema, and the growing importance of documentaries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

ENGFLM 2453 - FILM HISTORY AND THE NON-THEATRICAL

Minimum Credits: 3
Maximum Credits: 3
Over the past three decades, film studies has witnessed a substantial increase in published research into the production, circulation, and uses of motion pictures distinct from the international commercial cinema that emerged at the beginning of the twentieth century. The term "non-theatrical" now describes a widely recognized but unwieldy array of film materials and practices that encompasses the histories of experimental cinema, amateur film, educational and sponsored films, medical imaging, media installations, porn, home movies, military reconnaissance, and law-enforcement surveillance. Scholars' attention to the histories of the non-theatrical has made it clear that our standard film histories were, and continue to be, highly restricted in their consideration of moving-image culture, privileging the type of object that is the basis of what Christian Metz identified as "going to the movies," the fictional narrative film. This seminar surveys the emergence and development of "the non-theatrical" within film and media studies to consider if and how this research has challenged the guiding assumptions and objectives of our discipline, and to study the ways in which the study of non-theatrical moving images might contribute to a radical rethinking of the commercial cinema and its place.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENGFLM 2454 - THE MARXIST LEGACIES OF FILM HISTORY AND THEORY

Minimum Credits: 3
Maximum Credits: 3
The international cinema emerged during a moment when the political-economic analyses of Karl Marx and Friedrich Engles were already dramatically shaping world events. Not only would cinema document these transformations, but it would quickly be enlisted in various projects shaped by modern materialist understandings of social class, historical consciousness, imperialism, class struggle, revolution, and ideology. Moreover, Marxism provided the earliest theorists of moving images a productive means of describing and instantiating modernity itself as more or less commensurate with cinematic forms and practice, While it is now a commonplace to be amused by Eisenstein's desire to make Marx's Das Capital into a motion picture, such an ambition was in no way whimsical in the early to mid-twentieth century, when the cinema became one of the most contested sites of cultural politics across ideological and disciplinary

spectrums. This seminar considers the indebtedness of film and media studies today to a long history of marxist thought and practice that remains inextricable from our histories of film and filmmaking. Readings and screenings will include key works by Marx, Engles, Lenin, Eisenstein, Vertov, Luxemburg, Lukacs, Brecht, Kracauer, Benjamin, Cai, Ivens, Ferguson, Adorno, Arendt, Mao, Gramsci, Fanon, Solanas, Rocha, Marker, Godard, Sembene, Maldoror, Althusser, Ranciere, Negri, and Hardt.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGFLM 2455 - FILM AND MEDIA HISTORIOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
This course will look into theories of film history exploring philosophies behind their social, political, economic, technological, and textual stakes. We will analyze how various forms of film history, intellectual and popular, assert their truth and credibility, and discuss how these kinds of claims might be supported and contested. We will explore the problems of writing film history, particularly in eras where little material survives for any kind of study or where language becomes a major barrier.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

ENGFLM 2457 - ETHNOGRAPHIC FILM AND MEDIA

Minimum Credits: 3
Maximum Credits: 3
This course will engage the visual and narrative strategies of the "ethnographic imagination" addressing issues of cultural representation, truth, visuality, and epistemological implications of how anthropologists and documentary filmmakers construct other cultures. We will start with the history of ethnographic cinema so as to stage a broader inquiry into forms of popular and everyday ethnography that have accompanied anthropological practice since its inception. In addition to problematizing distinctions such as science and entertainment, authenticity and hybridity, non-fiction and fiction, and self and other.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

ENGFLM 2458 - ESSAY FILM/DOCUMENTARY FILM

Minimum Credits: 3
Maximum Credits: 3
This course will explore documentary from critical and creative vantage points. Key theoretical texts from the interdisciplinary field of documentary studies will address the pertinent ethical, formal and thematic concerns.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

ENGFLM 2459 - DOCUMENTARY THEORY & PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course will explore documentary film and video from critical and creative vantage points. Students will be introduced to key discussions from within the interdisciplinary field of documentary studies while also working on individual and collaborative short documentary projects and exercises. Hands-on training in audiovisual recording and editing techniques will be provided. No prior production experience is required.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

ENGFLM 2464 - LOW LIGHT: NARRATIVE AESTHETICS OF FILMING DARKNESS

Minimum Credits: 3
Maximum Credits: 3
What narrative considerations does filmed darkness have on visual storytelling? The art form of cinema has been described as "the art of light". Within idealized conditions, the luminous expressions of color and volume of space have the ability to be transportive via illusion, or as Plato understood cinema's precursor, painting, having the ability to conceal and obfuscate. From cinema's early experiments to construct storytelling, the filmic space brimmed with possibility to control the capture of light, either in abundance or very little, enveloping audiences and extending the film frame with variations of darkness. What French new wave reintroduced through developments in soft lighting, the dynamic range of industry tools today, have allowed for an expansion in practical lighting techniques that can bathe a scene and all its filmic accouterments in projected blackness. How might the cinematics of darkness create, manipulate, and apply an alternative language for visual obscurity? Do self-imposed limits of film's exposure obfuscate narrative matters of race, sexuality, gender, and subjectivity of character(s), and the alienation of audience(s)? Can contemporary cinema be a forum for reconciling the visual politics of filming darkness? This inquiry within film and media studies can only be properly negotiated through a comprehensive catalogue of film screenings and scholarship encompassing critical theory, media theory, film analysis, cultural studies, and selected excerpts from literary fiction. The goal of this film and media seminar will be to use a combination of media scholarship and practical experiments with lighting production to draw new conclusions through critical analysis and produce additional lines of inquiry on the matter of visual evolutions in cinema today.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGFLM 2467 - CINEMA AND TRAUMA

Minimum Credits: 3
Maximum Credits: 3
Trauma studies now stands at the forefront of contemporary cultural theory, straddling such disciplines as history, psychology, philosophy, and literary criticism. This seminar encourages graduate students to examine and contribute to the rapidly emerging sub-field of cinema/trauma studies. We will focus on the two mid-twentieth century events that continue to anchor many definitions of historical trauma: the Holocaust and Hiroshima. What do films that address these events teach us about the politics and ethics of representing experiences often referred to as unrepresentable'? How does cinema force us to refigure debates about the "limits of representation" and the nature of "the event" itself? Is cinema an agent of memory or memory's eraser? A broad range of films will inform our discussion of such questions - documentary and fiction, tragedy and comedy, mass cultural successes and lesser-known art films or genre films, films from the past and present.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

ENGFLM 2491 - FILM SOUND: HISTORY, THEORY, AESTHETICS

Minimum Credits: 3
Maximum Credits: 3
Questions framing the course include the relation of sound and image, aural and visual pleasures, soundscapes and theories of shock and modernity, the relation of voice and body to subject formation, sound in silent cinema, the aesthetics of analog and digital sound in cinema, sound technologies and imperialism, theories of non-cinematic audio technology such as radio and gramophone, debates over the ontological status of recorded sound, film sound and space, sound in documentary cinema, and culturally specific theories of sound.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGFLM 2493 - MEDIA/ECOLOGY

Minimum Credits: 3
Maximum Credits: 3
This seminar with explore media theory and practice through the lens of ecology. From the late twentieth century to the present, ecology as a scientific discipline and set of cultural narratives has risen to the forefront of knowledge production as a way to study and understand complex biological systems, their environments, and their internal dynamics. During the same period, media systems have grown exponentially in complexity until they too have begun to exhibit some of the behaviors of ecological systems, including self-organization, feedback, evolution, and emergent properties. The term "media ecology" captures both this new, nonlinear systems approach to understanding media itself as well as the intersection between natural ecosystems, the technological assemblages with which they are intertwined, and the human (and non-human) subjects that are produced molded within these structures. This seminar will explore both media that interface with natural ecosystems as well as works and theory that approach mediation from an ecological and systems theoretical perspective. The secret life of information, contagious media, and the post-natural ecologies of our present and future will challenge us to conceive of Media and Ecology as a single coupled system: the emblem of our contemporary environment and an important frontier in media studies of the present. Graduate students from all disciplines are welcome. Participants may optionally produce creative projects in lieu of a seminar paper, in any medium.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGFLM 2496 - MEDIA AND MOBILITY

Minimum Credits: 3
Maximum Credits: 3
Mobility has been one of the central functions and consequences of media technologies, from papyrus in ancient history to mobile phones in the digital era. This seminar seeks to conduct a thorough theoretical mapping between media and mobility, creating a productive framework in which media can be examined through the ways in which they facilitate, mediate, and regulate various modes of mobility of humans, things, and ideas.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

ENGFLM 2550 - SIEGFRIED KRACAUER AND THE ORGINS/FUTURES OF FILM AND MEDIA STUDIES

Minimum Credits: 3
Maximum Credits: 3
Siegfried Kracauer (1889-1966) is now widely regarded as one of the most important and innovative theorists of film and media studies. But this was not always the case, as he was overshadowed for decades by his more famous German Jewish contemporaries Theodor Adorno and Walter Benjamin. What Kracauer offers us now is a unique bridge between the classical origins of film and media theory in the 1930s-1960s and the possible futures for those theories today. Kracauer's remarkable career included fleeing Hitler's Europe and eventually arriving in New York to establish himself as a fellow traveler with major intellectual figures such as the film critic Robert Warshow, the art historian Meyer Schapiro, and the political theorist Hannah Arendt. In this milieu, Kracauer's work blazed trails across topics as varied as spectatorship, experience, genre, aesthetics, history, and realism, as well as media forms as diverse as film noir, fascist propaganda, animation, documentary, and photography. In this seminar, we will explore Kracauer's texts and contexts in order to grapple with urgent questions in film and media studies now.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGFLM 2662 - GENDER AND SEXUALITY IN ARAB FILM

Minimum Credits: 3
Maximum Credits: 3

This seminar pries open a window into the ways that gender and sexuality are understood, imagined, embodied, and practiced in the Arab-majority region. Rather than arriving at totalizing definitions, the seminar explores, through a transnational approach, how filmmakers from Arab-majority countries and their diasporas have adopted, throughout different periods, a multitude of approaches and strategies in tackling questions of gender and sexuality in realist, allegorical and experimental ways. We will unpack diverse film and video works to see how these filmmakers have responded to major political, social, and religious events and contexts, such as the Arab Spring and the Arab Israeli conflict.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGFLM 2695 - HORROR FILM

Minimum Credits: 3
Maximum Credits: 3
This seminar will investigate the key films and critical discussions surrounding the genre from its beginnings to the present, but not merely to perform a genre survey- instead we will use horror as a lens to ask wide-ranging questions about spectatorship, theory, history, aesthetics, and politics that have shaped and continue to transform film studies in profound ways.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

ENGFLM 2705 - THE (RE-) ANIMATED HUMAN

Minimum Credits: 3
Maximum Credits: 3
What is the human? What are the inclusions and exclusions of this category? How is it imagined with, through, and against mechanical technologies? This seminar considers these questions and more through a pairing of humanist and post-humanist theories alongside scholarship in new media studies with particular emphases on the broadly defined field of animation studies. We will look at how films and new media technologies animate and give body to changing understandings of the human and/as a cultural, biological, and mechanical entity. We will also look at how discourses of mechanical technologies inflect and draw from imaginings of non-Human and para-Human Others through theories of Blackness and Asianness. The course takes a transnational scope with key nodes in the U.S. and Japan. Lessons will span and juxtapose topics in cybernetics, artificial intelligence, speculative fiction, the gendering of machines, the history of race sciences, animation as medium and metaphor, and global media ecologies. The seminar will require works of scholarly writing as well as facilitate experimental and creative exercises to encourage students to think about the cross-section of theory and praxis in their approach to the critical project of the human.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

English Literature

ENGLIT 0618 - WAR

Minimum Credits: 3
Maximum Credits: 3
This course explores literary and cultural texts variously engaged with war. Global in scope and perspective, the course considers the relationship between violent conflict and representation across a range of particular wars at different moments in history. Students will explore diverse views of war, such as those of artists and governments, civilians and veterans, survivors and victims. Along the way, the course will address such questions as: How do writers and artists respond to war? What is war's relationship to other forms of conflict, such as terrorism or revolutionary violence? What distinguishes times or war from times of peace?
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

ENGLIT 1009 - J.R.R. TOLKIEN AND COUNTERCULTURE

Minimum Credits: 3
Maximum Credits: 3
This course studies the persona, work, and critical and popular reception of J.R.R. Tolkien (1892-1973) from his initial publication of The Hobbit in 1937 through today. In the 1960s and '70s, people were scribbling "Frodo Lives" on subway walls and getting married dressed like Aragorn and Arwen. Less than half a century later, The Lord of the Rings repeatedly beat out the Bible as "best-loved" book in British polls, and Peter Jackson's adaptations made history both for their box-office earnings and for their groundbreaking contributions to film-making. Widely recognized as the father of modern fantasy and touted as the "Author of the [Twentieth] Century" by scholars, Tolkien continues to exert a panoramic influence on culture, particularly in his ability to speak to and for the marginalized. From Comic Con to Elder Scrolls to Game of Thrones, his sub-creation of Middle-earth embodies and fuels "nerd" culture now just as it did for the hippies of the previous century. Yet, Tolkien " war veteran, Oxford professor of Medieval languages and literature, devout Catholic " was a man of his time and quite conservative, at least publicly. While he famously said that his wife "should be satisfied by devotion to her children" and not "enter the intellectual side of life," the female characters in his stories, while small in number, are arguably great in power, assertiveness, and heroism. Tolkien's writing argues for the importance of a community where all cultures coexist: Elves, Dwarfs, Men, Hobbits go to war against Sauron and the "One Ring" designed to "rule them all." In this course we will read Tolkien's major works, The Hobbit and The Lord of the Rings in their entirety, as well as excerpts from what he considered to be his master work, The Silmarillion. We will explore Tolkien materials housed in Special Collections at Hillman Library and online. Our reading list will include reviews and scholarship on Tolkien's life and work, as well as on the ways in which his mythology continues to resonate and be reimagined in the twenty-first century. Ultimately, we will analyze the relationship between Tolkien and the counterculture as a way of understanding the ways in which myth, fantasy, and literature more broadly represent, shape, and interrogate complex social and political systems.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212 or 0213 or 0214) or ENGFLM 0210 or FP (0003 or 0006) or (ENGR 0012 or 0712 or 0715 or 0716 or 0718)

ENGLIT 1135 - LITERATURE, MEDIA, AND SCIENCE IN THE AGE OF SHAKESPEARE

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to the broad range of styles, genres, and concerns of literature written in English in the early modern period, particularly the 17th century. The designation "early modern" is capacious enough to straddle the renaissance as well as the early enlightenment. Readings could include English writers, writers from the Americas, and writers who composed in English but wrote about countries other than England, Ireland or new England.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis

ENGLIT 1360 - TOPICS IN 20TH CENTURY LIT

Minimum Credits: 3
Maximum Credits: 3
Considers thematic, formal historical or cultural topics in late 19th and 20th century literature. It ties these issues to critical and social concerns in international modernism and post modernism.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis

ENGLIT 1600 - DIGITAL METHODS FOR HUMANISTIC RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Texts hide secrets from us humans that are manifestly obvious to computers: all we need to do is crack the code. This course teaches students with zero coding experience to use computers to reveal hidden insights from digitized texts. Students will learn to make those texts

"speak" by transforming them into dynamic visuals and interactive websites: in this manner, Hamlet becomes a chart of gender-coded language; a history of Rome becomes a map of the empire's most frequently referenced battles; and much more. Over the course of the semester, students will apply digital methods to a research project of their own choosing. In addition to adding a valuable tool to their research repertoire, students will leave with coding and web design skills highly sought after in other career contexts.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

ENGLIT 1910 - SENIOR SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Intensive study of a single topic or figure that assumes previous work in related literary historical and critical areas. Each seminar moves toward a final paper that integrates earlier literary study with the specific critical perspective developed in this course.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212 or 0213 or 0214) or FP (0003 or 0006) *Applies to all WRIT Courses*

ENGLIT 2003 - LITERARY STUDIES

Minimum Credits: 3
Maximum Credits: 3
This course examines topics in literary studies in relation to current developments in the field of literary studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2004 - INTERDISCIPLINARY METHODS IN LITERARY STUDIES

Minimum Credits: 3
Maximum Credits: 3
A recent trend in literary studies is balancing our consideration of the textual and discursive elements of literature with attention to various aspects of its materiality, as well as its relationship to questions of ontology, embodiment, and lived experience. An exciting part of this development is increased integration of interdisciplinary methodologies, especially archival work and ethnography, into literary research. In this course, we'll learn about the scholarly movements and theoretical conversations shaping this turn, while learning practical ways to engage the material and embodied in our own scholarship. We will be inspired by work in various fields, including book history, childhood studies, Black studies, gender studies, global/postcolonial studies, and American studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2005 - SPECIAL TOPICS IN LITERARY STUDIES

Minimum Credits: 3
Maximum Credits: 3
This seminar studies the most important recent developments in the fields of literary and cultural criticism. It both introduces students to a range of topics, methods, and theories and explores deeply the historical, conceptual, and societal significance presented by all these. The course introduces students to, and helps them learn to evaluate, the most important contemporary work in English studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2041 - PUBLIC HUMANITIES

Minimum Credits: 3
Maximum Credits: 3
This course has two goals: 1.) to explore what the term "public humanities" means; and 2.) to help graduate students in the humanities connect their academic work to public spaces and organizations. With regard to the first goal, our readings and discussions will focus on questions such as: What are the humanities? Are they publicly valuable? If so, are they publicly valuable in ways that differ from other academic disciplines? With regard to the second goal, the course will involve frequent guests and site visits to cultural institutions that will allow students to see the humanities at work in local spaces. Students will also be responsible for designing and executing a public humanities project during the term. The projects will require that students engage with public spaces in developing their work, but will depend on students' prior experience with public humanities for their specific content. Students with a significant degree of public humanities experience may wish to create and implement a collaborative humanities- or arts-based project with a local cultural institution. Those just beginning to think about the relationship between their academic work and non-academic spaces may wish to explore opportunities for public engagement that fit their research interests and methods. Whatever the case, students will work to better formulate the relationship between their academic work and public spaces, and design and/or execute projects based on these formulations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2046 - SCIENCE, HUMANITIES, AND PUBLIC ENGAGEMENT

Minimum Credits: 3
Maximum Credits: 3
The current pandemic seems a good time to consider the relationship between science and democratic decision-making. In this course, we will explore theories, methods, challenges, and challenges of public deliberation, especially with respect to science and technology. The course will be offered in conjunction with an art exhibition called Art's Work in the Age of Biotechnology that will take place online in spring 2021. By presenting works in which artists appropriate tools and techniques that have until recently been the exclusive purview of scientists, the exhibit invites viewers to consider what they want from genomic technologies, and why. Similarly, the course invites students to articulate what they want from community engagements, and then put their ideas into practice. We will draw on the exhibit as an opportunity to experiment with a variety of models of interdisciplinary collaboration and public scholarship.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2122 - AUTOMATING WRITING FROM AMANUENSES TO ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
This course counts as a DSAM elective and for the Composition Certificate We swim in a sea of writing, much of it written by algorithms rather than humans. Automated Writing Systems (AWS) that employ natural language processing techniques are currently used to amplify political messages on social media, to convey sports and financial statistics, to generate click-worthy headlines, as smartphone chatbots, and as creative writing aids. Whether or not we use them ourselves, AWS are shaping the circulation of our writing and the environment in which we read. This course is a historical and technical dive into why people have developed AWS, what challenges AWS offer, and how to implement AWS using natural language processing and public data sets. The course brings histories of gender and race in writing automata, office automation, and amanuenses in conversation with contemporary questions in artificial intelligence to ask: whose intelligence is being automated or simulated and how? We will explore: what writing is; power dynamics in writing; the limits of what computers can do; and the relationship of human consciousness to computation. Hands-on work in AWS-related systems include basic programming; Tracery (using Javascript) and InferKit (using GPT-2); Twitterbots; Conway's game of life; the Leibniz cipher machine held by ULS. Readings include historical studies of writing automata such as the Maillardet Automaton, creative work with AWS such as Lillian-Yvonne Bertram's Travesty Generator, and theoretical work in AI by Alan Turing and Joy Buolamwini. Assignments include reading histories of AWS, writing short blog posts analyzing different historical and contemporary AWS or their products, and playing with algorithms and datasets such as GPT-2 (an AWS that uses machine learning and which is publicly available in a scaled-down version). The final project for the course asks students to break the boundaries of the class: develop a unit to teach something you learned here in Pitt undergrad English courses such as Composing Digital Media or Narrative and Technology; an online creative project using automated writing; a public art project; or a workshop for others. Students will get both a theoretical and practical introduction to automated writing

systems in this course. No prior technical expertise is required, though a willingness to play around with technical systems is.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2124 - WRITING IN GLOBAL CONTEXTS: TRANSLINGUAL AND MOBILITY PERSPECTIVES

Minimum Credits: 3
Maximum Credits: 3
The global flows of capital, information, artifacts, and people have increasingly made us aware of our multilingual reality. Simultaneously, enactments of physical and imaginary "borders" have permeated discourses that seek to restrain such movements. Although language use in classrooms and communities has always been multilingual, increasing linguistic and cultural heterogeneity of students enrolled in US institutions of education has renewed research interests in understanding students' literacy repertoires as mobilized and negotiated. In writing studies particularly, a conceptual turn toward translingualism has shifted our view of language and cultural differences as assets for student learning and objects of scholarly inquiry. Such attention indexes broader moves in literacy studies to conceptualize literacy as implicated with global and local forces, mobilized across languages, genres, and modes, and dynamically negotiated across life worlds. This course will introduce research that theoretically and methodologically explores a phenomenon that is rapidly changing: acts of geographical, linguistic, cultural, and disciplinary border-crossing as an important dimension of our literacy lives. How do writers make sense of their experiences and life worlds across languages, modalities, and spaces? How do researchers follow literacy practices on the move? What do principles of translingualism and mobility theories suggest about pedagogy? These are some of the questions that we inquire by way of readings across rhetoric and composition, literacy studies, and applied linguistics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2125 - GAME STUDIES

Minimum Credits: 3
Maximum Credits: 3
This interdisciplinary seminar will explore the key relationships between play, social and technological mediation, narrative, and visual culture. It will provide a wide-ranging survey of game studies, from foundational texts in play studies through the central debates in video game studies to the most recent scholarship on gamification, tabletop gaming, identity, and scale in the rapidly expanding field of game studies. Topics covered will include the history of gaming and ritual, play and childhood, emergent and environmental narrative, gamification and capital, game theory, artificial intelligence, video games, tabletop games, gaming and scale, gaming and gender, games and empire, agency, gaming and environment, cooperative gaming, and game design as an artistic medium. We will explore why games are not only a key form of cognitive mapping in digital control societies, but also significant sites of creative expression, and perhaps most significantly, a vital paradigm to critically engage agency, identity, and decision making in the twenty-first century. The underlying argument will be that we cannot understand how power, capital, or media more generally function today without a critical theory of play and games. It is no accident that capitalism has gamified itself, nor that games have become the dominant form of narrative media on a global scale. Students from all disciplines are welcome. Final projects can be analytical (a paper or other form of media) or creative (a game or interactive fiction). Regardless of whether your goal is to engage games as cultural objects within your scholarship, to work creatively within a modality of play, or to broaden your critical methodology, my intent is that as a group we will all think, play, and create together.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2141 - MAKING AND UNMAKING THE BOOK

Minimum Credits: 3
Maximum Credits: 3
This course is a historical, practical, and creative introduction to one of the most important media forms in human history-the codex book. You will have the chance to design your own books and to create the various components of books, including making paper, setting movable type, inking and printing on a letterpress printer, and learning to stitch and glue book bindings. You'll have lots of support along

the way, including working with the wonderful staff in Pitt's Text and Context Lab. At the same time, we will study and discuss the material and cultural history of books, including a process of Western canon-formation that moved from the publication of the first printed bibles to the treatment of certain English literary works as quasi-sacred texts. After tracing how this influential view of the book was formed, we will turn to various modes of "unmaking" the book, from artists' books to poetry such as M. NourbeSe Philip's Zong! As we trace the material history of books, another central theme will be the relationship between words and images: Are different processes used to produce them, as when movable type would be combined with woodblock printing in the first European printed books? Or are they combined, as with William Blake's illuminated printing or graphic novels such as Alison Bechdel's Fun Home? Other case studies will include literary, artistic, and political examples of many kinds of print publications, including medieval illuminated manuscripts, early modern poems and plays such as Shakespeare's, illustrated religious and political broadsides, pop-up and other children's books, and many other of modern forms-such as zines, chapbooks, and art books. Students from all departments and programs are welcome, and you will have a chance to develop independent projects on topics of personal interest to you.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2161 - CARIBBEAN WATERS: POLITICS AND POETICS IN THE ANTHROPOCENE

Minimum Credits: 3
Maximum Credits: 3
This seminar will pursue two related lines of inquiry: First, it will study the contemporary planetary water crisis through the lens of the Caribbean. What concepts does the Caribbean yield that might provide useful alternatives to some dominant approaches to the Anthropocene? How do contemporary struggles around water fit with longer histories of extractivism? What dialogues can we create between Critical Ocean Studies and the study of the politics of freshwater? What genres of history, reportage, and art shape our imagining of Caribbean waters--and how do we respond to generic and archival absences? For example, what representational alternatives might we find to the spectacularization of both beauty and disaster that is familiar from so many representations of the global south? Second, as scholars located in the global north, we will ask what forms of allyship, documentation, witnessing, and amplification can we practice in support of the global south? What does public engagement or the engaged humanities look like when the site of engagement is not local (a particularly resonant question for Global or Transnational Studies)? How does one practice an immersive scholarship from across an ocean? What affordances and pitfalls do the digital humanities offer in such a project? Our seminar will engage several Caribbean archives and artistic and activist practices--both born-digital ones and ones that have resisted digital mediatization. A workshop with visiting artists or poets will be woven into the course, and we will experiment with various poetic and visual forms, playing at the meeting point of case-study, data, and art.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2187 - DATA AND DISCIPLINE

Minimum Credits: 3
Maximum Credits: 3
What does it mean to "join a discipline," and what methods or evidence can we marshal to find out? What does a disciplined approach to data-gathering or analysis look like in a humanistic context? In the first part of the course, we will use these and related questions to interrogate the two key terms of the title in relation to one another. Readings will be drawn from Rhetoric, Composition, and Writing Studies (e.g. Mueller;¿Kynard; Malencyk et al), Digital Humanities (e.g. D'Ignazio and Klein; Goldstone and Underwood; Sugimoto and Weingart), and critical theory (e.g. Foucault; Ferguson), but the methods are applicable to any disciplinary self study, and all are welcome. The final project for the course is a draft of a data-supported article investigating questions about a discipline or subdiscipline, which we'll develop together starting around midterm. Students are encouraged to work on these article drafts in groups, depending on shared interest. In the second part of the course, we'll work through data labs and writing studios to develop the skills to translate questions into analyses and outputs into arguments. Students will leave the class with a better understanding of how datasets are constructed, with what ethical trade-offs; how to filter, sort, merge, and summarize rectangular datasets using R and/or OpenRefine; how to visualize and summarize simple networks in Gephi and/or Cytoscape; and how to visualize various aspects of textual corpora using VoyantTools. No prior experience with any of these tools or platforms is necessary.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ENGLIT 2237 - CATASTROPHE NARRATIVES: NATURE AND EMPIRE IN AMERICA

Minimum Credits: 3
Maximum Credits: 3
This course will explore the relationship between imperial expansion and ecological catastrophe in the Americas. Rather than reading eco-apocalypse as a future possibility, we will instead attend to the legacy of land theft, environmental degradation, and mass extinction that has been central to the American settlement project from its origins in the seventeenth century to the present. We'll begin the course by grounding our analysis in critical work on environmental crisis by critics such as Kathryn Yusoff, Tiffany Lethabo King, and Leanne Betasamosake Simpson to attend to the following questions: What is the relationship between human-made catastrophe and natural disaster? How do writers grapple with, and address, the different scales of environmental trauma - structural, generational, and individual? And what tools for survival and subsistence can we draw on in the wake of these large-scale events? By drawing on work in critical race studies, settler colonial studies, indigenous studies and eco-criticism, we'll develop a theoretical background in narratives of crisis, identifying catastrophe narratives as one of the main genres of American writing. Our case studies may include writing on pollution and environmental racism in contemporary American cities, conversations about land conservation and indigenous sovereignty at the founding of the National Park System, Protestant theology and Christian "land stewardship" in early colonial writing, and accounts of indigenous resistance such as Nick Estes' Our History is the Future (2019). We'll conclude with utopic visions of eco-apocalypse and land reclamation in the novels of Cherie Dimaline and Octavia Butler. By reading catastrophe as its own genealogy of modernity from the early modern period to the present, we'll consider the ways that writers have grappled with the large-scale shared and unshared crises of America's contemporary settlement moment. This course is inherently interdisciplinary, featuring work from scholars in the fields of geology, political science, literature, sociology, cultural studies, and anthropology. Students from across the humanities and humanistic social sciences are welcome and may conduct research that is relevant to their ongoing work in their home departments as they respond to the larger conceptual and thematic engagements of the course. Students will also be able to focus on the genre of writing, and critical or disciplinary framework, that is most relevant to their work in the final weeks of the course. There will be many opportunities throughout the semester for constructive feedback and one-on-one mentorship.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2238 - TELL/IN' THEORY: BLACKNESS IN THE DIASPORA

Minimum Credits: 3
Maximum Credits: 3
Destabilizing boundaries between creative and analytical, performative Black thought demonstrates means by which Black(ened) peoples challenge ways intellectual acts might be conceived. Notions of diaspora, similarly, blur static markers of identity to question claims of place-based belonging. In this course, participants will engage texts from across the Black diaspora that theorize through telling. We will, as they, explore and meld rhetorical possibilities of autoethnography, memoir, poetry, academic criticism, and more, blurring conceptions of received genre in generative knowledge making.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2239 - BLACK CRITIQUE AND THE BLACK RADICAL TRADITION

Minimum Credits: 3
Maximum Credits: 3
This seminar will explore the advent and unfurling within modernity of a distinctive set of critical practices and thought that have over the centuries given expression to radical political events, such as the Haitian Revolution, as well as political movements, such as the Black Panther Party, and Black Lives Matter. In other words, we shall engage two questions: that of critique, asking whether it is an activity essential to the continued pertinence of the concept of revolutionary republicanism. Second, whether at this current conjuncture, radicalism is the best purchase from which to engage critique. In taking up this interrogation, we shall engage a wide array of texts, from political theory and social critique to literary representation, across multiple media, including those of image and sound.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2260 - BLACK WOMEN'S PRINT CIRCUITS

Minimum Credits: 3
Maximum Credits: 3
Whether described as a flourishing, an explosion, or a blossoming, the renaissance of African American women's writing that began in the 1970s is now commonly accepted as the starting point, if not a signature feature, of what we consider the long era of contemporary African American literature. Engaging in bibliographic, archival, and critical work situated at the intersection of textual scholarship and African Americanist criticism, we will examine the gendered dimensions of late-twentieth-century African American print culture by studying the conditions of publication and distribution of black women's novels, short stories, poetry, drama, manifestos, periodical work, anthologies, and essays.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2261 - QUEER WOMEN OF COLOR RADICALISM

Minimum Credits: 3
Maximum Credits: 3
What if we approached the historical and theoretical traditions of activism, feminism, and Marxism using queer women of color as our starting point? We will address intersectional theory derived from Kimberly Crenshaw's legal discourse and how questions of subjectivity have been raised by scholars such as Jennifer Nash and Maria Lugones. However, the course takes its departure from earlier writings by queer women of color in the 1970s and 1980s that resisted multiple oppressions and placed class struggle as a central to social change, including Audre Lorde, Cherrie Moraga, Alice Walker, Gloria Hull, Patricia Hill Collins, and the collective writings from This Bridge Called My Back, the Combahee River Collective Statement, The Black Woman Anthology, and Keeanga-Yamahtta Taylor's How We Get Free. Using this collection of voices as our starting point, we will then look at recent issues and debates in activism studies, contemporary Marxist theory, and the crises of global capitalism, privileging indigenous and grassroots approaches to social change.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Gender, Sexuality & Women's St

ENGLIT 2262 - THE ART AND PHILOSOPHY OF TONI MORRISON

Minimum Credits: 3
Maximum Credits: 3
Toni Morrison has passed but her voice will remain with us for eternity. The ambition of this course is to read with care and precision Morrison's iconic prose for their insight, power, resonance, and perhaps most of all their beauty. There is material here that is shocking, triggering, angering, funny, hopelessly sad, and confusing but also thick with philosophical import. We will study these novels as literature that has much to say about philosophical questions like freedom, self-making, death, race, gender, and the beautiful and the sublime.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2263 - SYLVIA WYNTER'S CONCEPT OF HOMO NARRANS: STORYTELLING AS SPECIATION

Minimum Credits: 3
Maximum Credits: 3
In this seminar, we will read widely across Sylvia Wynter's writings from early works such as "Beyond Miranda's Meanings: Un/silencing the 'Demonic Ground' of Caliban's 'Woman,'" "The Pope Must Have Been Drunk, the King Of Castile a Madman: Culture as Actuality, and the Caribbean Rethinking Modernity," and "On How We Mistook the Map for the Territory, and Re-Imprisoned Ourselves in Our Unbearable Wrongness of Being, of Desetre: Black Studies Toward the Human Project" through to Black Metamorphosis. Our focus will be on her concept of homo sapiens as a hybrid storytelling species, which she designates interchangeably as bios / mythoi and homo narrans. In the course of carefully analyzing the centrality of that concept to her theory of indigenization, we will study it comparatively in relation to other accounts of the black radical tradition, such as Frantz Fanon's poetic invention, C.L.R. Jame's concept of the artist as

revolutionary, Edouard Glissant's poetics of relation, and George Lamming's radical imagination.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2264 - BLACK RHETORICAL HISTORY:SEMINAR IN RHETORIC

Minimum Credits: 3
Maximum Credits: 3
This course takes shape around varied perspectives on the history, influence, and perseverance of the African American rhetoric tradition. Our exploration, while historical in focus, will underscore how Black rhetoric functions through its cultural expressions, and how these expressions are grounded in African American cultural values, rhetorical and literary transactions, and literacies of the world. While we will read scholarship on Black rhetoric, our endeavor will also explore primary and archival texts and the use of public mediums, such as in the epideictic tradition and newspapers. Thus, this course is interested in how Black Africans and their descendants operationalized English in their efforts to stake claims of agency, citizenship, justice, and humanity. These efforts will help shape our understanding of Black rhetoric as a generative rhetorical praxis that's about making lives better throughout the United States' history. Our engagement is organically multidisciplinary as we will engage a variety of themes in Black rhetoric history; thus, our exploration will be useful to students in composition and rhetoric, literature, communication studies, education, history, and film and media studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2265 - DIGITAL RHETORIC

Minimum Credits: 3
Maximum Credits: 3
This course introduces graduate students to the joys, thrilling possibilities, and frustrations of producing rhetoric and composition scholarship in digital formats. We will read/watch/listen to/engage with scholarship that theorizes the creative and intellectual processes behind the blending of digitality and research. We will also engage with peer-reviewed article-and-book-length projects that push at the boundaries of what rhetoric and composition is and can become as it embraces digitality. As the semester progresses, students will work on their own digital projects in a studio-style creative environment where we pool our knowledge and ideas to help projects emerge in ways that suit the author's vision while meeting (and/or knowingly subverting) its target audience's expectations. You do not need to have any experience with or knowledge of digital production to enroll in this class. We will develop those skills together as we enact and experience the theoretical issues we're learning about through course texts. Final projects will be aimed at publication in a digital journal in our field selected by each author-Kairos, Enculturation, constellations, Computers and Composition Online, Present Tense, Peitho, and more. As students craft their projects, we will analyze (and follow) the instructions their selected journal provides for submissions in their chosen medium. At once experiential and theoretical, this course aims to help build a community of digital producers who collaborate in future projects for years to come.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ENGLIT 2266 - PICTURING THE BLACK BODY: ARCHIVE, INVENTION, HISTORY, AND PUBLIC

Minimum Credits: 3
Maximum Credits: 3
This seminar will consider the Black lived experiences as the praxis for doing visual rhetoric-the study of how images mean, act, and sound-through the Black body. This consideration stems from the claim that 'rhetorical contingency', a condition for knowing what images mean and do in rhetorical studies, often excludes the Black ways of being. This exclusion suggests that the Black body almost always already means what is assigned to it without its lived experiences. We will reflect on the tension between the Black body and visual rhetoric, noting its implications for rhetoric: That rhetoric's view of the Black body is often predetermined, and that rhetoric as such is not always a reasoned practice and discipline. We will explore colonial archives and photographic camera inventions to account for these exclusionary practices. First, colonial archives will be regulated repositories of Black photographs which reaffirm or recreate the Black body as capital, void, obsession, and in zoological terms for public consumption. Second, we acknowledge that the invention of the digital and analog/manual photographic cameras does not accommodate the diverse Black skin tones, an exclusion that often depicts the cameras

as inherently biased technologies. We will introduce colonial, postcolonial and decolonial theories that center on Black ontology for two reasons: i) to explain the exclusionary practices in visual rhetoric and ii) to restore the Black body to its agentive human subject. To accomplish these goals, we will implement multiple projects and activities: develop visual grammar from our readings and photographs, apply this grammar to analyze a wide range of archival photographs and their corresponding camera devices, collaborate with an art historian/tech professional/photographer to compose a persuasive proposal on the inclusive photographic cameras for dark skin tones, design a visual agentive Black human subject, and write a short essay that offers new directions for visual rhetoric. Through this seminar, graduate students will learn how to do rhetorical history, theory, and criticism, and familiarize themselves with the interdisciplinary conversation between Africana studies and rhetorical discipline in a transnational and transcontinental context.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2270 - AI CULTURES

Minimum Credits: 3
Maximum Credits: 3
This interdisciplinary seminar will grapple with the cultural histories and futures of Artificial Intelligence as it has been represented in fiction, influential texts by the pioneers of AI, media corporations, and popular culture. We'll study the history of AI as a cultural imaginary, as a research program, and as a corporate paradigm. We'll examine the relationship (historically and in the current moment) between labor and AI. How does AI function simultaneously as a tool for humanity, a replacement of humanity (as affect, as creativity, as labor), and as a speculative end of humanity? Can AI be truly creative? In an AI saturated media ecology, what will be the role of human-created art, literature, and thinking? Does AI challenge what it means (philosophically or pragmatically) to be human? The meaning or status of knowledge? The nature of agency? How will AI reconfigure identity categories such as race, gender, class, and sexuality? How does the loss of media dynamics such as verifiability, authenticity, and provenance effected by AI challenge the role of authorship, citizenship, the ethics of media production, and the future of democracy? We will also discuss professional concerns, such as how AI will transform the humanities and social sciences, universities in general, and students' commitments to values such as originality, critical thinking, and long-form information processing (reading). We'll consider the relationships between AI and misinformation, neofascism, and political futures. An overarching question will be how AI challenges or even forces the humanities to function at different scales in order to retain a place for its core values. How might the human (and the humanities) need to evolve and adapt as AI colonizes more and more functions of the human? Beyond corporate techno-optimism, is there a version of AI that could enhance human agency and experience in a meaningful way? For primary sources, I'll draw upon my extensive research in the history of AI, as well as published texts from AI practitioners, as well as critics of AI. We'll read short stories and novels that have given voice to humanistic concerns about AI, as well as watch a number of films that have prominently and influentially featured AI characters, shaping our collective narrative of what AI is or can be. My goal is to mount a multi-disciplinary study of AI as a cultural paradigm that has already radically transformed our cultures over the past 75 years, to help us understand the past and chart our way through its radical futures. I welcome students from all disciplines who wish to incorporate an understanding of or a response to AI in their academic and creative work.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2320 - CARIBBEAN ENVIRONMENTAL IMAGINATIONS

Minimum Credits: 3
Maximum Credits: 3
What do our postcolonial and global solidarities invite us to learn about places in the global south? How might we situate our scholarship in dialogue with such places and with their cultural and intellectual histories? How can thinking about the specificities of place deepen our theoretical generalizations? And how does postcolonial studies itself change if we think from the perspective of islands and archipelagoes rather than subcontinents and continents? Since the Caribbean (and the New World more broadly) were key to the making of capitalist modernity, we will address the above questions by exploring the environmental imaginations of Caribbean literature as it responds to the inextricably linked (post)colonial histories of extractivist, environmental, and epistemic violence. Caribbean writers have found extraordinarily inventive and wide-ranging ways to navigate both archival erasures and dominant representations of the Caribbean as picturesque paradise or as place of tragedy or disaster. We will study their environmental maneuvers across several different genres and forms--from realism to speculative fiction to epic to satire, from theater to literary essays to allegory to "small" forms such as the vignette, the fragment, patwa proverbs and creole voicings, short ekphrastic poems, and postcards. We will explore the affordances of each genre for framing and resolving environmental considerations: what vocabularies for environmental witnessing and repair do particular genres offer? How do they approach problems of representation, knowledge, agency, and political desire? For example, how might the politics of water

be treated differently in a realist novel, a found poem drawn from a newspaper article, a postcard, and a visual poem? Our readings will focus on the Anglophone Caribbean, Puerto Rico, Haiti, the Atlantic, and the Caribbean diaspora. Writers will include Nobel laureate Derek Walcott; Jamaican poet laureates Lorna Goodison and Olive Senior; Kei Miller; Marlene NourbeSe; Jacques Roumain; and Aliyah Khan. Our theoretical interlocutors include Michel-Rolph Truillot, Rob Nixon, Isabel Hofmeyr, Elizabeth DeLoughrey, Yarimar Bonilla, Deborah Thomas. Assignments will include a presentation; exploratory, academic, and public writing; and short writing exercises in different genres.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2321 - TRANSLATION AND WORLD LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine the role of translation in the construction of world literature, defined for our purposes as a mode of circulation and of reading (David Damrosch). We will operate with an expanded concept of translation, not limited to issues of linguistic or cultural equivalence and attuned to multiple contexts of literary production and reception. Drawing on the work of Damrosch, Lefevere, Casanova, Venuti, and Apter (among others), we will trace key debates and consider factors that shape the global politics of translation today. We will discuss selected case studies and pursue our own translation-based scholarly projects.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ENGLIT 2385 - POSTCOLONIAL DISCOURSE AND CULTURAL CRITIQUE

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to current debates and directions in Postcolonial Studies. Students will spend 1-2 weeks contextualizing these debates by reading some of the core texts and early debates within the field (such as the Marxism vs post-structuralism debates and the tensions amongst nationalist, subaltern, and post-nationalist frameworks). But the bulk of our time together will be spent exploring what kinds of re-thinking of earlier postcolonial models are necessary and adequate to this moment. Thus, we will explore such topics as: Postcolonial Studies¿ relationship to indigenous, subaltern, and decolonial frameworks. What does each of these frameworks bring into view? How do they shift debates about sovereignty? Post-Cold War frameworks for place-based studies. How does ¿place¿ shape our understanding of the postcolonial? How have traditional Area Studies models been reconfigured? What alternative regionalisms, geographies, landscapes and waterscapes have emerged and what do they offer? How might attending to Palestine, Iran, China, the Caribbean, the planet¿s oceans, and to planetartity rather than globalization productively redirect postcolonial studies? How do we continue to understand the specificities of place across different scales? Postcolonial engagements with the Anthropocene, Ecocriticism, and Environmental Justice. What insights emerge into the multiple and diverse histories of extractivism and development? How is the field now articulating different ecologies of belonging and agency? How does revolution relate to other models of insurgency? In our moment of planetary precarity, what do such models as withdrawal, refusal, and conviviality offer? Postcolonial Studies¿ practices of Memory Studies and Archival Studies. How might these practices shift our understanding of sources of knowledge, genres of study, and agents of action? The negotiations between between Postcolonial Studies and related rubrics such as world literature, Global English, and Comparative Literature. What should Postcolonial Studies bring to the study of non-Anglophone literatures, literatures in translation, ¿rotten English,¿ ¿broken English,¿ and patwa? Postcolonial forms and genres: We will often take up the aforementioned topics by studying how they are worked out in different literary texts and forms from the global south. We¿ll shift from Postcolonial Studies¿ historical emphasis on the Anglophone novel to pay particular attention to archival fragments, ¿minor¿ genres, small poems, and vernacular forms such as dub poetry. Of course, there will be space for critique of the field of Postcolonial Studies, but our focus will be on discovering and advancing together its most vibrant, creative, and transformative energies. Readings will likely include such writers as Sunil Amrith, Pascale Casanova, Dipesh Chakrabarty, David Damrosch, Tao Leigh Goffe, Isabel Hofmeyr, Yogita Goyal, Walter Mignolo, Gayatri Spivak, Deborah Thomas, and Sylvia Wynter as well as poets such as Kei Miller and Jean Binta Breeze.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2500 - SEMINAR IN PEDAGOGY

Minimum Credits: 3
Maximum Credits: 3
This course provides the opportunity for graduate students to develop strategies for teaching, to reflect on those strategies, and to consider the larger social, historical and institutional contexts that shape their teaching. The seminar will place teaching practices in dialogue with texts that focus on current critical questions and pedagogical theory and practice across English studies curricula.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2525 - COMPOSITION STUDIES

Minimum Credits: 3
Maximum Credits: 3
This course will provide a general introduction to composition as an area of professional study. The purpose of the course is to introduce key texts (and forgotten texts) since the turn of the century, and to situate those texts in the development of English studies, the history of post-secondary education, and history of related work on writing. We will be looking at how the field has represented the subject as its own and at how the field has constituted itself as a "discipline".
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2526 - QUALITATIVE RESEARCH METHODS IN LITERACY AND WRITING STUDIES

Minimum Credits: 3
Maximum Credits: 3
This seminar will offer an introduction to qualitative research methods for understanding writing as a phenomenon, exploring literate practices, and assessing the efficacy of writing and literacy pedagogy. Framing our conversations around epistemological and research paradigms (e.g. positivist, critical, constructivist, ecological, social network) that have guided collective efforts to understand writing, writers, and writing pedagogy, we will engage with seminal writing research scholarship from diverse theoretical and epistemological positions. Following this overview, the course focuses on a single methodology to show how it is simultaneously grounded in epistemological commitments while also enabling a flexible range of research methods or practices. Building on short projects that encourage students to survey exemplary research studies aligned with their research interests, the final project will be a research design, with students proposing a design for a research project, discussing the rationale for such a design, practicing and assessing one or two research methods, and experimenting with preliminary analysis of relevant data.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2547 - CRITICAL LITERACIES AND PEDAGOGIES ACROSS URBAN EDUCATION AND HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course examines historical, theoretical, and practical relationships among reading, writing, language, culture, and schooling. Specifically, these connections are explored across urban education and higher education learning sites, both in-school and out-of-school. Ultimately, students will be expected to examine the curricular, pedagogical, and theoretical contexts that shape teaching and learning as a bridge to the continued development of their own pedagogical identities.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2548 - CULTURAL RHETORICS

Minimum Credits: 3
Maximum Credits: 3
This course introduces graduate students to cultural rhetorics theories and methodologies. Cultural rhetorics focuses on scholarship that values storytelling and personal experience, as well as building and honoring relationships. Because cultural rhetorics sees all cultures-not just the Western tradition-as rhetorical, it tends to foster scholarship centering around populations and experiences that have until now been underexplored in mainstream academia. In this course students will: Read/watch/listen to and analyze work that inspired the emergence of cultural rhetorics and contemporary cultural rhetorics publications in book, article, and multimodal formats. Through engaging with these texts and exchanging ideas about them during class discussions, students will develop a sense of how cultural rhetorics came about and an understanding of the various methodological moves that cultural rhetoricians make. Get a sense of the biographies and trajectories of some of the scholars whose work we'll be reading so students can begin to connect their stories with their research. Apply what they've learned about cultural rhetorics methodologies to crafting their own scholarship. Although this course will center around texts produced within the fields of rhetoric and composition and literature, the experiences students garner will be useful to students in creative writing, film studies, communications, and other fields in the humanities and the social sciences.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2549 - RHETORICAL METHODS IN COMPOSITION STUDIES

Minimum Credits: 3
Maximum Credits: 3
"Rhetorical Methods in Composition Studies" is an advanced introduction in rhetorical techniques for performing scholarship and creative work in and around English departments. Participants will read recent and anti/canonical works of rhetorical scholarship and public-facing work (drawn from composition studies as well as poetry, public address, critical media studies, queer of color critique, fiction, and other textual fields) to build an archive of methods for composing rhetorical criticism and theory in University and other institutional contexts. Course assignments invite students to practice critical contributions to the question of what it means to do rhetoric work in and around University composition programs. Writers across all modes and disciplines are welcome.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2551 - TRANSLINGUALISM AND MULTILINGUALISM

Minimum Credits: 3
Maximum Credits: 3
This graduate seminar explores translingualism and multilingualism from the perspective of composition, rhetoric, and literacy studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2571 - FEMINISM AND CRAFTWORK

Minimum Credits: 3
Maximum Credits: 3
This interdisciplinary seminar will examine the intersection of feminism and craft. We will approach domestic, professional, individual, oppositional, and coalitional labor as rhetorical, working from the assumption that these categories are not static but fluid and subject to ongoing persuasive negotiation. The first part of the course will blend scholarly investigation and practical experimentation with writing, computing, horticulture, fiber artistry, laboratory practices, and other forms of embodied knowledge to consider the entangling of labor, identity, and social positioning. Building on these explorations, we will develop and carry out research and/or creative projects rooted in feminist epistemologies and methodologies. Students will have ample opportunity to adapt their course experiences in relation to their research agendas, working individually and in partnership with classmates, guest speakers, and local organizations, museums, and archives.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2608 - GENRES AND GENRE THEORY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: English (MFA) or Department Consent

ENGLIT 2800 - CHILDREN'S LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the critical study of children's literature at the graduate level. Sometimes the syllabus will be centered on a particular historical period or genre; other times, around a specific theme or critical controversy. But the course will inevitably engage with theoretical issues raised by a genre whose practitioners inhabit a different subject position than its intended readers, as well as focusing on literary, philosophical, and cultural constructions of childhood.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2802 - CRITICAL APPROACH TO CHILDREN'S LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This course examines a variety of children's books from a number of theoretical perspectives; historical, feminist, transactional, structuralist, etc. The implications of theory will be emphasized. We will place children's books and reading in the wider context of the emotional, cognitive, and moral development of the child, the popular culture of childhood, and contemporary multicultural society.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2804 - CITY AND THE YOUNG

Minimum Credits: 3
Maximum Credits: 3
This course examines children's and adolescents' experiences within and navigation through both constructively organized and devastatingly deprived urban structure to reveal that their perceptions of subjectivities and social justice are stratified by race, class, gender, sexuality, and nation, which, in turn, is historically and systematically rooted in place. Spanning material and institutional spatial scales (e.g., the young body, city infrastructure, nation) and processes (e.g., representation, migration, globalization), we will explore theoretical and methodological ways in unveiling young people's experiences and responses towards the injustices and violence across urban geographies. Particular attention will be paid to debates surrounding competing roles of young people (e.g., the neglected children, delinquent youth, youth activists, youth migration) in the city as being shaped by relations of power. Course readings span across disciplines including literary and media studies on the contradictive fantasies of Russian adolescence and unaccompanied American child, historical studies on the lives of young black women in segregated New Orleans and Tokyo young people's traumatic experiences and practiced behaviors after the Great Kant¿ Earthquake in 1923, and ethnographical works investigating adolescents' experiences navigating urban schools and neighborhoods
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2811 - MINOR SUBJECTS: CHILDHOOD, LITERACY, AND MARGINALITY

Minimum Credits: 3
Maximum Credits: 3
Grounded in children's literature/childhood studies, this course focuses on texts and cultural practices involving those considered "minor" or "marginal." As we will explore, the age-based marginalization of children and youth does not equal but complexly overlaps with larger processes and experiences of marginalization across other identity categories, with shared mechanisms including social isolation, institutionalization, criminalization, and control of reproduction. Assuming a readership defined by (inter)dependency and relationality, texts designed for or by young readers (understood intersectionally) frequently perform their initiation into and regulation within public, collective, stratified, and ordered social worlds via literacy, raising ethical questions about these rituals of textual socialization and what it means to write for/as people not considered fully literate, fully agential, or fully rights-bearing. Taking cues from literacy studies and children's lit/childhood studies scholarship that emphasizes the embeddedness of texts and reading within larger cultural and material practices/structures, as well as the ways that literacy involves interdependency and multimodality, we will consider how children's textual and material inclusion or exclusion within the public sphere is enacted in books for and by youth, with attention to how young people navigate this process, individually and collectively. We will also investigate cross-written texts for adults and children to explore forms of activism and solidarity organized around minoritarian practices and discourses. The course will involve significant training in and practice of close reading and archival research practices. We will work closely with archival collections at the University of Pittsburgh (especially our signature collection of children's materials from the Black Arts Movement as well as a new collection of Dick and Jane readers) and the American Antiquarian Society (especially their Historical Children's Voices digital library of diaries, newspapers, and books created by young people). Students will be encouraged to identify and bring in materials related to their own areas of focus for us to discuss together. Anyone with an interest in any aspect of the course is welcome and the course will give guidance about how students can develop larger projects, or smaller pieces of projects, that involve some consideration of childhood/youth, education, literacy/reading, marginalization, socialization, and/or literary/textual initiations into the public sphere.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2862 - BOOK HISTORY AND ITS USES

Minimum Credits: 3
Maximum Credits: 3
This seminar examines printed books as material, commercial, and expressive objects. We will investigate some ways that historical practices of book making have mediated the production, circulation and reception of writing. Much of the course will involve hands-on work with materials housed in Special Collections at Hillman Library, where we will examine a broad range of printed materials, including variously formatted literary editions, children's books, broadsides, artists books, and facsimiles. We will be considering such topics as exchanges between the printed word and the printed image; the conditions and goals of textual editing at the present moment; the uses of digital archives for book history; and the political economy of publication practices. There will also be several opportunities to experiment with making printed artifacts with a small proof press.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2902 - DIRECTED STUDY FOR MA AND MFA STUDENT

Minimum Credits: 1
Maximum Credits: 6
In exceptional circumstances a student who wishes to pursue a topic for which no course is available can arrange for directed study.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ENGLIT 2907 - LITERATURE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ENGLIT 2920 - WRITING CENTER PRACTICE

Minimum Credits: 1
Maximum Credits: 1
This experiential course, for graduate students who are part of the Writing Center Scholars Program, allows students to tutor undergraduates, graduate students, faculty, and staff at the Writing Center and administer a project that serves the Writing Center community.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

ENGLIT 2921 - WRITING CENTER THEORY

Minimum Credits: 1
Maximum Credits: 1
This course allows participants to read and discuss relevant scholarship and engage with guest speakers who have experience as writing program administrators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

ENGLIT 2925 - CREATING A CULTURE OF ACCESS

Minimum Credits: 1
Maximum Credits: 1
This seminar features guest speakers, readings, discussion, and writing focused on disability studies and creating a culture of access.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

ENGLIT 2926 - PREPARING FOR PUBLICATION

Minimum Credits: 1
Maximum Credits: 1
This seminar will help to contextualize the publication process, support writers in drafting and submission processes, and offer workshop opportunities.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

ENGLIT 2960 - ENGLISH GSA

Minimum Credits: 3
Maximum Credits: 3
This course provides credits for English department graduate students who have been appointed as a graduate student assistant.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

ENGLIT 2980 - PROFESSIONAL DEVELOPMENT FOR GRADUATE STUDENTS

Minimum Credits: 1
Maximum Credits: 1
This professional development seminar has a two-part focus: it will help you prepare your materials for the academic job market, from the cover letter to the teaching portfolio, and it will also offer resources for exploring diverse careers beyond the academy. It is primarily designed for graduate students who have finished coursework, but others are welcome to join if they are interested in beginning to work on their application materials. The seminar will include workshops of student materials along with discussions of select readings and sample job materials. We will have several guest speakers during class time as well as attending one event outside of class time. Writing assignments will include various job application components as well as critical reflections on the writing process and the readings.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
In order to register for this course a student must work with a faculty member under one of the following circumstances: a) faculty-graduate student shared research project; b) special study in relation to pedagogical problems; c) defined areas of study in relation to comprehensive examinations.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

ENGLIT 2991 - PUBLISHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This workshop will help English graduate students to prepare previously-drafted seminar papers for journal publication. Students will read and workshop each other's manuscripts and discuss journals in relevant fields, the politics of publishing, the submission and publication process, and other relevant topics.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis

ENGLIT 2993 - INTRODUCTION TO GRADUATE STUDIES

Minimum Credits: 1
Maximum Credits: 1
This course will introduce MA and Ph.D. students to important practices and genres of graduate studies and to department programs and resources.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis

ENGLIT 2995 - PHD WRITING WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
This writing workshop is designed for graduate students on all PhD tracks in English - Comp, Lit, and FMS - and will provide structure and support for larger writing projects. Students will draft toward their most relevant program deadline depending on their stage, using workshop feedback to develop either their project papers or a dissertation chapter. There will be opportunities to draft and receive feedback on job materials and/or grant application materials for early career graduate students. The workshop will provide a supportive, seminar-style environment with accountability check-ins each week. It will not require extra reading, although we will occasionally read style models for the various genres of professional writing that we will undertake together. This workshop can be retaken multiple times post coursework to help students maintain momentum and meet program benchmarks for progress toward degree. The hybrid designation

accommodates grad students who may be on fellowship or out of state
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

ENGLIT 2996 - TEACHING PRACTICUM 1

Minimum Credits: 3
Maximum Credits: 3
Hands-on teaching practicum course for graduate students to learn about university-level teaching. Topics will include: the relationship of reading and writing, writing conventions, social contexts for writing, digital modes of composition, assignments and sequences, evaluation and assessment of writing.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

ENGLIT 2997 - TEACHING PRACTICUM 2

Minimum Credits: 3
Maximum Credits: 3
Hands-on teaching practicum course for graduate students to learn about university-level teaching. Topics will include: the relationship of reading and writing, writing conventions, social contexts for writing, digital modes of composition, assignments and sequences, evaluation and assessment of writing.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

ENGLIT 3000 - DISSER RES FOR THE PH.D. DEGREE

Minimum Credits: 1
Maximum Credits: 12
For advanced doctoral students who have completed or nearly completed their formal course work and are pursuing independent research leading to the dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

ENGLIT 3902 - DIRECTED STUDY FOR PH.D. STUDENT

Minimum Credits: 1
Maximum Credits: 6
In exceptional circumstances a student who wishes to pursue a topic for which no course is available can arrange for directed study.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ENGLIT 3910 - COMPREHENSIVE EXAM

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

English Writing

ENGWRT 1915 - PROFESSIONAL DEVELOPMENT IN WRITING

Minimum Credits: 1
Maximum Credits: 1
This one-credit seminar invites Writing majors to deepen and expand their understanding of professional life and options. Professional Development will allow students to explore the ways their academic work has prepared them for life after graduation, allow them to identify next steps in their career planning, and help them learn about practical aspects of professional life. They will have the opportunity to work on crucial career documents and an online portfolio.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: Satisfactory/No Credit

ENGWRT 2000 - LIFE OUTSIDE OF THE MFA: PUBLISHING, TEACHING, AND FELLOWSHIPS

Minimum Credits: 1
Maximum Credits: 1
While creative writing classes offer students time to engage in close reading, deep listening, and intensive creative and critical writing, this practical course will facilitate hands-on sessions which tackle professional techniques and strategies for publishing (submitting creative work to literary journals and magazines), teaching opportunities (application materials such as cover letters, CVs, and teaching portfolios), and applying for fellowships/residencies (application materials such as project proposals, creative samples, etc.). Students will explore varied approaches to these topics and develop their own methodology unique to them; non-creative writing and forms don't have to be devoid of personality, verve, and character! Regardless of your standing in the Writing Program, this course will help you draft materials you'll need in the immediate or approaching future; these are skills you can adapt and apply to a wide array of professional opportunities. This one-credit course is open to any student in any major and program (as long as they are interested in creative writing professional development).
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

ENGWRT 2010 - FICTION WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
This course enables students to master the particular prose fiction forms they are working in. It helps them focus on their manuscript--either a short story collection or a novel-- and to work seriously on it. Close examination of student writing and revision of submitted work are essential parts of the course.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: English (ENG-MFA)

ENGWRT 2094 - READINGS IN CONTEMPORARY FICTION

Minimum Credits: 3
Maximum Credits: 3
This course acquaints students with a variety of contemporary writers. This study helps students raise questions about their own developing esthetics as they are reflected in form and take into account their dual roles as creative writers and critics. It also helps students access their relationship to reviewing and criticism, including its benefits to a creative writer developing a career, and to discover techniques of reviewing and criticism which aid and do not transgress upon their esthetics and its expression.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2110 - NARRATIVE AUDIO WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2200 - HYBRID WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This one-credit graduate workshop seminar will meet periodically, throughout the semester, as an intensive consideration of student poems and fiction writing, both first drafts and revisions. This will act as a dedicated space for MFA students in the poetry and fiction tracks to workshop poems, fiction forms, and thesis manuscript excerpts with their peers five times over the course of the spring semester.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2210 - POETRY WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
This graduate seminar emphasizes an intensive consideration of student poems, both first drafts and revisions, in an informal workshop setting.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: English (ENG-MFA)

ENGWRT 2290 - READINGS IN CONTEMPORARY POETRY

Minimum Credits: 3
Maximum Credits: 3
This course focuses on American poets who have come to prominence since 1963. We will read widely in the poetry of this period to understand its unique contribution to the development of poetic form and its relationship to the culture that produced it.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2310 - NON-FICTION WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
A workshop in non-fiction reporting for magazine publication. Students will research, write, revise and re-write articles. Emphasis will be placed on style, fluidity, organization, suitability for market, and ultimately, on publication.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: English (ENG-MFA)

ENGWRT 2390 - READINGS IN CONTEMPORARY NON-FICTION

Minimum Credits: 3
Maximum Credits: 3
This course familiarizes students with a number of different forms of and approaches to contemporary non-fiction writing.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2399 - TOPICS IN NONFICTION: NEW YORK TRIP

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2403 - STRUCTURES AND TECHNIQUES IN NONFICTION

Minimum Credits: 3
Maximum Credits: 3
This is a grad level course required for NF MFAs. The course is designed to examine and develop advanced research skills for the nonfiction writer, and to explore and practice story structure through required readings and creative exercises. Students will design and participate in immersion research projects, produce one long-form narrative or research-based essay using field research, interview and textual sources. The classwide project will be produced in digital form.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2405 - PUBLISHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
This practicum is for nonfiction M.F.A.S in their third year of study. We will survey current trends in book, magazine, journal, and online publishing, as we design a trip to New York City to meet editors and agents. Students must have manuscripts and/or other completed work ready for publication in order to be accepted into the class, which is offered by special permission only.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Attributes: Hybrid

ENGWRT 2501 - TOPICS IN CREATIVE WRITING

Minimum Credits: 3
Maximum Credits: 3
This course concerns itself with matters of interest in creative writing: form and technique, contemporary production, issues in teaching and pedagogy, and/or the relation of the creative writer to society.
Academic Career: GRAD
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2502 - INTRO TO THE MFA AND THE WRITING LIFE

Minimum Credits: 3
Maximum Credits: 3
This course will focus on essentials to thrive as a professional writer. We will learn how to navigate various resources within and beyond

the university, including archives and literary journals. Readings and guest visitors from across the field will support our in-class discussions that will cover a wide range of topics such as, working with editors, publishing, how to apply for funding to support projects, interviewing practices, writing an artist statement, time management, performing your work, organizing your research materials, etc.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2503 - INTRO TO THE MFA AND THE WRITING LIFE

Minimum Credits: 1
Maximum Credits: 1
This mandatory course focuses on essentials to thrive as a professional writer in a graduate program. We will learn how to navigate various resources within and beyond the university, including archives and literary journals. Readings and guest visitors from will support in-class discussions, coverings topics such as: publishing, grant funding, time management, sharing your work, and more.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2505 - THESIS WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
This cross-genre course for 3rd-year MFA students focuses on the development of the thesis manuscript. Together we will consider the particular challenges and excitements of writing a first book of poetry, nonfiction, or fiction, and various concrete strategies for approaching this task. We will discuss writing schedules, revision methods, sequencing/ordering, when and how to seek out feedback, how best to make use of the feedback one receives, how to balance forward momentum with reworking, etc. Short readings will be drawn from published first books-novels, short story collections, memoirs, essay collections, and poetry collections-and craft essays, and guest visitors who work in these genres will share their wisdom. In addition to discussion, each class will incorporate dedicated work-time for students to move forward on their own thesis projects; this will allow us to consider individual writers' questions as they arise.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2506 - PROJECT WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This cross-genre course for both thesis year MFA students as well as students working with a specific project in mind (novel, short story collections, memoir, collection of essays, collection of poems, and so on). Together we will consider the particular challenges and excitements of writing a first book of poetry, nonfiction, or fiction, and various concrete strategies for approaching this task. We will discuss writing schedules, revision methods, sequencing/ordering, when and how to seek out feedback, how best to make use of the feedback one receives, how to balance forward momentum with reworking, etc. Short readings will be drawn from published first.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGWRT 2900 - MANUSCRIPT WRITING FOR THE MFA

Minimum Credits: 1
Maximum Credits: 9
For advanced MFA students who have completed or nearly completed their coursework and are completing the MFA manuscript. Can be taken only once toward the 36 credits required for the degree, only in the last year of study, and counts as elective credits.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

ENGWRT 2905 - PRACTICUM IN COMMUNITY TEACHING

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

ENGWRT 2907 - WRITING INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis

ENGWRT 2960 - ENGLISH GSA

Minimum Credits: 3
Maximum Credits: 3
This course provides credits for English department graduate students who have been appointed as a graduate student assistant.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

ENGWRT 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
In order to register for this course a student must work with a faculty member under one of the following circumstances; a) faculty-graduate student shared research project; b) special study in relation to pedagogical problems; c) defined areas of study in relation to comprehensive examinations.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

ENGWRT 3009 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
In exceptional circumstances a student who wishes to pursue a topic for which no course is available can arrange for directed study with a member of the graduate faculty willing to supervise the work.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Environmtal & Occupatnal Hlth

EOH 2004 - OCCUPATIONAL HYGIENE

Minimum Credits: 3
Maximum Credits: 3
The course will provide the students with a comprehensive overview of the current technologies in terms of real-time monitors for

occupational hygiene. The course is organized around real-time monitors for different hazards and health endpoints. Common concepts related to mode and principle of operations of various real-time monitor will be discussed, along with issues such as sensitivity, reliability, and reproducibility. In addition to the technical and scientific aspect of the monitors, the course will expand to data analysis; transformation of data to information; risk communication; and workers empowerment. This course will also present the concept of work safety and the roles of NIOSH and OSHA in conducting on-site investigations and promoting safety and health of workers. The course will be conducted by in class lectures, hand-on practices for real-time monitors and data analysis, and paper discussions. No pre-requisites are required for taking this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE

Minimum Credits: 2
Maximum Credits: 2
This is the school of public health core curriculum course in environmental and occupational health. The world health organization defines environmental health as "those aspects of human health, including qualities of life that are determined by physical, biological, social, and psychosocial factors in the environment." The discipline of environmental and occupation health refers to the "theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can adversely affect the health of present and future generations." This course will familiarize the students with current issues and practice in environmental and occupational health, as well as assessment of the risk of environmental exposures. It is designed to introduce the students to knowledge basic to public health focusing on chemical and physical environmental factors affecting the health of the community.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restriction by Program Plan: - BCHS-MPH - EOH-MPH - EPIDEM-MPH - HPM-MPH - PHGEN-MPH - IDM-MPH - MULMPH-MPH

EOH 2021 - SPECIAL STUDIES

Minimum Credits: 1
Maximum Credits: 15
Properly qualified students may undertake advanced study under the guidance of a faculty member.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

EOH 2022 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 3
Properly qualified students may undertake advanced study under the guidance of a member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

EOH 2024 - MPH ESSAY/THESIS

Minimum Credits: 1
Maximum Credits: 15
MPH students have the option to complete an essay or thesis that is designed to provide the student with an opportunity to integrate the major components of the learning experience.
Academic Career: Graduate
Course Component: Thesis Research

Grade Component: Grad HSU Basis
Course Requirements: PLAN: EOH-MPH

EOH 2025 - MS THESIS

Minimum Credits: 1
Maximum Credits: 15
Research credits for the master's thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis
Course Requirements: PLAN: EOH-MS

EOH 2108 - ENVIRONMENTAL AND OCCUPATIONAL HEALTH PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
This practicum provides an opportunity for EOH MPh students to demonstrate integration and application of knowledge in the area of environmental and occupational health, through a culminating experience. This is a faculty supervised applied research or problem solving project in consultation with a health environment related agency or organization. Student participates after completion of course work. The practicum includes preparation, contribution to field work, and a final written report which may be the basis for a master's essay.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

EOH 2109 - ENVIRONMENTAL AND OCCUPATIONAL HEALTH SCIENCES JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
This course is for students to gain experience in the presentation and discussion of topics of current interest in the fields of industrial and environmental health sciences and toxicology. The format is journal club presented by the students. Our goals are to expose students to the most exciting research in our field of interest. Secondly, to provide a forum to hone skills in organizing and presenting scientific data, as well as critically discussing published work.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad LG/SU3 Basis

EOH 2110 - ROTATION/PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
This course is designed to be a practical research experience for Ph.D. students, goals of which are for students to gain research experience within laboratories of faculty within the molecular toxicology training program. Each laboratory rotation will be eight (8) weeks in duration with 2 rotations. Students will be required to write a report on their research project upon completion of the laboratory component.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS

Minimum Credits: 3
Maximum Credits: 3
This course presents in a quantitative fashion the movement, transformation, bioaccumulation, and fate of various physical, biological, and chemical agents through the environment, home, and occupational settings. Chemical degradation, atmospheric transport, surface and

groundwater transport, deposition on terrestrial surfaces and in sediments, and concentration by biological systems are described, including movement through food chains; also indoor transport and ventilation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EOH 2309; PLAN: For EOH-MPH; MS: PHD (Instructions: Instructor Consent as some students from Engineering apply.)
Course Attributes: Global Studies

EOH 2140 - CLIMATE CHANGE AND HUMAN HEALTH

Minimum Credits: 3
Maximum Credits: 3
Climate change is increasingly recognized as the single biggest threat to the environment and human health, affecting the physical environment as well as natural and human systems. This course features trans-disciplinary science, practice, and policy approaches examining the interconnectedness between climate change, the environment and health. Students will gain a comprehensive understanding of climate science, its impact on the environment and human health, including health inequities, relevant policies, and strategies for climate adaptation and mitigation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EOH 2150 - ENVIRONMENTAL SAMPLING AND MONITORING

Minimum Credits: 2
Maximum Credits: 2
Environmental sampling is essential to our understanding of toxicant contamination in our environment. The course will provide an opportunity for the students to participate in field location sampling for practical environmental sampling for air and water. Furthermore, the course will go over the process of working with a community partner, an essential part of public health practice. The course will be conducted by in class lectures and hands-on practices for determining concentrations of contaminants in environmental media. Some field sampling will be conducted but will not require travel outside of Oakland.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade
Course Requirements: PLAN: EOH-MPH, EOH-MS, or EOH-PHD

EOH 2175 - PRINCIPLES OF TOXICOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to the principles governing the interaction of chemicals within the human body. Major organ systems will be described with regard to anatomy, physiology and effects from interactions with chemicals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EOH 2180 - INTRODUCTION TO RISK SCIENCES

Minimum Credits: 1
Maximum Credits: 1
Course will explore issues surrounding environmental and occupational risks with focus on adverse human health effects. Will provide overview of risk sciences including: risk assessment, risk perception, risk communication and risk management. Detailed attention to methods for qualitative and quantitative characterization of risks to human health. Qualitative and quantitative approaches for risk assessment will consider methods for assessment of cancer and non cancer health risks using four step paradigm by national academy of sciences

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: EOH 2181; PROG: Graduate Sch of Public Health (PPBHL)

EOH 2181 - RISK ASSESSMENT PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
Practicum will provide the student opportunity to conduct a quantitative risk assessment for human health endpoint (either cancer or non-cancer) from an environmental or occupational exposure. Students will learn to identify human health hazards, characterize dose response relationships and site and mechanisms of action, conduct an exposure characterization dose response relationships and site and mechanisms of action, conduct an exposure characterization and use that data to characterize risks to human health.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: CREQ: EOH 2180; PROG: Graduate Sch of Public Health (PPBHL)

EOH 2260 - ENVIRONMENTAL JUSTICE AND HEALTH EQUITY: REGULATIONS, POLICIES, AND PRACTICES

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to introduce students to national regulatory and policy frameworks that seek to mitigate environmental risks and hazards. In addition, this course places an emphasis on the social determinants of health that lead to environmental injustices and the strategies that have been deployed to try and addresses these concerns. This course starts with theoretical foundations, moves to applied research efforts and concludes with practice approaches for each unit covered. The course builds upon the public policy framework and explores areas of falter in the framework, and how environmental practitioners can address those deficits. Students are exposed to a variety of analytic tools that can help identify environmental health disparities across populations. Students will also be expected to connect with environmental health professionals at different levels of governance (local, state, and federal) to gain insight on policy challenges faced and strategies to achieve policy goals. This course will culminate in student presentations of proposed position papers that address a current environmental hazard with national impacts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EOH 2309 - ENVIRONMENTAL HEALTH CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
The organic, inorganic and mechanistic biochemical details of interactions of toxins and biological systems will be presented. Emphasis on chemical understanding of potential toxicological sequelae of such interactions. Students present one lecture on bioorganic toxicological topic synthesized from recent scientific literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EOH 2310 - MOLECULAR FUNDAMENTALS

Minimum Credits: 3
Maximum Credits: 3
Course is designed to be a review of the fundamentals of biochemistry, molecular biology, and cell biology. There is significant time devoted to techniques, with the goal of providing background for Ph.D. students beginning their research careers, and a perspective for mph students on the availability and utility of modern biological research methods.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE

Minimum Credits: 3
Maximum Credits: 3
This course introduces concepts inherent in recognition of sources, contaminant generation, transport and uptake of chemical, biological and physical stresses in the context of potential environmental exposures related to human health. This course prepares students to understand exposure assessment in anticipation, recognition, evaluation and intervention as utilized in risk assessment and composition of matter, exposure pathways, pathway assessment methods including measurement, analogy and exposure modeling.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EOH 2605 - MOLECULAR ENVIRONMENTAL BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide a foundational understanding of how biological principles explain the functioning of organisms triggered by environmental stimuli, at the molecular and cellular levels. The topics covered align with the core scientific training required for graduate students in pre-health and biological research fields. Topics will include the genetic code, genome structure, and the complex regulation of gene expression, focusing on both genomic and epigenomic control mechanisms upon exposure to environmental factors (chemical and non-chemicals). The course will also explore the molecular basis of fundamental cell functions, including cell signaling, the cell cycle, DNA damage and repair, and mechanisms of cell death. Furthermore, it will cover the molecular basis of the body's defense systems, including stress responses and immune mechanisms, in reaction to environmental toxicants. Finally, the course will present recent advances in biotechnology and techniques used to study environmental diseases, including genomic editing, stem cell biology, next-generation sequencing and exposomics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EOH 2609 - CHEMICAL TOXICOLOGY IN THE AGE OF GREEN CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
The design of safer chemicals is vital to reduce environmental and occupational health diseases. Molecular designers, toxicologists, chemists, and engineers require knowledge about the biochemical mechanisms of toxicity, predictive toxicology, and how chemical structures and properties impact toxicity and the environment. Green chemistry has been widely incepted into the curriculum in higher education to provide students with adequate skills in the fundamental principles of toxicology and structure-activity relationships for the design of safer chemicals. This course will present the concept of designing chemicals for reduced toxicity to promote synthesis of less hazardous chemical substances that possess little or no risks to human health and the environment. Students will be provided with fundamental understanding of how to apply in-silico modelling and QSARs, etc. to identify novel replacements for the generation of hazardous chemicals (such as forever chemicals) already persisting in the environment and also create the next generation of safe chemicals and products. This course will also present the concept of designing chemical products to preserve efficacy of the function while reducing toxicity so that at the end of their function they do not persist in the environment but instead breakdown into safe products. The course will be conducted by in class lectures, hands-on practices for in-silico modeling, and paper discussions. A college level background in chemistry or toxicology will be required for taking this course. A college level background in chemistry or toxicology will be required for taking this course. Courses such as: Environmental Health Chemistry (EOH 2309), Principles of Toxicology (EOH 2175), Transport & Fate of Environmental Agents (EOH 2122), Principles of Environmental Exposures (EOH 2504), Fate & Transport in Environmental Engineering (CEE 1522); OR Chemistry in Environmental Engineering (CEE 1504) are suggested
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: A college level background in chemistry or toxicology will be required for taking this course.

EOH 2805 - EPIGENETICS AND EPIGENOMICS OF ENVIRONMENTAL HEALTH

Minimum Credits: 3
Maximum Credits: 3
Gene environment interactions are important determinants of disease risks. This course will present how environmental stressors (such as chemicals, microbiota or lifestyle) modulate the epigenetic regulation of gene transcription and chromosome stability, which ultimately produce an array of unique phenotypes controlling cell differentiation, growth and cell death. Students will be provided with a fundamental understanding of basic epigenetic processes related to the mechanisms by which exposure to environmental stressors causes environmental diseases not limited to neurological dysregulation, cardiopulmonary and inflammatory diseases, metabolic diseases and cancer. This course will present the concept of epigenetic modulation of cellular signal pathways involved in protection from effects of environmental stressors, including responses to stress and oxidative damage. In addition, we will present the most recent and advanced genetic and epigenetic techniques to study the impact of the environmental stressors on disease pathogenesis, which includes microarrays, next-generation-sequencing and genetic models. The course will also discuss how to apply the 'omic' data and pathway analysis tools for the identification and validation of disease biomarkers and exposure markers from environmental and occupational health research. Course will be conducted by in class lectures, hand-on practices for epigenomic data analysis and paper discussion. A college level background in the molecular biological sciences is required for taking this course. Course of Molecular Fundamentals (EOH 2310) or Principles of Toxicology (EOH 2175) is suggested.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EOH 2310 OR EOH 2175; PROGRAM: Graduate School of Public Health A college level background in the molecular biological sciences is required for taking this course.

EOH 3010 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Includes doctoral study under the various programs within the department.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: EOH-PHD

EOH 3110 - SCIENCE COMMUNICATIONS AND PROFESSIONAL DEVELOPMENT

Minimum Credits: 2
Maximum Credits: 2
This experiential course provides graduate students in the environmental health sciences an introduction to major skills in professional development and effective science communication including strategic planning, goal setting and prioritization, network building, building collective resilience and self-accountability practices. These skillsets, while vital for success in a graduate program, are increasingly important in hiring processes and we aim to prepare participants for success in their chosen career path whether in academia or beyond. Students will gain skills in organization and time management, developing a strategic career plan, enhancing their network of sponsors and mentors, and communication. Through experiential learning, students will craft long- and short-term personal and professional goals, aided by their Individual Development Plan (IDP). They will map their networks of support, including identification of any gaps and develop plans to address those gaps.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EOH 3111 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 2
Maximum Credits: 2
This experiential course provides graduate students in the public health sciences an introduction to major skills in professional development and effective science communication including strategic planning, goal setting and prioritization, network building, building collective resilience and self-accountability practices. These skillsets, while vital for success in a graduate program, are increasingly important in hiring processes and we aim to prepare participants for success in their chosen career path whether in academia or beyond. Students will gain skills in organization and time management, developing a strategic career plan, enhancing their network of sponsors and mentors, and communication. Through experiential learning, students will craft long- and short-term personal and professional goals, aided by their Individual Development Plan (IDP). They will map their networks of support, including identification of any gaps and develop plans to address those gaps.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

EOH 3210 - PATHOPHYSIOLOGY OF ENVIRONMENTAL DISEASE

Minimum Credits: 3
Maximum Credits: 3
This graduate level course focuses on the etiology and pathogenesis of human disease and how the disease process affects normal physiologic function. The course will include a didactic component covering the normal anatomy and function of the major organ systems and a series of student-led presentations and discussions of the nature and cause of commonly encountered diseases and or injuries. Students will be expected to apply basic mechanistic physiologic principles of each organ system in current public health and environmentally relevant topics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EOH 3305 - GENOME INSTABILITY AND HUMAN DISEASE

Minimum Credits: 3
Maximum Credits: 3
Mechanisms that maintain genome stability allowed the origin of species. DNA damage is omnipresent and DNA repair and DNA damage tolerance mechanisms are interwoven in systems that control transcription, replication, cell division, signal transduction, cell death and evolution. More than 40 distinct human diseases are caused by defects in DNA repair, including syndRomes of impaired development, immunodeficiency, cancer predisposition, neurodegeneration, and premature aging. This course will emphasize the molecular biology and biochemistry of DNA repair, placing these mechanisms into the context of other cellular processes as they pertain to health and disease. Environmental, clinical and endogenous sources of DNA damage will be discussed. An understanding of the fundamental role of DNA repair mechanisms in immunology, oncology, neurology, and aging will be central to all lectures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Envrl Influence Management

BENV 2115 - MARKET MANIPULATIONS

Minimum Credits: 3
Maximum Credits: 3
Market Manipulations is a course about the forms of market failure and the generalizations we can draw to understand market behavior in the future. The course compares financial panics in U.S. business history: 1792, 1819, 1837, 1857, 1873, 1893/95, 1907, 1929, and 2008. How can we generalize to understand future panics? We look at major forms of market scams, including bubbles (Tulipomania, South Sea Bubble, Dot Con Bubble), Ponzi schemes, and typical behaviors of con artists (e.g., Gregor MacGregor) and generalize their common patterns. We consider the origin of the modern business firm (joint stock trading company) as the solution to the general agency problems of managing risk and providing assurance. We examine how Carnegie, Rockefeller, and Westinghouse built their companies, seeking

monopoly, and identify the "monopolist's playlist," generalizations about patterns of monopoly-building. These tactics surprisingly remain as relevant today as they were during what Mark Twain called the "Gilded Age." We shift to the Progressive Era, and pushback. Coxey's Army was the first march on Washington, anticipating the New Deal 40 years later. The "stunt journalists" and "muckrakers," including Nellie Bly, Jacob Riis, Ida Tarbell, Lincoln Steffens, and Ray Stannard Baker, sought to influence repair of market defects via journalistic investigation. We look at the Triangle Shirtwaist Factory Fire of 1911 and the career of Frances Perkins. We review causes of the Crash of 1929/Great Depression. Thus, this course is highly unusual in using events in business history to generalize about our expectations of business behavior today and in the future.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Epidemiology

EPIDEM 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

Minimum Credits: 4
Maximum Credits: 4
This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the life span.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EPIDEM 2012 - WRITING IN POPULATION NEUROSCIENCE

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to write a manuscript or grant proposal related to population neuroscience. Population neuroscience consists of the application of state of the art population science and neuroscience to better understand the pathogenesis and etiology of a given disease of the central nervous system. This course provides a practical opportunity to write a proposal or a manuscript using neuroepidemiological methods that focus on a specific CNS disease/condition. Emphasis is placed on factors that influence vulnerability to onset, progression and response to treatment of neurological diseases, including geographic variations. This course is designed to reach pre- and postdoctoral trainees in epidemiology, neuroscience, neurology, psychiatry, rehabilitation and data sciences. Students are expected to be proficient in scientific writing. This course is part of the curriculum in Population Neuroscience of Alzheimer's Disease and Related Dementias (https://www.ebrain.pitt.edu/training/), together with EPIDEM 2017 Population Neuroscience Seminar (Fall) and EPIDEM 2019 Introduction to Multimodal Neuroimaging (Spring).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EPIDEM 2017 - POPULATION NEUROSCIENCE SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This seminar focuses on the methods and current literature in population neuroscience. Population neuroscience draws from multiple fields, including epidemiology, neuroimaging, and cognitive psychology, to understand the intrinsic (e.g. genetic) and extrinsic (e.g. environmental) factors that contribute to brain structure and function in various populations (healthy, aging, and diseased).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

EPIDEM 2019 - INTRODUCTION TO MULTIMODAL NEUROIMAGING AND APPLICATIONS IN POPULATION NEUROSCIENCE

Minimum Credits: 2
Maximum Credits: 2
There have been great advances in neuroimaging techniques, which allow neuroscientists to visualize molecular, cellular and system physiology and functions. The Introduction to Multimodal Neuroimaging course will teach the underlying principles of neuroimaging techniques, including data modeling and visualization. Special emphasis will be on the discussion of the strengths and limitations of each technique, and on novel approaches to utilize complementary imaging modalities. The course will teach the principles and research applications of neuroimaging modalities via basic lectures and workshops that emphasize the integration of multiple imaging modalities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

EPIDEM 2022 - SPECIAL TOPICS IN EPIDEMIOLOGY

Minimum Credits: 1
Maximum Credits: 3
Properly qualified students may undertake advanced study under guidance of a faculty member(s).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PROG: Public Health (permission from instructor required for no-Public health students)

EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Epidemiology is a scientific discipline which seeks to identify and describe patterns of disease occurrence, identify determinants of disease, and evaluate disease prevention and health care treatment efforts. With its focus of study in human populations, epidemiology is directly linked with public health research, policy, and practice. This course provides an introduction to the fundamental definitions, terminology, concepts, methods, and critical thinking used in epidemiology. The material presented in this course is designed to lay the foundation for future study and practice in public health activities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EPIDEM 2130 - FOUNDATIONS IN SOCIAL EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This semester-long course provides students with a foundation in social epidemiology. It will cover the theory and framing that underpins the ways in which social structures and environmental factors shape public health outcomes. Students will learn how to develop research questions and public health interventions around social, political and economic determinants of health, including understanding how socioeconomic position, race/ethnicity, place, and social networks contribute to the distribution of population health. The premise of the course is that health and disease are shaped by social, economic, political, and commercial factors operating at multiple levels of influence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EPIDEM 2141 - BEHAVIORAL LIFESTYLE INTERVENTION TRAINING - THEORY OF PREVENTION EFFORTS

Minimum Credits: 2
Maximum Credits: 2
Translating the findings of clinical trials of lifestyle intervention for disease prevention into community settings is increasingly important. This course will provide the conceptual foundation needed for such public health initiatives and serves as a key component of the Prevention, Lifestyle Intervention, and Physical Activity Area of Emphasis within the Department of Epidemiology. The background and rationale for behavioral lifestyle intervention will be covered in this course, as well as the relationship of lifestyle behaviors to chronic disease, with a focus on diabetes and cardiovascular disease. By attending this lecture-style course, students will receive behavioral lifestyle intervention training based upon a modified version of the Diabetes Prevention Program intervention protocol, called the Group Lifestyle Balance (DPP-GLB) program, which was adapted for use in the community setting. Upon successful completion of this class, each student will also receive a Certificate confirming that he/she was officially trained as a coach for the DPP-GLB intervention program.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate Sch of Public Health
Course Attributes: Hybrid

EPIDEM 2142 - LIFESTYLE INTERVENTION PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
This course follows the lifestyle intervention training theory course. The foundation for this practicum is the group lifestyle balance (GLB) program, a behavioral lifestyle intervention training based upon a modified version of the diabetes prevention program intervention protocol. The GLB has already been developed and evaluated by the course instructors. The lifestyle intervention training practicum will provide students with the opportunity to utilize their theoretical knowledge for behavioral lifestyle intervention with hands-on application in the field. This course will be a key component in the new prevention/ lifestyle intervention area of concentration within the department of epidemiology, providing the practical experience needed to deliver the group lifestyle balance program independently.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: EPIDEM 2141

EPIDEM 2143 - SOCIAL EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to introduce students to a broad overview of the field of social epidemiology related to the history and development of the field including the theoretical underpinnings, conceptual approaches, current topic areas, and research methods. Social epidemiology reveals how social processes are intrinsically linked to the health of populations and individuals. Social epidemiology takes into account the social, psychological, biological, and medical determinants of disease and health and uses a multidisciplinary approach to analyzing and solving complex contemporary social issues. This course will emphasize the role of social determinants of health in relation to health equity. Teaching methods include lectures, readings, class discussions, and written assignments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041); PROG: Graduate Sch of Public Health

EPIDEM 2144 - AGENT-BASED EPIDEMIOLOGICAL MODELING OF SOCIAL DETERMINANTS OF HEALTH

Minimum Credits: 2
Maximum Credits: 2
This course is an introduction to agent-based models (ABMs) as a technique for understanding how the dynamics of social, biological, and other complex systems arise from the characteristics and behaviors of the agents making up these systems. Students will learn using the Epistemix software platform that was spun out of Pitt Public Health. The course will emphasize simulation applications in public health, including infectious disease transmission and control measures, and health behaviors such as vaccine refusal, drug and tobacco use, and

birth control. Students will focus on modeling effects of the Social Determinants of Health. While this course is intended primarily for students in public health, graduate students in other disciplines, including social sciences, engineering or computer science, are welcome to enroll in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EPIDEM 2150 - CARDIOVASCULAR EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
In this course, students will gain knowledge about cardiovascular disease and its epidemiology and develop critical and presentation skills. Students will be expected to critically analyze scientific journal articles, present orally, and write a term paper.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041)

EPIDEM 2151 - PHYSICAL ACTIVITY EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
Physical inactivity is a major risk factor for many chronic diseases as identified in the Surgeon General's Report. This course will provide an up-to-date overview of the area of physical activity epidemiology, from the evidence of the relationships between physical activity and/or sedentary behavior and various chronic diseases, to methodological issues pertaining to the assessment of physical activity and/or sedentary behavior, to lifestyle efforts that includes physical activity in population studies, all of which will have a special emphasis on minority groups.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 OR 2041)

EPIDEM 2152 - STUDENT WORKSHOP IN CARDIOVASCULAR DISEASE EPIDEMIOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course is designed to be a supplement to the standard epidemiology coursework. It is a "hands on" workshop that will provide the opportunity for students to practice many of the concepts that they learn in class in the context of CVD epidemiology. It will also cover some areas which are not covered by the current curriculum, including an introduction to subclinical CVD, professional development, reliability analyses, and formal presentations of analysis results.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

EPIDEM 2153 - ANALYTICAL METHODS ACROSS PHYSICAL ACTIVITY DATA COLLECTION MODES

Minimum Credits: 1
Maximum Credits: 1
Data for epidemiologic research is now being collected using many modes of data collection from direct observation and clinical assessment, to self-report questionnaires and electronic wearables. Using examples from physical activity data collection, students will become familiar with the different categories of data (e.g. continuous, categorical: ordinal and binary), data collected across a wide range of measurement instruments (e.g. questionnaires, body-worn monitors), and common data-related issues associated with different methods of collection. They will also gain experience cleaning, analyzing, and comparing data from across data categories that were collected from

different instruments. Although the issues discussed and the methods demonstrated in this course use physical activity data, skills learned should be applicable to non-physical activity data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110; CREQ: BIOST 2049 or 2142

EPIDEM 2154 - INTRODUCTION TO BEHAVIORAL AND PHYSICAL ACTIVITY EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
Modifiable habitual behavioral factors including physical activity/inactivity are important determinants in the development of many health outcomes. This course will provide an up-to-date introduction to understanding what these types of behavioral factors are (eg. physical activity/ sedentary behavior, smoking, eating habits), how they fit into the web of causation with other types of factors (such as genetic and environmental factors), and how they can be targeted for prevention efforts as "modifiable" risk factors. There will also be a brief introduction to evidence-based lifestyle interventions including those involving physical activity and sedentary behavior and a discussion of issues related to collecting data on these factors in special populations. This will lay the foundation for a more in-depth exploration of physical activity epidemiology in the second half of the semester including research design methods, measurement and reporting of physical activity in epidemiology studies. Students will gain practical experience through in-class exercises with physical activity measurement and reporting.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES

Minimum Credits: 2
Maximum Credits: 2
The goal of this course is to provide students with a basic understanding of epidemiologic techniques used to describe patterns of infectious disease transmission and risk for infection. In addition, students will learn about the epidemiology, public health impact, and prevention and control measures for selected infectious diseases. This course includes a series of lectures and practical exercises to introduce students to both the application of epidemiologic skills pertaining to infectious diseases and the public health concepts associated with specific infectious diseases.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110
Course Attributes: Global Studies

EPIDEM 2161 - METHODS INFECTIOUS DISEASES EPIDEMIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Covers important topics in infectious diseases epidemiology, including public health surveillance, emerging infectious diseases, the role of infectious diseases in the etiology of chronic diseases, and epidemiologic study designs and laboratory methods used in infectious diseases epidemiology. Course includes lectures, readings, and mid-term (take home) and final examinations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Global Studies

EPIDEM 2162 - INFECTIOUS DISEASES AND GLOBAL HEALTH

Minimum Credits: 2
Maximum Credits: 2

This course will deal with the epidemiology, pathogenesis, and control aspects of infectious diseases of global health impact including malaria, HIV, tuberculosis, COVID-19, anti-microbial drug resistance, etc. State-of-art knowledge of the natural history, biology, virology or microbiology, epidemiology, clinical and public health, and vaccine efforts will be reviewed. Descriptive, analytic, and experimental epidemiologic studies will be critically reviewed to provide a synthesis of our current understanding of the topical global infectious diseases. The format will include didactic lecture, interactive discussion, small work groups and home-assignments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110 and EPIDEM 2160

EPIDEM 2163 - GLOBAL EPIDEMIOLOGY OF VACCINES AND VACCINATION

Minimum Credits: 2
Maximum Credits: 2
This course will provide students with knowledge and skills related to the study of vaccines and vaccination programs in the US/EU and in low- and middle income countries. This course will prepare students for entry-level positions in vaccine research or programming for academic, government, or private sector institutions. This course will provide a broad introduction to a wide range of vaccine related topics ranging from biological mechanisms of vaccines to vaccine financing. Within this range of topics, the course will focus heavily on the epidemiological study of vaccine efficacy, safety, effectiveness, and impact. The course is organized around four themes: 1) introduction; 2) vaccines; 3) research and development; and 3) vaccination programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110; PROG: Graduate Sch of Public Health

EPIDEM 2166 - GLOBAL CONTROL OF AIDS/HIV AND TUBERCULOSIS

Minimum Credits: 1
Maximum Credits: 1
This course will deal with the epidemiology of infection with human immunodeficiency virus (HIV) and Tuberculosis (TB). Current knowledge of the natural history, biology, virology or microbiology, epidemiology and clinical aspects of AIDS as well as treatment and vaccine efforts against HIV and TB will be reviewed. Descriptive, analytic and experimental epidemiologic studies will be critically reviewed to provide a synthesis of our current understanding of the pathogenesis of these infectious diseases.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will reinforce epidemiological concepts, research skills and public health concepts in the context of the study of chronic diseases and associated risk factors. The course will provide an overview of the prevalence, incidence and risk factors for major chronic diseases that face the U.S. population and the population around the world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2171 - CANCER EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
The course reviews basic cancer biology, reviews classic descriptive cancer epidemiology, considers the role for modern biomedical

techniques in studies of cancer etiology, and reviews the active hypotheses regarding the etiology of common and uncommon human cancers. Specific topics include biomarkers and intermediate endpoints, tobacco and alcohol associated cancer, viral associated cancer, endocrine related cancer, and nutrition related cancer.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2180 - FUNDAMENTALS OF EPIDEMIOLOGICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
This intermediate epidemiology methods course will focus on the use of standard study designs and statistical methods for answering research questions, the interpretation of results obtained from these methods, and consideration of these issues from a causal inference perspective. Students are expected to have some statistical knowledge and will use SAS, a statistical software package, to analyze data sets. Students will be expected to participate in class discussions that extend and apply the topics covered in lectures to epidemiology research articles and to exercises involving epidemiology in practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110 and BIOST 2041; PLAN: EPIDEM-DPH, EPIDEM-PHD, EPIDEM-MS, or EPIDEM-MPH

EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS

Minimum Credits: 2
Maximum Credits: 2
The course surveys methods in the design and conduct of clinical trials. Clinical trials require successful collaboration of clinical, organizational and statistical skills. This course will focus on clinical and organizational issues, such as patient selection, recruitment, endpoint definition and protocol development. Throughout the semester, students develop a clinical trial proposal that emphasizes the application of the concepts learned. The course will complement courses in biostatistics on the statistical analysis of clinical trials.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2185 - INTRODUCTION TO SAS

Minimum Credits: 2
Maximum Credits: 2
This course is an introduction to SAS, a statistical software package commonly used to perform data preparation, statistical analysis, and graphical presentation of results. The course consists of lectures and four lab sessions, where students will practice in a guided manner what was taught during the preceding lectures. The aim of this course is to teach students how to write basic SAS programs to import data, export data, create data sets within SAS, clean data, prepare data sets for analysis and apply statistical, as well as graphical, procedures. Students will also learn to make informed decisions regarding the appropriate SAS commands and options to use for these tasks and will be asked to use SAS for solving a set of simple specific research questions. Upon completion of this course students will feel comfortable using SAS as a tool to conduct research and know how to subsequently further develop their own SAS programming skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Epidemiology (MS or MPH or PHD or DPH)

EPIDEM 2186 - INTRODUCTION TO R

Minimum Credits: 2
Maximum Credits: 2
This introductory course will help students become familiar with the R software for data management and statistical analysis in public health. The R software is widely used in a broad range of scientific disciplines and has a large, active user community. Many resources exist online to learn R, but few are focused on the public health domain. This course will combine lectures and extensive hands-on exercises to guide students in learning R for a wide variety of tasks, including data import/export, data preparation and management, basic statistical analyses, and visualizations. Students will also learn how to create their own functions in R, how to manage their code, and how to make their work reproducible.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EPIDEM 2189 - EPIDEMIOLOGICAL METHODS OF LONGITUDINAL & TIME-TO-EVENT ANALYSES

Minimum Credits: 3
Maximum Credits: 3
This course will introduce the students to advanced regression methods used to address research questions involving longitudinally collected data from an epidemiological perspective. It serves as the second epidemiological methods course in the Department of Epidemiology following EPIDEM 2180. The course content includes an introduction to standard analytical methods of longitudinal data and time-to-event outcomes as well as missing data in this study setting. Sample size and power calculations involved when using these methods will be presented. Causal inference framework within the longitudinal study setting will be briefly introduced late in the course. SAS, a statistical software package, will be used in all presented examples and class notes. This course will not cover statistical theories of longitudinal data and survival analyses. It is an applied course of those two methodological approaches.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2180 and (BIOST 2049 or 2142); PLANS: EPIDEM-DPH; EPIDEM-PHD; EPIDEM-MPH; EPIDEM-MS

EPIDEM 2191 - ADVANCED THEORY AND METHODS FOR THE ANALYSIS OF EPIDEMIOLOGICAL DATA

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to advanced epidemiologic and statistical methods. The focus of the course is on the fundamental theoretical and applied aspects of using data to answer research questions. Students will be introduced to the causal inference framework and how it relates to standard (e.g., linear and logistic regression) and novel (e.g., inverse probability weighting, g computation, double robust) analytic methods. Students will learn how to use various machine learning (random forest, gradient boosting, support vector machines) approaches for causal effect estimation and predictive analytics. Student will learn how to apply these methods using R.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pre-reqs: BIOST 2049 AND EPIDEM 2180 AND EPIDEM 2189

EPIDEM 2192 - CAUSAL INFERENCE IN EPIDEMIOLOGIC RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The focus of this course is on the fundamental theoretical and applied aspects of using data to attempt to answer causal questions in epidemiologic research. Students will be introduced to formal causal inference frameworks, including the concept of target trials, causal diagrams, and counterfactual theory. Using these frameworks, students will learn to articulate well-defined causal questions for point interventions and sustained treatment strategies, describe conditions sufficient for identifying causal effects, and apply appropriate data analyses for estimating causal effects.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2180 and 2189 and BIOST 2041 and (BIOST 2049 or 2142)

EPIDEM 2193 - MACHINE LEARNING IN EPIDEMIOLOGICAL RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Machine learning methods are a set of tools for analyzing epidemiologic data with complex interactions or high dimensions. This course focuses on application of supervised and unsupervised learning techniques used in Epidemiology. Sample topics include penalized approaches for regression, decision trees and random forests, dimension reduction, and clustering. The computing package R will be used in all examples and class notes. This class focuses on applications, ensuring that students can appropriately manipulate datasets, apply and interpret these methods. The class will be reading manuscripts using these methods to understand how and when they are used within epidemiology as well as to identify strengths, weaknesses and ethical issues in the techniques and the author's interpretation of them.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2180 and 2186 and 2189

EPIDEM 2210 - SPECIAL STUDIES - ESSAY

Minimum Credits: 1
Maximum Credits: 15
Research credits for master's essay.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: EPIDEM-MPH

EPIDEM 2213 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
Properly qualified students may undertake special study or research which does not apply to the master's essay or doctoral dissertation. This study must be done with permission of the specific faculty member who will supervise the work.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

EPIDEM 2214 - PUBLIC HEALTH INTERNSHIP

Minimum Credits: 1
Maximum Credits: 4
This internship provides an opportunity to gain valuable knowledge and experience that would not normally be available through coursework. Placements may be outside of the University of Pittsburgh (e.g., in health services organizations, clinics, health departments, community based organizations working with "at risk" populations) or within the University. Each specific placement is to be agreed upon by each student and his/her faculty advisor, based on the strengths, needs and career/academic goals of students. Internship sites should provide a minimum of 200 hours of public health oriented work (generally 20 hours/week for 10 weeks). Students are encouraged to pursue placements beyond the online list and to think creatively about the domestic and international possibilities. Students are encouraged, but not required, to develop their master's essay based on their internship experience.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis
Course Requirements: PREQ: EPIDEM 2110 and BIOST 2041

EPIDEM 2215 - TEACHING PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide doctoral students with opportunities to develop practical skills in teaching and mentoring students taking epidemiology courses. As teaching assistants, students may lecture, grade homework and exams, lead review sessions, hold office hours or maintain course blackboard sites. They may also help plan, update or expand course syllabi or teaching materials. Course goals include improvement in oral and written communication skills and exposure to the process of planning and implementing a course.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

EPIDEM 2221 - GEOSPATIAL MAPPING AND SPATIAL ANALYSIS IN EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide a conceptual understanding of the field of environmental epidemiology and to provide the spatial statistical tools for geospatial analysis. The course will provide "hands on" training in software and tools for analysis of spatio-temporal variations in health and disease with respect to demographic, environmental, behavioral, socioeconomic, genetic, and infectious risk factors. Basic tutorials in Arc GIS (10.3) and Geoda freeware will be provided. There will be 7 assignments over the term and 1 final project. The course is meant for all interested master's and doctoral students who have taken an introduction to Biostatistics and Introduction to Epidemiology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2041 and EPIDEM 2110

EPIDEM 2223 - INTRODUCTION TO ENVIRONMENTAL EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This is an introductory course in which we outline fundamental principles specific to environmental epidemiology as a subdiscipline of epidemiology. The evolution of environmental epidemiology studies, including refinement of exposure assessment and outcome measurements, will be provided. This course will provide understanding of routes of exposure to environmental contaminants, and how to quantify these exposures. Example reports of environmental epidemiology studies and cluster investigations from various government agencies, as well as peer reviewed literature, will be discussed. Publicly available datasets for both environmental agents as well as relevant health outcomes will be made available and discussed. Another topic will be the potential for exposure misclassification, including confounding social factors. Students will gain appreciation and understanding of how environmental agents contribute to disease and how epidemiologists study these associations in human populations. Students will begin to understand the benefits and disadvantages of relevant study designs, and will develop topical preliminary expertise on specific environmental agents.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or BIOST 2041)

EPIDEM 2230 - SECONDARY DATA ANALYSIS: A CAPSTONE COURSE

Minimum Credits: 2
Maximum Credits: 2
This course covers methods for obtaining and presenting data from existing sources. Classes will cover data management, effective practices for statistical programming when analyzing data, and presenting results of a research project in the context of large public-use datasets. Students will work in groups on a secondary analysis research project that will be presented in seminar format.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2180

EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Areas of current epidemiology interest in research are presented. Often a general theme such as epidemiology of aging, women's health issues, disorders of immunity, is chosen. All departmental majors are expected to take this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

EPIDEM 2260 - EPIDEMIOLOGICAL BASIS DISEASE CONTROL

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to gain understanding of the principles underlying disease prevention and develop the ability to apply these principles to the design, implementation, and evaluation of prevention interventions for chronic and infectious diseases. The first part of the course will be devoted to learning the principles of surveillance and risk assessment and their applications in epidemiologic practice, including prediction modeling. The second part will focus on application of observational data and efficacy and effectiveness studies to populations in the development of evidence-based practices. The third part will focus on the implementation and evaluation of prevention strategies for chronic and infectious diseases. Throughout the course, there will be an emphasis on the interaction of biologic and clinical information with epidemiologic data and analysis as well as the impact of prevention interventions on health policies and health equity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041)

EPIDEM 2261 - APPLIED EPIDEMIOLOGY FIELD INVESTIGATION METHODS

Minimum Credits: 2
Maximum Credits: 2
This course introduces students to the methods of applied field epidemiology used in applied epidemiology settings such as federal, state, local and tribal government agencies. Upon completion of this course, students will be prepared to conduct urgent public health investigations and write reports for public consumption. This course will also introduce students to applied epidemiology topic areas and their respective analytic methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110 and EPIDEM 2180; PLAN: EPIDEM - MS or MPH

EPIDEM 2310 - PSYCHIATRIC EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will review the classification systems, research methods, methodological issues in psychiatric epidemiology, and the distribution of common child, adolescent, and adult psychiatric disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2340 - PEDIATRIC EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will focus on epidemiologic approaches to the study of disorders that occur during childhood and will provide an overview of common physical and psychiatric childhood disorders. In addition to describing the epidemiology of the disorders, consideration will be given to the risk factors, research methods, and methodological issues in pediatric epidemiology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2400 - PSYCHOSOCIAL FACTORS IN DISEASE

Minimum Credits: 2
Maximum Credits: 2
This course focuses on psychosocial and behavioral factors that influence the development and course of physical disease. Some of these factors can be modified, so identification can lead to improved health. This course is directed towards students who want to learn about the most common psychosocial factors implicated in disease, how they are measured, psychometric issues, and how to incorporate them into studies of disease and physical health. Students will also learn how to analyze and evaluate the strengths and limitations of studies that include psychosocial factors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110; PROG: Graduate Sch of Public Health

EPIDEM 2450 - EPIDEMIOLOGY WITH ELECTRONIC HEALTH CARE DATA

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the application of epidemiologic principles and methods to electronically stored data originating from the documented interactions of individuals with health care delivery organizations. Such data are primarily drawn from electronic health records (EHR) and insurance claims. EHRs and insurance claims are important data sources for epidemiologic research on diagnosis, treatment, and outcomes. The course will address common methodological issues in epidemiologic analyses of EHR and claims datasets. Topics to be covered include study designs using electronic health care data, validation of case definitions based on diagnosis code algorithms, data missingness, linking datasets across data sources, etc. A growing interest in this field has emerged over the last decade with the proliferation of EHRs across the United States, combined with a growing realization of the importance of real-world data for understanding disease burden and the effects of treatments in non-clinical trial populations. The course will provide valuable knowledge for careers in several job sectors such as traditional academia, health care organizations, government organizations such as the Food & Drug Administration, pharmaceutical & medical device companies, departments of public health, and health care consulting firms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2600 - INTRODUCTION TO MOLECULAR EPIDEMIOLOGY

Minimum Credits: 3
Maximum Credits: 3
To provide students with an introduction to the key concepts in genetics and molecular biology, and the diverse ways they are used to solve practical problems in the epidemiology of disease and risk identification. This course will deliver the working knowledge of genetics and molecular biology necessary for critical assessment of molecular epidemiological studies. It will provide suitable preparation for more advanced and specialized study in molecular epidemiology. The student will develop familiarity with the ways molecular epidemiology is used to determine susceptibility to disease and response to interventions. The main topics covered are: genetic susceptibility, the use of biomarkers, and molecular association studies.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2602 - APPLICATION OF MOLECULAR BIOMARKERS IN EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will advance the learning of students interested in molecular epidemiology by teaching practical aspects of measuring, quantifying and modeling levels of RNA and protein in human biological specimens (blood, tissue,etc). Some topics will include: selecting and validating biomarkers of RNA and protein for application in epidemiologic study design, candidate molecule vs. omics (high-dimensional) approaches, basic know-how in the design and execution of bioasssays, and statistical issues in biomarker data analysis. Students will observe the work of a molecular epidemiology laboratory, and have opportunities for hands-on learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PREQ: Undergraduate Biology, more than one EPIDEM course, one BIOST course, and EPIDEM 2600.

EPIDEM 2670 - INJURY EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide an introduction to and understanding of the epidemiology of injuries. The class will review the fundamentals underlying injury data and the methods used in injury research studies. Research in major injury topics; motor vehicle crash, violence, sports injury, and other topics will be discussed in depth. Through instruction and practice with data, participants will become familiar with the importance of injury as a public health problem, the strengths and weaknesses of injury data sources and injury surveillance systems, and injury research methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2709 - EPIDEMIOLOGY OF WOMEN'S HEALTH

Minimum Credits: 1
Maximum Credits: 1
This overview course on women's health is designed to introduce the student to a variety of health conditions that are unique to, more common in, or more severe in women. We present these features within a health equity lens. A range of health topics will be covered including reproductive outcomes, maternal outcomes, cardiovascular disease, depression, and ageing. This course will also introduce to students the concept of life course epidemiology and its implementation in women's health research. A life course approach assesses the biological and social factors at each stage of life that affect health during adulthood. This course will review study designs appropriate for a variety of life course research questions related to women's health and health equity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2719 - REPRODUCTIVE EPIDEMIOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course first presents a solid background of critical approaches and methodologic challenges unique to reproductive epidemiology, an overview of maternal physiology, equity in sexual and reproductive health, and availability and application of data sources and dashboards for the study of reproductive epidemiology. The course subsequently covers special topics in gynecologic and sexual health and prenatal health including sexually transmitted infections and infertility, contraception, intimate partner violence and reproductive coercion, preterm birth, infecti

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or BIOST 2041)

EPIDEM 2725 - REPRODUCTIVE DEVELOPMENT FROM MODEL ORGANISMS TO HUMANS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the molecular aspects of the transition from gamete to a reproductive organism. The course progresses through the building of germ cells, fertilization and stem cell participation to sex determination, gonad morphogenesis, puberty, menopause and pregnancy. This course highlights both human and model organisms to bring together diverse aspects of the cell and developmental biology of reproductive tissues and their impact on disease pathology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: PUBHLT 2015 or EPIDEM 2004

EPIDEM 2850 - PHARMACOEPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide an introduction to the field of pharmacoepidemiology, which uses epidemiologic methods to examine the benefits or risk of medications in the population. This course will: explain what pharmacoepidemiology is and what types of study designs are used within this methodology, discuss the roles that pharmacoepidemiology studies have regarding drug use and health outcomes; describe the threats to validity that are possible in pharmacoepidemiologic studies and the variety of solutions available to avert or control for these threats. This information will prepare students to both interpret and critique, in writing and through presentations, studies from the pharmacoepidemiology literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

EPIDEM 2900 - ADVANCED EPIDEMIOLOGY OF AGING

Minimum Credits: 2
Maximum Credits: 2
This is an advanced course targeted towards Epidemiology PhD students. The purpose of this course is to understand in depth the current epidemiologic research findings regarding common health conditions and geriatric syndromes in the aging population. The course will focus on the common age related processes and chronic health conditions that contribute to disability and frailty and on enhancing successful aging and preventing disability. Advanced research methods will be reviewed as part of each class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110 and 2981 and (BIOST 2011 or 2041); PROG: Graduate Sch of Public Health

EPIDEM 2921 - GRANT WRITING

Minimum Credits: 3
Maximum Credits: 3
During this course, students will develop a grant proposal on a research topic that should be their dissertation topic. The proposal will be written in the format of the National Institutes of Health (NIH) R01 grant application. The application will include specific aims and a research plan that includes significance, innovation, and approach. Students will participate in small-group discussions to provide and receive peer feedback. Students must receive approval to enroll in the course from their academic advisor or dissertation chair and the course instructor.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: EPIDEM 2110 and 2180 and 2183. RECOMMENDED: EPIDEM 2160 and 2170.

EPIDEM 2923 - SCIENTIFIC WRITING IN EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
The focus of this course will be learning how to organize, write, and review a primary research paper with an emphasis on writing skills through hands-on experience. Through a combination of in-class lectures and independent work, the students will learn how to organize and write a publishable research paper. By the end of the course, students will have a completed manuscript suitable for submission and peer review. Students will become aware of the common problems associated with each section including Introduction, Methods, Results, and Discussion. Students will learn about current issues surrounding the ethics of publication and authorship. Students will review each others' completed manuscripts and discuss the critiques in the format of a journal editorial review board. Students are expected to bring a work in progress for this course. If not actively working on a manuscript, students should seek a project through their advisor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EPIDEM 2950 - EPIDEMIOLOGY OF AGING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
The workshops are designed as practical professional skill development to supplement to the additional coursework for the Epidemiology of Aging trainees and students. The workshop will include sessions on: presentations by the students from their research, journal article reviews, longitudinal analyses techniques, and professional skills sessions. The presentation sessions provide an opportunity for students to present and refine their interim research and data analyses by obtaining feedback from peers, faculty and mentors on their work in progress. Journal article review sessions will provide an opportunity for students to identify and share current articles relevant to the epidemiology of aging and develop proficiency in the critical review of scientific literature. Emphasis will be placed on understanding emerging and novel methods in the field, particularly longitudinal statistical analyses techniques (e.g. handling missing data longitudinally; interpreting changes in slopes over time; joint modeling). A faculty member will help student leaders select articles (distributed before the meeting) and will work with students to encourage questions and discussion among the group. Professional skill sessions will vary by semester and cover topics such as post-doctoral career development, grant and professional medical writing, and longitudinal data analysis.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad HSU Basis

EPIDEM 2981 - EPIDEMIOLOGY OF AGING-METHODS

Minimum Credits: 2
Maximum Credits: 2
This course will introduce the methodological aspects of epidemiologic research in the field of aging and to critically evaluate research in older adults. The course will focus on: demography, study design, sampling, recruitment, retention, measurement of key variables and special populations. Students will write a critical review of a published article and comment on proposed future directions for epidemiologic studies addressing these questions in older populations. Throughout the course, a Problem Solving Learning Method will be applied by prompting the students to solve pragmatic issues. Examples include: How to measure a specific outcome? What type of chronic health conditions may be related to the research question? How to operationalize specific measures of interest (e.g.: how to create a composite score for co-morbidity assessment?). The course has been formulated to provide the students with the building blocks of the epidemiological study of aging. By the end of the course, the students will be able to critically evaluate various components of a study to further address the research questions in aging populations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110

EPIDEM 3100 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Research and dissertation for the doctoral degree after passing preliminary exams.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: EPIDEM-PHD

EPIDEM 3140 - TARGET TRIAL EMULATION

Minimum Credits: 2
Maximum Credits: 2
For many types of public health and medical decision-making, we rely on analysis of observational data in order to inform the effects of treatment strategies or interventions. The target trial framework provides a rigorous and grounded guide for such analyses, by encouraging researchers to specify the protocol of the hypothetical randomized trial that would have answered the question of interest and then emulating that protocol in how available data are analyzed. This course introduces the target trial framework. Through readings, discussions, guided exercises, and development of the students' own research ideas, students will understand the strengths and limits of the target trial framework and put the framework into practice. Students must either have taken EPIDEM2192 previously or be concurrently enrolled in EPIDEM2192. The course is designed for students in the School of Public Health who are in the planning phase of proposing an analysis to emulate a target trial using data available to the student. The student must either already have access to their data source or have detailed knowledge of the data source. Advisor permission is required to enroll to ensure the student meets these requisites.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2192

EPIDEM 3183 - READING, ANALYZING, AND INTERPRETING THE PUBLIC HEALTH AND MEDICAL LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This course provides the opportunity to analyze, interpret and critique original research articles. Topics covered include types of review articles, library searches and bibliographic database development, assessing study validity, subject selection in reference to the target population, bias, confounding, appropriateness of statistical analyses and results presentation, and interpretation of findings with consideration for study limitations. The course also includes detailed instructions on how to conduct a targeted systematic review. Additionally, students will be introduced to meta-analysis methodology and learn how to judge when a meta-analysis is and is not appropriate. Assignments consist of oral and written reviews of published papers, a targeted systematic literature review on a topic chosen by the student that follows published reporting guidelines, and peer editing. Discussions and small group work are used to apply concepts covered in lectures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110 and EPIDEM 2180 and BIOST 2041 and (BIOST 2049 or 2142), or equivalent; PLAN: EPIDEM-DPH or EPIDEM-PHD

Experiential Learning - ARTSC

EXLA 1990 - UNDERGRADUATE SUMMER RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course is offered in the summer term for undergraduate student researchers who are not enrolled in another course

Academic Career: Undergraduate
Course Component: Directed Studies
Grade Component: Print No Grade

Experiential Learning - ENGR

EXLH 1990 - UNDERGRADUATE SUMMER RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course is offered in the summer term for undergraduate student researchers who are not enrolled in another course.
Academic Career: Undergraduate
Course Component: Directed Studies
Grade Component: Print No Grade

Faculty Development

FACDEV 2200 - PRACTICUM ON UNIVERSITY TEACHING

Minimum Credits: 1
Maximum Credits: 3
This course in university teaching is designed for people who are teaching independently for the first time, or who have the flexibility in a recitation to design course materials and teach subject matter. It features the application of instructional principles to course development and materials.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

Family Medicine

FM 5316 - FAMILY MEDICINE CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
Family medicine clerkship is a four week experience in primary care discipline that deals with comprehensive care of individuals and families with special focus on preventive medicine, addressing psychological and social determinants and consequences of illness. Clerkship has five goals: 1) improve and evaluate student clinical skills; 2) provide students with fundamental knowledge of diagnosis and management of common problems; 3) provide rational and scientific approach to preventive medicine; 4) learn unique aspects of family medical care; 5) economic influences of health care delivery and care of patient.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

FM 5317 - FAMILY MEDICINE CLERKSHIP 3RC

Minimum Credits: 0
Maximum Credits: 0
The Family Medicine Clerkship is a 4-week rotation that encompasses the comprehensive and longitudinal care of patients with a special emphasis on care of individuals in the context of families and communities.
Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U

FM 5401 - FAMILY MEDICINE ACTING INTERN

Minimum Credits: 0
Maximum Credits: 0
Four week experience which fulfills the acting internship requirement in which students participate in a family practice teaching service at the level of a first year resident under direct supervision of senior residents and attending physicians. Students are responsible for initial patient evaluation and implementation of care, including writing orders and following up on evaluations. Students participate in night call and weekend coverage as well as all conferences. This is primarily an inpatient experience.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5406 - EXTRAMURAL ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
Students will register for this course when participating in a family medicine acting internship at an institution outside of the university of Pittsburgh school of medicine. This experience will not fulfill the required acting internship experience to meet graduation requirements.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5420 - INDIAN HEALTH SERVICE

Minimum Credits: 0
Maximum Credits: 0
This clerkship is offered at hospitals on the Navajo and other Indian reservations. Each student participates in a project, using clinical epidemiology or health survey techniques. Students may also have some clinical experience at hospitals or clinics; and opportunities to observe various aspects of the IHS field program. Students live in government quarters and work under the direct supervision of us public health service physicians. Overall coordination and research supervision is provided by clinical epidemiology and preventive medicine faculty.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5422 - 2-WEEK INTEGRATIVE MEDICINE ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
UPSOM has offered an integrative medicine elective for medical students for 20+ years. Students work with Dr's. Michelle Thompson and Ronald Glick, in their practices. Dr. Thompson is the Medical Director for the UPMC Lifestyle Medicine Program, is on the faculty of the Center for Mind-Body Medicine, and sees patients for integrative holistically oriented primary care at Hermitage Community Medicine, in Hermitage PA. Dr. Glick is the Medical Director of the Center for Integrative Medicine, is trained in psychiatry and physical medicine and rehabilitation, and sees patients for integrative medicine consultations for mental health and pain conditions that have not responded to conservative approaches. Additionally, students are exposed to a broad range of complementary and alternative medicine (CAM) modalities, with the opportunity to shadow practitioners of acupuncture, various forms of bodywork, integrative and pelvic floor physical therapy, and nutritional experts. Students spend time at the Center for Integrative Medicine at UPMC Shadyside and at Hermitage Community Medicine, which is a 1 hour 15 min drive. Monday and Tuesday with Dr. Thompson is via telemedicine, which students can do from home. Wednesday is in office, but can be done in reverse technology where the learner is not onsite if transportation is an issue and

they follow virtually while Dr Thompson is in person. Commonly, there is an opportunity to attend a virtual class or "group medical visit" highlighting mind-body medicine, weight management, integrative and lifestyle changes for individuals with various health conditions. Time is set aside to allow for independent reading of pertinent articles and texts, exploration of internet-based resources, and viewing educational videos. Informal case-oriented discussions and didactics occurs through the week. There is at least 1 formal didactic session weekly on an integrative health topic of interest. Since this is a 2-week option, the goal will be getting a taste of Integrative Medicine and there will be no presentation requirement.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

FM 5448 - COMMUNITY BASED FAMILY CENTERED MATERNITY CARE

Minimum Credits: 0
Maximum Credits: 0
This elective is intended to offer medical students exposure to a wide variety of Family Centered Maternity Care models through a series of inpatient and outpatient clinical experiences including: 1) INPATIENT AND OUTPATIENT OBSTETRICAL CARE: Routine prenatal care Routine deliveries Post-partum care (4th trimester care) Complications in prenatal and obstetrical care Interconception care (ICC) Women's Health (Contraception & LARC procedures) ALSO (Advanced Life Support in Obstetrics) hands-on training Multi-team based obstetrical care Centering Pregnancy group visits Contact with newborn and children
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5450 - COMMUNITY FAMILY MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This elective is intended to offer medical students opportunity to experience family medicine in a remote community setting which is realistic to how family physicians practice. The student will focus on developing the skills necessary to evaluate and treat patients in a community office setting. The student will participate in a SWPA AHEC community or practice project during the elective. The student will choose one SWPA AHEC family practice site for the duration of the elective. The SWPA AHEC preceptor will be responsible for clinical evaluation of the student.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5455 - PRIMARY CARE SPORTS MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This four-week elective is for the student who is interested in learning more about sports medicine. The musculoskeletal system, its exam and their treatment. Students will be ex posed to a variety of sports/musculoskeletal injuries in a multi-provider outpatient sports medicine team approach. The course objectives are: to improve the student's musculoskeletal system exam skills; to assess and manage the various musculoskeletal injuries encountered frequently in a sports medicine/musculoskeletal outpatient setting; to develop an appreciation of the roles of surgeons.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5456 - EVIDENCE-BASED MEDICINE ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
his elective course will challenge future physicians to develop and strengthen their information mastery skills through discussion and application of evidence-based medicine (EBM). Evidence-based medicine is defined as the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. EBM requires healthcare professionals to stay up to date with current literature, aids in effective communication across the healthcare team, and makes best use of information alongside specific patient factors. EBM does NOT mean something is in a guideline or has been shown in one trial. Rather, EBM is a critical appraisal of these sources to examine any nuances and how they can influence single patients and not populations. This course is virtual and allows for flexibility with student's schedules. Students will participate in several topic discussions about EBM principles, lead critical appraisal of articles, and write an article reviewing a recently published study. This course may be taken by students with any future specialty interests to improve their diligence in practicing EBM.
Academic Career: Medical School
Course Component: Seminar
Grade Component: S/U Basis

FM 5460 - FAMILY PRACTICE

Minimum Credits: 0
Maximum Credits: 0
Clinical experience, intensive exposure to comprehensive primary care. Multiple sites, general association with community hospitals, family practice residency program. 50-100% Clinical ambulatory, variable inpatient. Emphasis on development of problem-oriented interview and exam, formulation of cost-effective diagnostic approach, and establishment of comprehensive management plans. Knowledge of diagnostic and management strategy, presenting symptoms and chronic problems in office practice stressed.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5461 - EXTRAMURAL FAMILY PRACTICE

Minimum Credits: 0
Maximum Credits: 0
Clinical experience, intensive exposure to comprehensive primary care in primarily outpatient office settings. These family practice experiences will take place in community settings or medical schools away from the university of Pittsburgh but within the United States.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5462 - COMBINED FAMILY MEDICINE AND FAMILY PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
This four-week elective focuses on psychiatric and general medical problems in a variety of patients. Student will work on the consultation/liaison service at St. Margaret's Hospital where the student will respond to requests from physicians for psychiatric evaluation of patients on inpatient units. The student conducts the clinical evaluation, investigates any ward management difficulties, assesses the role of the patients family in the clinical problem, makes treatment recommendations and when appropriate does follow up during the patient's hospital stay. The multi disciplinary team on the service attempts to integrate the biological with the psychosocial perspective to achieve a comprehensive view of patient care. Students will participate in family medicine case conferences, attend outpatient experiences at primary care clinics, participate in palliative care interventions and work on the medical care of the psychiatry patient (MCPP) service at WPIC. Learning opportunities include: supervised clinical assessments; hospital rounds; case conferences and seminars. This elective can prepare a student for combined family medicine/psychiatry residency programs.
Academic Career: Medical School
Course Component: Clinical

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5465 - INTEGRATIVE MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to give students a broad exposure to complementary & alternative medicine (cam) modalities & a more in-depth exposure to somatic oriented approaches and pain management. Students will be exposed to practitioners and physicians in clinical settings covering disciplines including: acupuncture, chiropractic, osteopathic manipulative treatment, integrative medicine, integrative pain management and mind-body approaches. Students are expected to pick one clinical problem and explore the evidence-basis for cam modalities that may offer benefit in treatment.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5468 - 2-WEEK LIFESTYLE MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Implementation of the 6 pillars of Lifestyle medicine (sleep, exercise, nutrition, stress management, substance use, connection with others) in a primary care setting, or as the basis of any medical specialty. This elective will be primarily a clinical experience under the leadership of Lifestyle Medicine Certified Physicians. There will be an opportunity to sit in on group medical visits. There will also be a small amount of reading and didactic experiences. We will discuss how Lifestyle Medicine can be used for prevention along with reversal of disease. The goal of the two-week option is for students to get a taste for the practice of Lifestyle Medicine.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

FM 5470 - PRACTICE-BASED PHARMACOTHERAPY

Minimum Credits: 0
Maximum Credits: 0
This is a 4-week elective where students will participate in a variety of activities (direct patient care, group/individual case-based discussions, chart reviews, and projects to improve skills in prescribing and management of medications. Special emphasis will be placed on obtaining a thorough medication and history and using evidence-based drug information databases. The student will learn rational prescribing strategies based on cost, formulary guidelines, effectiveness and individual patient characteristics. Contact will be with clinical pharmacists and family physicians.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5471 - INTERPROFESSIONAL PREVENTATIVE MEDICINE ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This rotation takes place at the Pitt Vaccination and Health Connection Hub on the University of Pittsburgh's Main Campus. Students will have the opportunity to interact with patients from the Pitt Community including faculty, staff, students, and community members through vaccination education, vaccine administration, and wellness screenings. In addition, students will contribute to protocols, policies, and quality improvement projects surrounding vaccination of adults and children over the age of 3. Students will assist with travel health consultations by developing treatment plans focused on vaccinations and appropriate prescription and over the counter medications. Travel consultations are done in collaboration with pharmacists and physicians at the Hub. Periodically, the Pitt Vaccination and Health Connection Hub provides "pop up" vaccination events in the community. Students on this rotation will contribute to the planning and

execution of these events including training volunteers, developing educational materials, and collaborating with site personnel. The Hub is an interprofessional practice with students from all 6 schools of the health sciences at Pitt including: School of Nursing, School of Pharmacy, School of Medicine, School of Dental Medicine, School of Health and Rehab Sciences, and the School of Public Health. Students will learn to work effectively with each profession and develop an understanding of each person's role on the health care team. Students will also have the opportunity to teach other students from each of the health professions about various topics and skills based on their experience. The teaching philosophy at the Hub is to foster independent critical thinking and judgment through encouraging students to lead the patient care process with patients with clinician oversight. Additionally for discussions, simulation, presentations, role play, and small group work, whenever possible interprofessionalism is encouraged. The Hub teaching staff seek to pair and group students across disciplines to learn alongside and from one another through the planned learning activities and patient care.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

FM 5485 - CULTURAL COMPETENCY

Minimum Credits: 0
Maximum Credits: 0
Course objectives: to create better understanding of different health beliefs in different culture, resulting in students with facility in operating in a multicultural environment; foster an understanding of the challenges to physicians and the health care system of varying cultural beliefs and practices; improve the recognition of health beliefs and practice as they present in the clinical setting. The medical student will be introduced to a variety of cultural issues as they relate to medical care. Directed readings will be assigned to expose students to major health beliefs, disparities, challenges and practices of members of a variety of culture groups, including native Americans, African Americans, Arab Americans, eastern European immigrants, Latino Americans, and Asian Americans. Students will spend time with UPMC medical translators, attending to inpatients and outpatients, both in clinics and on house calls, learning both from the medical reasons for the patient seeking care, and the background health belief. Students will also attend health education events as available in community settings, including steps to a healthy community programs, center for minority health programs, Jewish community center programs, and other opportunities. The student will be expected to do a complete family health belief study on a selected patient's family, including recommendations for improvement of the quality of their health experience. Students will have a weekly meeting with the course director to discuss suggested readings and how the content applied to the clinical experiences.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5486 - MASS VACCINE ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This rotation takes place at the Pitt Vaccination and Health Connection Hub on the University of Pittsburgh's Main Campus. Each fall, the faculty, staff, and students at The Hub are responsible for conducting mass vaccination events for the University of Pittsburgh community. During this two-week rotation, students will have the opportunity to work with experts in the field of mass vaccination and public health. They will help with the ongoing design and implementation of mass vaccination events at locations such as the Peterson Event Center, The Pitt Student Union, and the University of Pittsburgh Community Engagement Centers. Students will help to lead Health Sciences nights at The Hub where they will educate and vaccinate colleagues from the Health Sciences schools. Students on this rotation will also be responsible for helping to recruit volunteers, train colleagues from other allied health professions, and discuss quality improvement related to mass vaccination events. The Hub is an interprofessional practice with students from all 6 schools of the health sciences at Pitt including: School of Nursing, School of Pharmacy, School of Medicine, School of Dental Medicine, School of Health and Rehab Sciences, and the School of Public Health. Students will learn to work effectively with each profession and develop an understanding of each person's role on the health care team. Students will also have the opportunity to teach other students from each of the health professions about various topics and skills based on their experience. The teaching philosophy at the Hub is to foster independent critical thinking and judgment through encouraging students to lead the patient care process with patients with clinician oversight. Additionally for discussions, simulation, presentations, role play, and small group work, whenever possible interprofessionalism is encouraged. The Hub teaching staff seek to pair and group students across disciplines to learn alongside and from one another through the planned learning activities and patient care.
Academic Career: Medical School

Course Component: Clinical
Grade Component: S/U Basis

FM 5500 - INTERNATIONAL FAMILY MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This elective is intended to give some structure and guide lines for students wishing to experience medical care in other countries. Although the department has some contacts in other countries, students are strongly encouraged to pursue their own interests and contacts. Students should focus on the practice of medicine in other countries as well as the epidemiology and public health issues within the country.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5505 - FAMILY MEDICINE IN HONDURAS

Minimum Credits: 0
Maximum Credits: 0
This is a four week elective to expose the student to a global health experience in a community based project working with shoulder to shoulder San Jose in Honduras. It will consist of 2 weeks in Pittsburgh and 2 weeks in San Jose del Negrito, Honduras, under the direction of shoulder to shoulder Pittsburgh and the UPMC family medicine global health (GH) team. In select situations a student with fluency in Spanish and prior international travel experience may construct a four week rotation entirely in Honduras. Each student will have an opportunity to practice clinical medicine and preventative care in a low resource setting in rural Honduras. There will be structured educational objectives in public health, tropical medicine and community oriented primary care. The team traveling to San Jose will work with the local nurse and physician in the local clinic setting as well as the various community projects. Each student will be active not only in the clinic setting but in the wider community as the project focuses on community development and community health.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5815 - BIOETHICS CONFERENCE AND READINGS IN BIOETHICS AND FAMILY MEDICINE

Minimum Credits: 0
Maximum Credits: 0
The student will attend at his/her own expense, two (2) weeks of conference (s) in bioethics that is accredited (one week option can be discussed). The rotation is offered for four (4) weeks of credit. Independent readings, writings and discussion with Dr. Zimmerman or other faculty of the readings will be needed to complete the course. The student is encouraged to attend any lectures by the center for bioethics and health law. Objectives: use various ethical theories to analyze bioethical issues related to family medicine; understand perspectives on bioethical issues at the beginning of life and/or the end of life; interact with other professionals from a variety of backgrounds on bioethical issues; identify resources for understanding bioethical issues.
Academic Career: Medical School
Course Component: Seminar
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5840 - RESEARCH IN FAMILY MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This elective is available to interested and motivated students. This elective provides opportunities to learn basic research methodology which may include approach to experimental design, protocol development, data analysis and evaluation of results. Student may participate in ongoing research in the lab and on patients.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5900 - FAMILY MED INDEPENDENT STUDY

Minimum Credits: 0
Maximum Credits: 0
Students interested in pursuing a particular course of independent study and/or research may choose this elective. Topic to be determined by student and preceptor.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5910 - LEADERSHIP/MANAGEMENT/ADMINISTRATION

Minimum Credits: 0
Maximum Credits: 0
This elective will offer the opportunity to develop a wide view of medical leadership and management. Through a series of directed readings, guided experiences, and a "mini-project," students will extend their understanding of clinical managerial sciences: quality management and improvement; utilization management; the us health care system; cost benefit analysis and the distribution of the health care dollar; medical staff administration and function; managed care systems, incentives and trends; measuring physician performance; and introductory accounting and financial management concepts. The student will be evaluated by various faculty members and the course director based on oral examination of the knowledge of the readings, the "mini-project," and engagement in the topic.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U

Film and Media Studies

FMST 1898 - TELEVISION NEWS PRACTICUM: PITT TO THE POINT

Minimum Credits: 3
Maximum Credits: 3
Television News Practicum: Pitt to the Point is a hands-on course practicum that produces one live hour-long, television news/magazine program per week, incorporating every facet of broadcast television. The course incorporates news writing, feature writing, research, formatting, pre-production, live production, as well as public speaking and direct interaction with broadcast industry professionals. The course covers news, sports, entertainment, and politics across the University of Pittsburgh campuses, as well as the city of Pittsburgh. This is a production course and counts for a Category III for the Film and Media Studies major and minor. It is part of the Television and Broadcast Arts Certificate and the Media and Creative Industries certificate. The course may be taken a maximum of two times, but it can only count once towards Film and Media Studies major and minor and the Television and Broadcast Arts Certificate requirements.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SU3 Elective Basis
Course Requirements: PREQ: FMST 1886 and 1893

FMST 2151 - FILM HISTORY/THEORY

Minimum Credits: 3
Maximum Credits: 3
This course will explore issues relating to film theory, history and research methodology. We will discuss dominant modes of film criticism and explore the creation of "cinema history". We will examine different formulations of this history, tracing how certain explanations of events in cinema have come to prevail, and how certain methods of writing about film have become institutionalized.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2151 - FILM HISTORY/THEORY

Minimum Credits: 3
Maximum Credits: 3
This course will explore issues relating to film theory, history and research methodology. We will discuss dominant modes of film criticism and explore the creation of "cinema history". We will examine different formulations of this history, tracing how certain explanations of events in cinema have come to prevail, and how certain methods of writing about film have become institutionalized
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2152 - FILM HISTORY/THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This seminar will focus on the history and theory of cinema from 1960 to the present. While individual theorists and historians will be discussed (e.g. Cavell, Deleuze, Frampton, Kluge, Gunning, Mulvey), there will be special attention paid to historical and theoretical arguments within film studies, such as: psychoanalysis and theories of spectatorship; apparatus theory; historicism and archival research; film and philosophy; theories of genre, adaptation, and performance; neo-formalism and cognitive theory; and the rise of new media, from television to digital cinema and from Imax to video games. These arguments will be explored through major film movements and film-makers, taking up topics such as international art cinema, the changing Hollywood studio system, the role of political cinema, and the growing importance of documentaries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2152 - FILM HISTORY/THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This seminar will focus on the history and theory of cinema from 1960 to the present. While individual theorists and historians will be discussed (e.g. Cavell, Deleuze, Frampton, Kluge, Gunning, Mulvey), there will be special attention paid to historical and theoretical arguments within film studies, such as: psychoanalysis and theories of spectatorship; apparatus theory; historicism and archival research; film and philosophy; theories of genre, adaptation, and performance; neo-formalism and cognitive theory; and the rise of new media, from television to digital cinema and from Imax to video games. These arguments will be explored through major film movements and film-makers, taking up topics such as international art cinema, the changing Hollywood studio system, the role of political cinema, and the growing importance of documentaries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2153 - PROSEMINAR IN FILM AND MEDIA STUDIES

Minimum Credits: 1
Maximum Credits: 1
All students in the Film and Media Studies Ph.D. program are required to complete a one credit proseminar in film and media studies prior to taking their comprehensive examinations. Enrolled students attend a designated lecture by invited scholars, as well as an associated ninety-minute seminar conducted by a Film and Media Studies faculty member concerning the work of the speaker or the topic addressed. The faculty member conducting the seminar will typically choose pertinent readings to be completed prior to the lecture and seminar. The proseminar is usually offered twice a year: once during the fall term and once during the spring, with a lecture and its associated seminar scheduled each term. Invited scholars may or may not participate in the seminar meetings. Dates and times of visiting speakers and the associated seminars will be announced well in advance so that students may plan their schedules accordingly. A student in the program may repeat the proseminar for up to three credits. The proseminar in film and media studies seeks to expand and enhance our graduate students' experience of the critical exchange of ideas, by involving them more fully in the contemporary research being conducted by film and media scholars from around the world.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2155 - FILM HISTORIOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
This course will look into theories of film history exploring philosophies behind their social, political, economic, technological, and textual stakes. We will analyze how various forms of film history, intellectual and popular, assert their truth and credibility, and discuss how these kinds of claims might be supported and contested. We will explore the problems of writing film history, particularly in eras where little material survives for any kind of study or where language becomes a major barrier.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2155 - FILM HISTORIOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
This course will look into theories of film history exploring philosophies behind their social, political, economic, technological, and textual stakes. We will analyze how various forms of film history, intellectual and popular, assert their truth and credibility, and discuss how these kinds of claims might be supported and contested. We will explore the problems of writing film history, particularly in eras where little material survives for any kind of study or where language becomes a major barrier.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2220 - NEW CHINESE CINEMA

Minimum Credits: 3
Maximum Credits: 3
Students will study Chinese films made by filmmakers of mainland China and Taiwan. They will learn about origins, development, themes, and styles with major directors and important films of new Chinese cinema being studied. Students will have an opportunity to understand contemporary Chinese culture and society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies, Film Studies

FMST 2235 - JAPANESE CULTURE AND SOCIETY THROUGH CINEMA

Minimum Credits: 3
Maximum Credits: 3
This course provides a critical study of selected international prize winning Japanese films and compares these films with Western films dealing with similar themes. The student learns to analyze and interpret films; becomes familiar with particular genres of Japanese films compared with Western; studies the history of Japanese cinema and its place in international cinematography and exposes the inter cultural benefits of judging the content of the films from oriental and Western aesthetic perspectives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies, Film Studies

FMST 2250 - SIEGFRIED KRACAUER AND THE ORIGINS/FUTURES OF FILM AND MEDIA STUDIES

Minimum Credits: 3
Maximum Credits: 3
Siegfried Kracauer (1889-1966) is now widely regarded as one of the most important and innovative theorists of film and media studies. But this was not always the case, as he was overshadowed for decades by his more famous German Jewish contemporaries Theodor Adorno and Walter Benjamin. What Kracauer offers us now is a unique bridge between the classical origins of film and media theory in the 1930s-1960s and the possible futures for those theories today. Kracauer's remarkable career included fleeing Hitler's Europe and eventually arriving in New York to establish himself as a fellow traveler with major intellectual figures such as the film critic Robert Warshow, the art historian Meyer Schapiro, and the political theorist Hannah Arendt. In this milieu, Kracauer's work blazed trails across topics as varied as spectatorship, experience, genre, aesthetics, history, and realism, as well as media forms as diverse as film noir, fascist propaganda, animation, documentary, and photography. In this seminar, we will explore Kracauer's texts and contexts in order to grapple with urgent questions in film and media studies now.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2327 - NEW EAST SYMPOSIUM

Minimum Credits: 3
Maximum Credits: 3
Participants collaborate over four months to stage a post-semester, multi-day media event with two simultaneous components. First, the Cinema component trains participants in film rights acquisition, event introductions, screenings, and discussions; film writing (program notes, press releases, poster design); social-media dissemination; and logistics. Second, the Academic component, focusing on the REEES region (Russia, East Europe, and Eurasia), combines relevant theory assignments with a CFP (selection, shaping, implementation) to design the event's two research panels, comprising national and international presenters, supported in part by major partner universities. By the semester's end, participants are trained to organize an intellectual multi-day event in potential collaboration with Pittsburgh's annual cycle of three local festivals (New East in May; ScreenShot Asia in October; Europe's Moving Images in February). Weekly readings in cultural politics and relevant artistic texts are part of the seminar.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Attributes: Film Studies

FMST 2341 - CONTEMPORARY LATIN AMERICAN FILM

Minimum Credits: 3
Maximum Credits: 3
This course surveys a representative sampling of recent Latin American film, primarily feature films made for commercial distribution, but also socio-political documentary.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2411 - FILM AND LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This course examines the historic and theoretical relationship between film and literature. Among the topics to be considered are: (1) narrative structure in film vs. literature; (2) parallels between filmic and literature genres; (3) adaptation from literature into film; (4) the case of the writer/director; (5) the influence of cinema on writing; (6) the politics of high vs. low culture distinctions; (7) a comparison of film and literature criticism.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2415 - WOMEN DIRECTORS IN FILM AND TELEVISION

Minimum Credits: 3
Maximum Credits: 3
This course surveys the history and contributions of women directors working in the film and television industries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2415 - WOMEN DIRECTORS IN FILM AND TELEVISION

Minimum Credits: 3
Maximum Credits: 3
This course surveys the history and contributions of women directors working in the film and television industries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2416 - CINEMA AND TRAUMA

Minimum Credits: 3
Maximum Credits: 3
Trauma studies now stands at the forefront of contemporary cultural theory, straddling such disciplines as history, psychology, philosophy, and literary criticism. This seminar encourages graduate students to examine and contribute to the rapidly emerging sub-field of

cinema/trauma studies. We will focus on the two mid-twentieth century events that continue to anchor many definitions of historical trauma: the Holocaust and Hiroshima. What do films that address these events teach us about the politics and ethics of representing experiences often referred to as unrepresentable'? How does cinema force us to refigure debates about the "limits of representation" and the nature of "the event" itself? Is cinema an agent of memory or memory's eraser? A broad range of films will inform our discussion of such questions - documentary and fiction, tragedy and comedy, mass cultural successes and lesser-known art films or genre films, films from the past and present.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2416 - CINEMA AND TRAUMA

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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2417 - QUEER THEORY, QUEER CINEMA

Minimum Credits: 3
Maximum Credits: 3
This seminar explores film (also TV and theater) textuality and reception from a "queer" perspective. What is the relationship among queer authors, queer textuality and the subcultures that consume these texts? What place does non-heteronormative sexuality occupy within the production and reception of mass culture? The course will cover: foundational works in the history of sexuality; camp and gay subcultural reception; gay and lesbian authorship of both Hollywood and avant-garde films; the rise of queer television drama; and queer critical practices.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2418 - CINEMA AND PSYCHE

Minimum Credits: 3
Maximum Credits: 3
From the earliest years of film theory, writers have likened the discourse of cinema to the workings of the human mind. In 1916, for instance, Hugo Munsterberg (in "the photoplay") drew parallels between film language and recollection, attention, and anticipation. This course (through readings and film screenings) will pursue such comparisons between cinema and the mind, investigating such topics as dream, memory, fantasy, nostalgia, perception, cognition, affect, etc.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2418 - CINEMA AND PSYCHE

Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2420 - CINEMA AND COUNTER-HISTORY

Minimum Credits: 3
Maximum Credits: 3
This graduate course focuses on visual media's connection to historicizing. It is concerned with theoretical writings that can be understood as offering versions of the past that run counter to received perceptions about historical forms through visual media. The readings and the films pay specific attention to various, often conflicting, theories, forms, and styles to identify the philosophic, aesthetic, and political stakes in activating the past. Among the texts to be studied that are related to philosophies of history are those of Walter Benjamin, Michel Foucault, Gilles Deleuze, Jacques Rancire, Hayden White, Carlo Ginzburg, and Fredric Jameson as well texts on Andr Bazin, Jean-Luc Godard. Philip Rosen, Mary Ann Doane, Robert Rosenstone, and Vivian Sobchack. The films proposed for screening are Cabiria, Abel Gance's Napoleon, Scipione Africanus, Roberto Rossellini's the Rise to Power of Louis XIV, Pasolini's Mamma Roma, Kubrick's Paths of Glory, Carry on up the Khyber, Monty Python and the Holy Grail, The Camp at Thiaroye, Hyenas, Morfia, a History of Violence, the White Ribbon, and Il Divo.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2420 - CINEMA AND COUNTER-HISTORY

Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2421 - GLOBAL FILM STARDOM

Minimum Credits: 3
Maximum Credits: 3
Historically, film stardom was examined from an American perspective (where it originated in Hollywood in the first decades of the last century), and theories of stardom emerged from an implicitly Hollywood-based understanding of cinematic fame. Instead, while not ignoring the American cinema, this course will take a global perspective on stardom, in terms of performers, films, and theories. Our approach to stardom will be a combination of the historical, the theoretical, and the textual. This means that in addition to studying individual stars, we will also 1) consider the phenomenon of stardom in terms of its origins and the cultural and national institutional conditions that support it, 2) analyze stardom as a public phenomenon to be understood in the context of specific cultures and audiences, 3) discuss various theories of stardom, celebrity, and public fame, 4) consider the manner in which issues of gender and sexuality impact notions of stardom, and 5) consider the relationship between stardom and spectator subjectivity. Although the course will be focused on cinema stardom, we will also briefly consider theoretical overlaps with the broader category of celebrity studies. In general, when we look at individual stars in the course, we will consider their broad "star text" which involves the interrelationship of screen roles, off-screen information, publicity material, and cultural context. Questions raised will include: what constitutes a "star text" in different historical contexts and ideas about the public and the private? What specifically do the media of photography and film bring to public fame? How does stardom presume and shape norms of identity pertaining to gender, sexuality, social class, race/ethnicity, bodily norms, and other cultural values? What does stardom mean in old and new transnational contexts? What is the relation between stardom, nation, and politics?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2421 - GLOBAL FILM STARDOM

Minimum Credits: 3
Maximum Credits: 3
Historically, film stardom was examined from an American perspective (where it originated in Hollywood in the first decades of the last century), and theories of stardom emerged from an implicitly Hollywood-based understanding of cinematic fame. Instead, while not ignoring the American cinema, this course will take a global perspective on stardom, in terms of performers, films, and theories. Our approach to stardom will be a combination of the historical, the theoretical, and the textual. This means that in addition to studying individual stars, we will also 1) consider the phenomenon of stardom in terms of its origins and the cultural and national institutional conditions that support it, 2) analyze stardom as a public phenomenon to be understood in the context of specific cultures and audiences, 3) discuss various theories of stardom, celebrity, and public fame, 4) consider the manner in which issues of gender and sexuality impact notions of stardom, and 5) consider the relationship between stardom and spectator subjectivity. Although the course will be focused on cinema stardom, we will also briefly consider theoretical overlaps with the broader category of celebrity studies. In general, when we look at individual stars in the course, we will consider their broad "star text" which involves the interrelationship of screen roles, off-screen information, publicity material, and cultural context. Questions raised will include: what constitutes a "star text" in different historical contexts and ideas about the public and the private? What specifically do the media of photography and film bring to public fame? How does stardom presume and shape norms of identity pertaining to gender, sexuality, social class, race/ethnicity, bodily norms, and other cultural values? What does stardom mean in old and new transnational contexts? What is the relation between stardom, nation, and politics?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2422 - MEDIA AND MOBILITY

Minimum Credits: 3
Maximum Credits: 3
Mobility has been one of the central functions and consequences of media technologies, from papyrus in ancient history to mobile phones

in the digital era. This seminar seeks to conduct a thorough theoretical mapping between media and mobility, creating a productive framework in which media can be examined through the ways in which they facilitate, mediate, and regulate various modes of mobility of humans, things, and ideas.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2425 - BLACK TIME: AFROFUTURISM, AFROPESSIMISM, AND BEYOND

Minimum Credits: 3
Maximum Credits: 3
BLACK TIME: AFROFUTURISM, AFROPESSIMISM, AND BEYOND
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2440 - FILM SOUND: HISTORY, THEORY, AESTHETICS

Minimum Credits: 3
Maximum Credits: 3
Questions framing the course include the relation of sound and image, aural and visual pleasures, soundscapes and theories of shock and modernity, the relation of voice and body to subject formation, sound in silent cinema, the aesthetics of analog and digital sound in cinema, sound technologies and imperialism, theories of non-cinematic audio technology such as radio and gramophone, debates over the ontological status of recorded sound, film sound and space, sound in documentary cinema, and culturally specific theories of sound.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2485 - FILM AND ETHNOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
This course will engage the visual and narrative strategies of the "ethnographic imagination" addressing issues of cultural representation, truth, visuality, and epistemological implications of how anthropologists and documentary filmmakers construct other cultures. We will start with the history of ethnographic cinema so as to stage a broader inquiry into forms of popular and everyday ethnography that have accompanied anthropological practice since its inception. In addition to problematizing distinctions such as science and entertainment, authenticity and hybridity, non-fiction and fiction, and self and other.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2508 - TELEVISION STUDIES

Minimum Credits: 3
Maximum Credits: 3
This course will examine the emergence of television studies out of film studies during the 1980s and beyond. We will read key texts and examine approaches that have characterized this new orientation to the study of television: theories of television spectatorship, program and audience history, genre studies, and others. There will be screenings of key texts that have been considered crucial to the development of these ideas. The main emphasis will be to distinguish the televisual from the cinematic.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2510 - ANIMATION THEORY

Minimum Credits: 3
Maximum Credits: 3
This course will approach animation as a method, a way to rethink film theory beyond the assumption of an essentially photographic medium, and to unearth and explore the previously underdeveloped territories in theorizing and making sense of moving images.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2520 - FILM COMEDY

Minimum Credits: 3
Maximum Credits: 3
Since the earliest days of the cinema, film comedy has been one of the most profitable, prevalent and persistent genres-ranging from the primitive burlesques of Edison or Lumiere to the popular features of today. While comedy appeals to a viewer's sense of pleasure, it also addresses her intellect, for as Ousmane Sembene once said, comedy "makes people laugh but it also makes them think." That is precisely what we will do in this course: think through comedy. Here, it is interesting to note that, in 2010, the academic journal comic studies began

publication.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2524 - GENRE AND FILM MELODRAMA

Minimum Credits: 3
Maximum Credits: 3
Course will interrogate the cultural impact of melodrama through the media. We will explore the various expressions of melodrama in gothic narratives, the "woman's film", historical films, "tragic" melodramas, family melodramas, and TV docudramas. Topics addressed include questions about common sense/folklore and the nature of mass and popular cultural representation, the problematic nature of genre, the relation between melodrama, history, and the construction of narratives of national identity in relation to race, gender and sexuality.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2525 - HORROR FILM

Minimum Credits: 3
Maximum Credits: 3
This seminar will investigate the key films and critical discussions surrounding the genre from its beginnings to the present, but not merely to perform a genre survey- instead we will use horror as a lens to ask wide-ranging questions about spectatorship, theory, history, aesthetics, and politics that have shaped and continue to transform film studies in profound ways.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2526 - WAR AND CINEMA

Minimum Credits: 3
Maximum Credits: 3
This course theorizes the convergence of military and cinematic technologies, focusing on the logistics of perception, bio-politics, and the relation of cinematic/military technologies to the body. Topics include the military, medical, and cinematic uses of the scope and the screen, theories of human vision and ocularcentrism, new conceptions of space and time, the temporal convergence of production and exhibition (speed and acceleration), new media technologies, and the blurred boundaries of war and entertainment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Maximum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2540 - ESSAY FILM/DOCUMENTARY FILM

Minimum Credits: 3
Maximum Credits: 3
This course will explore documentary from critical and creative vantage points. Key theoretical texts from the interdisciplinary field of documentary studies will address the pertinent ethical, formal and thematic concerns.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

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Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2542 - DOCUMENTARY THEORY & PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course will explore documentary film and video from critical and creative vantage points. Students will be introduced to key discussions from within the interdisciplinary field of documentary studies while also working on individual and collaborative short documentary projects and exercises. Hands-on training in audiovisual recording and editing techniques will be provided. No prior production experience is required.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2542 - DOCUMENTARY THEORY & PRACTICE

Minimum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2570 - KEY CONCEPTS IN NEW MEDIA

Minimum Credits: 3
Maximum Credits: 3
What exactly is "information"? What is an "interface"? What does it mean when we speak of a "media platform"? These terms and concepts form the backbone of the major theories and discourses in new media, which produce a rich vocabulary that has yet to be rigorously defined. This course aims to provide a theoretical map to navigate the rapidly expanding fields of media studies by critically interrogating a set of key concepts that have been extensively used to deal with the technologies, forms, materials and cultures of new media. We will discuss the meaning, usage, and genealogy of such concepts as "network," "cybernetics," "hardwire," "infrastructure," and "system," which have animated a wide range of researches and debates. By critically engaging with these key concepts, we hope to not only reconstitute a framework for theorizing contemporary media, but to explore the very notion of "media" as a discursive formation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2570 - KEY CONCEPTS IN NEW MEDIA

Minimum Credits: 3
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Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2660 - SEXUAL REPRESENTATION AND CINEMA

Minimum Credits: 3
Maximum Credits: 3
SEXUAL REPRESENTATION AND CINEMA
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2662 - GENDER AND SEXUALITY IN ARAB FILM

Minimum Credits: 3
Maximum Credits: 3
This seminar pries open a window into the ways that gender and sexuality are understood, imagined, embodied, and practiced in the Arab-majority region. Rather than arriving at totalizing definitions, the seminar explores, through a transnational approach, how filmmakers from Arab-majority countries and their diasporas have adopted, throughout different periods, a multitude of approaches and strategies in tackling questions of gender and sexuality in realist, allegorical and experimental ways. We will unpack diverse film and video works to see how these filmmakers have responded to major political, social, and religious events and contexts, such as the Arab Spring and the Arab Israeli conflict.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2760 - THEORY/TECH/MEDIA PLATO-GAMES

Minimum Credits: 3
Maximum Credits: 3
This course will examine a number of key theoretical debates in the history of visual and verbal media, beginning with the technology of writing itself and moving into the invention of the codex, the printing press, and 19th and 20th century forms of imagistic production. Of particular concern will be modes of competition and symbiosis among various technologies of representation at particular historical moments, such as the relations between speech and print, poetry and theater, painting and photography, and cinema and digital media. Although case studies will be drawn from a number of historical periods, special attention will be paid to the Renaissance and to recent decades, when media of all kinds have come under increasing technological and theoretical pressure. Students will have the opportunity to extend the seminar's concerns to their own areas of research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2760 - THEORY/TECHNOLOGY/MEDIA FROM PLATO TO VIDEO GAMES

Minimum Credits: 3
Maximum Credits: 3
This course will examine a number of key theoretical debates in the history of visual and verbal media, beginning with the technology of writing itself and moving into the invention of the codex, the printing press, and 19th and 20th century forms of imagistic production. Of particular concern will be modes of competition and symbiosis among various technologies of representation at particular historical moments, such as the relations between speech and print, poetry and theater, painting and photography, and cinema and digital media. Although case studies will be drawn from a number of historical periods, special attention will be paid to the Renaissance and to recent decades, when media of all kinds have come under increasing technological and theoretical pressure. Students will have the opportunity to

extend the seminar's concerns to their own areas of research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2902 - DIRECTED STUDY FOR THE MA

Minimum Credits: 1
Maximum Credits: 3
In exceptional circumstances, a student who wishes to pursue a topic for which no course is available can arrange for directed study with a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 2907 - INTERNSHIP IN FILM AND MEDIA

Minimum Credits: 1
Maximum Credits: 3
Graduate students may complete professional internships for Film and Media Studies credit. Please seek permission from a Film and Media Studies advisor to enroll.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FMST 3902 - DIRECTED STUDY FOR THE PHD

Minimum Credits: 1
Maximum Credits: 3
In exceptional circumstances, a student who wishes to pursue a topic for which no course is available can arrange for directed study with a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

Film Studies - Graduate Program

FILMG 2451 - FILM HISTORY/THEORY 1

Minimum Credits: 3
Maximum Credits: 3
This seminar will focus on the history and theory of cinema up to 1960, taking up such topics as: the origins of cinema; the development of narrative; the rise of Hollywood and its global appeal; national and international cinemas; the relation between film and the other arts; the coming of sound; arguments between realist and modernist movements; the avant-garde; and the technological and social history of cinema. These topics will be addressed through consideration of major film movements and significant films. Students will also be introduced to key theorists from this time, including Kuleshov, Vertov, Eisenstein, Balzs, Mnsterberg, Lindsay, Epstein, Kracauer, Benjamin, Arnheim, Bazin, and others.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FILMG 2452 - FILM HISTORY/THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This seminar will focus on the history and theory of cinema from 1960 to the present. While individual theorists and historians will be discussed (e.g., Cavell, Deleuze, Frampton, Kluge, Gunning, Mulvey), there will be special attention paid to historical and theoretical arguments within film studies, such as: psychoanalysis and theories of spectatorship; apparatus theory; historicism and archival research; film and philosophy; theories of genre, adaptation, and performance; neo-formalism and cognitive theory; and the rise of new media, from television to digital cinema and from Imax to video games. These arguments will be explored through major film movements and film-makers, taking up topics such as international art cinema, the changing Hollywood studio system, the role of political cinema, and the growing importance of documentaries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FILMG 2902 - DIRECTED STUDY FOR THE MA

Minimum Credits: 1
Maximum Credits: 6
In exceptional circumstances, a student who wishes to pursue a topic for which no course is available can arrange for directed study with a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

FILMG 2905 - PROSEMINAR IN FILM AND MEDIA STUDIES

Minimum Credits: 1
Maximum Credits: 1
All students in the Ph.D. Film studies program are required to complete a one credit proseminar in film and media studies prior to taking their comprehensive examinations. Enrolled students attend a designated lecture by invited scholars, as well as an associated ninety-minute seminar conducted by a film studies faculty member concerning the work of the speaker or the topic addressed. The faculty member conducting the seminar will typically choose pertinent readings to be completed prior to the lecture and seminar. The proseminar is usually offered twice a year: once during the fall term and once during the spring, with a lecture and its associated seminar scheduled each term. Invited scholars may or may not participate in the seminar meetings. Dates and times of visiting speakers and the associated seminars will be announced well in advance so that students may plan their schedules accordingly. A student in the program may repeat the proseminar for up to three credits. The proseminar in film and media studies seeks to expand and enhance our graduate students' experience of the critical exchange of ideas, by involving them more fully in the contemporary research being conducted by film and media scholars from around the world.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FILMG 3902 - DIRECTED STUDY FOR THE PHD

Minimum Credits: 1
Maximum Credits: 6
In exceptional circumstances, a student who wishes to pursue a topic for which no course is available can arrange for directed study with a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Finance and Economics

BFAE 2801 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISIONS

Minimum Credits: 3
Maximum Credits: 3
This course develops an understanding of how a market-based economic system reconciles the separate needs of consumers and producers and provides an economic framework for managerial decisions. Additionally, the course provides tools of analysis and concepts which are used in the MBA program's functional fields.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BFAE 2850 - HEALTHCARE ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Business Administration (EMBA-MBA)

BFAE 3001 - MICROECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This is a Ph.D. level course in microeconomics with special emphasis on business applications. We will use decision and game theoretic models to analyze the decision making process of business firms. Both the neoclassical and industrial organization theories of the firm will be analyzed. Special attention will be devoted to issues of incomplete information as they pertain to signaling in markets, to the internal organization of the firm and to models of regulation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

French

FR 0256 - WRITING FRENCH: ATELIER D'EXPRESSION ECRITE

Minimum Credits: 3
Maximum Credits: 3
Question: What do Samuel Becket, Edith Philips, and Oscar Wilde have in common? Answer: they are all exophonic writers, writers who wrote in languages that were not their native tongues. And they were all English-speakers who wrote some or most of the their work in French. You can too! What are the secrets to writing well in a language that is not your first? How can you leverage all you know about writing in your native language to improve your written expression in French? "Writing French: Atelier d'expression Ecrite" will teach you how to cultivate exophonic writing skills through a writing-as-process approach that is keyed to the challenges of foreign language composition. Class work and written assignments will include writing effective professional and personal correspondence, composing a CV or job resume, writing journal articles and critiques as well as creative pieces (such as fables, poems, or song lyrics for a Francophone audience). Through textual modeling, cooccurrence analysis (words that go "together"), and comparative vocabulary and grammar review, you will learn techniques needed to write in a variety of genres and to "sound French." Recommended prerequisite: FR 0004 or 0104 or 0021/0221 or 0027/0227 or 0055/0255.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

FR 2000 - INTRODUCTION TO GRADUATE STUDIES IN MODERN LANGUAGES AND CULTURES

Minimum Credits: 1
Maximum Credits: 1
This one-credit course offers an introduction to graduate study in modern languages and cultures. It will help you adjust to your graduate program and will cover the nuts and bolts of how to take seminars, do readings, teach, balance your various obligations and meet the emotional and life challenges of graduate school. What matters most in teaching is not skills but a sense of personal identity and a strong relationship to the disciplinary knowledge. We will engage with the latest research in positive psychology, resilience, pedagogy, deep learning, creativity, sociology of work and executive coaching. The class will prepare you better to move among different kinds of professional situatons within and outside academia.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FR 2105 - SEMINAR: MEDIEVAL TOPIC

Minimum Credits: 3
Maximum Credits: 3
This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FR 2225 - SEMINAR: SIXTEENTH CENTURY TOPIC

Minimum Credits: 3
Maximum Credits: 3
This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Gender, Sexuality & Women's St, Medieval & Renaissance Studies

FR 2402 - TOPICS 17TH AND 18TH CENTURY FRENCH CULTURE

Minimum Credits: 3
Maximum Credits: 3
This course, broad in scope, will treat some aspect of 17th and 18th century French culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

FR 2505 - SEMINAR: 19TH CENTURY TOPIC

Minimum Credits: 3
Maximum Credits: 3
This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

FR 2601 - DISSERTATION WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This seminar will allow the students to work on their dissertation while receiving continuous feedback from a faculty and their peers. They will share writing strategies, research accomplishments and professional tips.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FR 2605 - SEMINAR: 20TH CENTURY TOPIC

Minimum Credits: 3
Maximum Credits: 3
This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

FR 2648 - CONTEMPORARY FRENCH CINEMA

Minimum Credits: 3
Maximum Credits: 3
This seminar examines the history of recent French cinema and/or emerging trends in contemporary French film production. Topics covered vary greatly with instructor and term.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

FR 2649 - CINEMA, TELEVISION, AND STREAMING PLATFORMS IN FRANCE

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine the relationships between cinema, television, and platforms in France from StudioCanal's early efforts at making "Quality TV" series like ~Spiral~ and ~Mafiosa~ in the mid 2000s up to more recent collaborations between French studios and American streamers such as ~Lupin~ and ~Becoming Karl Lagerfeld.~ While there has been a wealth of research on global television in the age of streaming over the past several years, French television remains an underappreciated object of study both in France and the US. France's strong sense of cultural and linguistic identity as embodied in the protectionist regulations that historically structure its film and media industry make it one of the best case studies to investigate new struggles over localization and internationalization in the age of global streaming platforms. This course will introduce students to recent scholarship in streaming and television studies, especially subfields like platform studies, localization studies, and media industry studies, and it will help them apply these emerging approaches to the French context. It will enable students to understand the extent of which older debates about national and regional identity do and do not matter in the contemporary media ecology. While the producers and companies we will study come from France and often develop series in the French language, students from other departments are welcome to develop final research projects that draw on series, producers, companies, or platforms in other regional areas so long as their project is in dialogue with the research approaches studied in the seminar. The seminar will be taught in English, series will have English subtitles, and the vast majority of readings will be available in English.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FR 2703 - SEMINARS: TOPICS, GENRES, THEMES

Minimum Credits: 3
Maximum Credits: 3
These seminars are subject - rather than author - or century - specific. Examples might be Vichy France, Baroque religious poetry, or Don

Juan in French literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FR 2710 - INTRODUCTION TO LITERARY AND CULTURAL THEORY: LANGUAGE, GENDER, HISTORY

Minimum Credits: 3
Maximum Credits: 3
How do language arts and practices live within a social and cultural context? What is the place of the critic and scholar of literature in the Humanities both as researcher and pedagogue? What kind of theoretical, wider perspective, can help us frame the context and different meanings of a work of art? Focused on the relation between language arts and historicity, the class will address issues concerning representation, gender, politics, education, and the psychology of language rules and infractions. Among the thinkers helping us in our discussions, we will study pragmatic linguists such as Emile Benveniste, social critics of hegemony such as Antonio Gramsci, psychoanalytic approaches to language and power in Jacques Lacan and Franz Fanon, the social critique of literary elitism in Pierre Bourdieu, the redefinition of cultural agency in postcolonial critics such as Gayatri Spivak and Achille Mbembe, the contemporary critique of gendered discourse in the works of Judith Butler, Sara Ahmed and Paul Preciado, and the ecocriticism of Stephanie Posthumus. The class will be organized thematically rather than according to a strict chronology of different approaches. The professor will try to insert workshopping exercises in the classroom, in order to alleviate and share the burden of understanding the contemporary tenets of our field. Seminar taught in English.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies, West European Studies

FR 2715 - TOPICS IN LITERARY AND CULTURAL THEORY

Minimum Credits: 3
Maximum Credits: 3
In this course, students will examine a special topic in literary and cultural theory. The course may be organized around a given theoretician, a theoretical movement, or a problematic. Students are expected to have some background in literary and cultural theory.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FR 2761 - FRENCH STUDIES GENDER STUDIES

Minimum Credits: 3
Maximum Credits: 3
What does it mean to put gender/sexuality studies and French studies into productive dialogue? This course treats selected topics related to gender and sexuality in French/Francophone studies. Texts studied might include film, theater, news media, literature, autobiography, and others. Texts may come from a variety of time periods from the meddle ages to the twenty-first century. Gender/sexuality will be understood in a broad sense, including women/feminism, masculinity, queer and trans*.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Gender, Sexuality & Women's St

FR 2765 - COMPARATIVE FRANCOPHONE CULTURE

Minimum Credits: 3
Maximum Credits: 3
This seminar examines `Francophonie' through the juxtaposition of francophone cultural production and theory from different areas of the

world
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FR 2767 - AFRICAN FEMINISMS

Minimum Credits: 3
Maximum Credits: 3
"We Should All Be Feminist," claimed Nigerian writer and feminist activist Chimamanda Adichie, but what does it mean to be feminist in Africa? How do African writers, cultural critics, and activists relate to feminism? What does "gender" mean in this context? African feminism(s) is an interdisciplinary seminar at the intersection of Cultural studies and Gender and Women's studies that uses a transmedial approach to reflect on Feminism in Africa. The seminar centers African perspectives to investigate the socio-political and cultural implications of feminist discourse and practice on the African continent and its diaspora. We will engage theoretical texts, examine authors whose work embraces feminist politics, and discuss the praxis of feminist activism to contextualize feminist studies in Africa.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FR 2794 - LE FRANCAIS PEDAGOGIQUE

Minimum Credits: 1
Maximum Credits: 1
Qu'est-ce que la grammaire au juste ? Quelle place doit-elle occuper dans les cours de français langue seconde ou étrangère ? Comment trouver la clef secrète qui permettra de mieux connaître et, partant, de mieux expliquer aux apprenants, la logique cognitive de la grammaire française ? Comment déceler les façons dont l'interaction de la grammaire et du lexique représente, chez les francophones tant totaux que partiels, la construction des pensées et leurs mises en communication éventuelles ? Pour répondre à ces questions, ce cours offre une introduction à la grammaire dite "pédagogique" ou "didactique" aux étudiants de cycle supérieur qui enseignent le français à l'Université de Pittsburgh. Axant nos efforts sur les questions que nos élèves nous posent le plus souvent en classe, nous examinons de près: 1) les idées reçues sur la grammaire française; 2) le(s) piège(s) des règles "empiriques" ou "générales"; 3) les métaphores conceptuelles qui sous-tendent les structures lexico-grammaticales du français; et 4) la pragmatique et l'importance du contexte dans les échanges écrits et oraux.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis

FR 2795 - TEACHING IN THE MODERN LANGUAGES DEPARTMENT

Minimum Credits: 1
Maximum Credits: 1
This one-credit course in teaching will focus on issues related to advanced teaching in modern language courses that integrate language and disciplinary questions such as literary studies, media analysis, cultural history, public-facing scholarship, among others. Topics covered may include advanced-level syllabus design; scaffolding techniques for different types of textual and media objects; designing and mentoring for undergraduate research experiences; modern language program curriculum analysis and design; writing teaching statements; teaching for diverse students; assessment design; responding to OMETs and class visit reports; and teaching in study abroad programs. The course will be run as a workshop drawing on the resources and expertise of faculty within and beyond the department. Outputs and assessments for the one-credit course will operate on a menu model, allowing each student to determine what would be most helpful for their ongoing teacher training in conjunction with their departmental mentors and teaching supervisors. Course will be taught in English.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

FR 2796 - FRENCH FOR THE HUMANITIES

Minimum Credits: 1
Maximum Credits: 3
This course is intended for graduate students in the humanities seeking to improve their professional French reading, writing, and translation skills in academic fields such as French literature, theory, social sciences, and philosophy. The course is composed of three different five-week modules: 1) comprehension of complex novelistic prose from the 18th to the 21st centuries; 2) comprehension of complex theoretical, philosophical, and social science texts likely to appear in one's career; 3) translation into English of both kind of texts, as one often needs to translate less-known references in one's professional writing. This course offers variable enrollment, meaning that students can enroll in one, two, or three credits to take the module(s) most relevant for their professional goals. While especially useful for non-French native speakers, everyone will benefit from learning the specific lexicon, syntactic structures, and ironic registers necessary for the humanities scholar working with texts coming from the Francophone tradition. The class will be workshop-based and will use a variety of short literary, theoretical, and social science texts written in French. Assessment will be based on regular, short assignments that take a hands-on approach. Prerequisites: Graduate Status in the French Program or proven graduate proficiency in the French language.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis

FR 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
This course enables M.A. Candidates to do research under the direction of a faculty member, on a topic of mutual interest.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

FR 2903 - MA RESEARCH PAPER DIRECTED STUDY

Minimum Credits: 3
Maximum Credits: 3
MA students write a research paper (6000-8000 words), typically during their final semester in the program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

FR 2910 - COMPREHENSIVE EXAMINATION MA

Minimum Credits: 1
Maximum Credits: 3
This course is intended for ma candidates in their last term of study when they present themselves for the ma comprehensive examination.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: West European Studies

FR 2970 - TEACHING OF FRENCH

Minimum Credits: 3
Maximum Credits: 3
This course provides graduate student teaching assistants/fellows/instructors with the knowledge and skills needed to teach an elementary- or intermediate-level foreign language class in an institution of higher education (i.e., language and literature departments at the University of Pittsburgh). Students will learn about contemporary theories and research on foreign and second language learning and acquisition, but much of the course content will focus on praxis and strategies related to classroom-based language teaching. Topics will include contextualized language instruction, communicative and task-based instruction, content-based instructional methods, equitable and inclusive teaching practices, and strategies for teaching grammar, vocabulary, and linguistic competencies (reading, writing, listening,

speaking). Students will be assessed via practice-based projects and self and peer evaluations. This course is taught in English, but speakers of all linguistic backgrounds are welcome, and examples will be taken from a wide variety of languages offered at Pitt. Pre-requisites: None, but students should have graduate standing in a language and literature department at the University of Pittsburgh. Other students interested in this course should contact the instructor directly.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

FR 2975 - ADVANCED TOPICS IN FOREIGN LANGUAGE LEARNING AND TEACHING

Minimum Credits: 3
Maximum Credits: 3
In this course intended for experienced foreign language teachers, students will focus on pedagogical issues encountered in advanced-level teaching in the areas of language, literature, and culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

FR 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
This independent course is for ma students who have completed, or are completing in their last term of study, all course requirements for the ma degree.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: West European Studies

FR 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Students register for this course while doing research for their Ph.D. Dissertations.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Attributes: West European Studies

FR 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
This course enables Ph.D. Students to do research under the direction of a faculty member, on a topic of mutual interest.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

FR 3905 - TEACHING APPRENTICESHIP

Minimum Credits: 1
Maximum Credits: 12
Available to Ph.D. students who will work with a faculty member in teaching an upper level literature, language or civilization course.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

FR 3910 - COMPREHENSIVE EXAMINATION

Minimum Credits: 1
Maximum Credits: 12
This course is intended for Ph.D. Candidates the term they present themselves for their Ph.D. Comprehensive examination.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: West European Studies

FT Dissertation Study LAW

FTDO 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Print No Grade
Course Requirements: School of Law (PLAW)

FT Diss Study D MED

FTDN 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study EDUC

FTDG 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Provides full-time enrollment status for doctoral candidates in the School of Education who are engaged in full-time dissertation research. This course carries no academic credit and does not receive a grade. Eligibility Criteria: PhD Students: PhD candidates may enroll in this course once they are within six (6) credits of completing all required coursework for the degree. EdD Students: EdD candidates may enroll in this course only after completing all required coursework, including the required dissertation credits.
Academic Career: Graduate

Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study ENGR

FTDH 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study FAS Humanities

FTDA 3999 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

FTDI 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertation may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

FT Diss Study FAS Natural Sci

FTDB 3999 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate

Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study FAS Social Sci

FTDC 3999 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study GSPIA

FTDK 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study KGSB

FTDF 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study NURS

FTDP 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate

Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study MED

FTDS 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade
Course Requirements: School of Medicine students only.

FT Diss Study PHARM

FTDQ 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade
Course Requirements: School of Pharmacy students only.

FT Diss Study PUB HL

FTDR 3999 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study SCI

FTDJ 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for this course. While the course carries no credits and no grade, students who

enroll in "full-time dissertation study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

FT Diss Study SOCWK

FTDL 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0
Maximum Credits: 0
"Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status."
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Full-Time Administrative Study

FTADMA 0000 - FULL-TIME ADMINISTRATIVE STUDY

Minimum Credits: 0
Maximum Credits: 0
While this course carries no credits and no grade, students who enroll in "Full-time Administrative Study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Full-Time Internship in GSPIA

FTIK 0000 - FULL-TIME INTERNSHIP STUDY

Minimum Credits: 0
Maximum Credits: 0
While this course carries no credits and no grade, students who enroll in "full-time internship study" are considered by the university to have full-time registration status.
Academic Career: Graduate
Course Component: Internship
Grade Component: Print No Grade

Full-Time Status in Arts & Sciences

FTA 0000 - FULL TIME STUDY

Minimum Credits: 0
Maximum Credits: 0
While this course carries no credits and no grade, students who enroll in "full-time study" are considered by the university to have full-time registration status.
Academic Career: Graduate

Course Component: Internship
Grade Component: Print No Grade

Gender, Sexuality, and Women's Studies

GSWS 1403 - GENDER, SEXUALITY, AND RELIGION IN SOUTH ASIA

Minimum Credits: 3
Maximum Credits: 3
When it comes to gender and sexuality, South Asia is subject to a variety of stereotypes. Some say it has always been home to rigid gender hierarchies and heteronormativity, while others claim that such restrictive norms were all but absent before the arrival of Islam or British colonialists. This course aims to help students understand the complex realities that these stereotypes miss. Our focus will be on marginalized genders and sexualities and their relationships to Hindu and Islamic traditions, although students will study other traditions in a group research project. Literary and historical sources from both traditions demonstrate a range of views on gender and sexuality before colonialism. Colonial law enforced much narrower range of gender and sexual expressions, but women and queer folks in South Asia and diaspora still find ways to flourish within existing cultural and religious frameworks.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

GSWS 2058 - FEMINIST SOCIAL WORK

Minimum Credits: 3
Maximum Credits: 3
This course focuses on gender and social work, beginning with a critical examination of the concept of feminist practice, with attention to oppression, power, and privilege in helping relationships and in women's lives more broadly. It explores meanings of gender as it intersects with race/ethnicity, class, sexuality, age, and ability in the lives of women in general and specifically as social workers and clients. Taught in a seminar format, this course examines topics such as work, welfare, family, violence, justice system involvement, health, mental health, and women as agents of change and is appropriate for students concentrating in micro or macro levels of practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Gender, Sexuality & Women's St

GSWS 2240 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
This graduate course addresses a current topic in gender, sexuality, or women's studies. Topic varies by instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Gender, Sexuality & Women's St

GSWS 2252 - THEORIES OF GENDER AND SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of important current topics and controversies in gender and sexuality studies, emphasizing emerging directions in scholarship and the foundational readings that have prepared the way for them. Gender and sexuality studies are interdisciplinary fields in conversation with feminist theory and queer theory as well as a host of academic disciplines. Drawing on readings from a variety of disciplines and sampling a range of methodologies, this course works through some of the key moments, movements, and problems that shape contemporary thinking about gender and sexuality. The course invites students to think through materials and ideas in relation to their own research, interests, and commitments.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Attributes: Gender, Sexuality & Women's St

GSWS 2902 - DIRECTED STUDY

Minimum Credits: 3
Maximum Credits: 3
Individual study on a topic related to gender, sexuality, or women's studies under supervision of a faculty member from the program. A variety of individual research and reading projects not covered in other courses may be undertaken.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Attributes: Gender, Sexuality & Women's St

Geology

GEOL 1314 - PEOPLE, PLACE AND CULTURE: ENVIRONMENTAL DEBATES IN AUSTRALIA, NEW ZEALAND AND THE PACIFIC

Minimum Credits: 3
Maximum Credits: 3
This course explores the multi-faceted dimensions of human interaction with diverse environments in Australia, New Zealand and the Pacific to illuminate the origins of environmental concerns and current debates in these regions from pre-European contact to now. From the peopling of the Pacific to the challenge of climate change, this course is broad in its scope while concentrating on selected issues such as the impact of mining, clean energy futures, our vulnerability to 'natural' disasters and increasing urbanization. In so doing, the intersection of culture and nature is explored. The course is embedded in the environmental humanities, but uses the approaches of environmental history, as well as insights from the disciplines of science, politics, sociology and cultural studies.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

GEOL 1334 - ENVIRONMENTAL POLICY

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to environmental policy choices made by various stakeholders. These choices span a wide range of issues, including when and how to regulate; the real-world impacts of regulation; the roles of non-governmental actors; the politics of environmental policy; and the ethical reasons for environmental protection. Students will connect real-world environmental policy outcomes to foundational ideas that guide decision-making. The course emphasizes practical, interdisciplinary thinking and will help students develop the skills needed to understand and evaluate contemporary environmental policy debates across multiple domains.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PLAN: Environmental Geology (BS, BPH) or Environmental Studies (BA, BPH) or Geology (BS, BPH) or Environmental Science (BS)

GEOL 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1
Maximum Credits: 12
This course is designed to permit graduate students the opportunity to accomplish research necessary for the completion of a master's degree in geology.

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Geology and Planetary Science (MS) or Geology and Environmental Sci (MS)

GEOL 2001 - SCIENTIFIC COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
The Scientific Communication course is required for all new MS and PHD students in Geology and Environmental Science. It is designed to introduce students to the department and develop communication skills. The goal of the class is to provide a foundation for students to develop a proposal and research strategy for their thesis project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Geology and Planetary Science(PHD or MS) or Geographical Information Sys (MS) or Geology and Environmental Sci (PHD or MS)

GEOL 2002 - MINEROLOGY/PETROLOGY

Minimum Credits: 3
Maximum Credits: 3
In this course, the student will gain an understanding of the basics of mineralogy and petrology, including crystal structure, optical mineralogy using a petrographic microscope, mineral chemistry, mineral associations in different rock types and soil, and the processes and conditions under which igneous, metamorphic and sedimentary rocks and minerals form and are altered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: GEOL 0800 or 0820 or 0860

GEOL 2015 - GEOLOGY COLLOQUIUM

Minimum Credits: 1
Maximum Credits: 1
Geology colloquium is a required course for MS and PhD students in geology and planetary science each term. It is a formalization of the seminar series with weekly guest speakers from industry, academia, and government. Each seminar will focus on a different research topic in the earth sciences and describe active and on-going projects of immediate interest to students.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad SN Basis

GEOL 2025 - ADVANCED VOLCANOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will provide an in-depth discussion of the generation of magma beneath the Earth's surface, the processes by which different volcanic eruptions occur and the deposits that are left behind. We will also discuss the monitoring and mitigation of volcanic hazards, through remote sensing and modelling techniques, as well as the volcanic processes that occur and have occurred on other planetary bodies in our solar system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 2045 - STATISTICS FOR EARTH SCIENCE

Minimum Credits: 3
Maximum Credits: 3
A statistics course geared toward environmental science and geology majors with an emphasis on applying data analysis and statistical techniques to environmental data. Topics will include: visualizing data, summary statistics, correlation, selected parametric statistics (t-tests, general linear models), selected non-parametric methods, statistical inference, and experimental design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2049 - PALEOCLIMATOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course presents the different types of data used to study the earth's climatic history and long-term climatic variability. Particular emphasis is given to the climatic changes during the last Cenozoic -- the so called glacial ages. Topics of discussion include time scales of climatic change, types of paleoclimatic records and their limitations, numerical climate models, the causes of climatic change, and the importance of paleoclimatic research in forecasting the future.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 2054 - SOILS: GEOBIOCHEMICAL LANDSCAPES

Minimum Credits: 4
Maximum Credits: 4
An overview of soils with a strong emphasis on landscape scale process. The course consists of lecture and laboratory/field work. The lecture will include description of physical and chemical soil properties and processes, discussion of major soil classifications and description of ramifications at the landscape scale.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 2060 - GEOMORPHOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course is a survey of the major landform features found on the earth's surface. Each landform type is first described qualitatively and then examined in terms of the processes, such as stream flow or glacial activity, which cause its development. The purpose of the course is to familiarize students with geomorphic principles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 2110 - PLATE TECTONICS

Minimum Credits: 3
Maximum Credits: 3
The geometry and kinematics of plate tectonics are developed together with the geophysical evidence for plate motions in the first half of the course. The second half involves a geological examination of convergent, divergent, and transform-dominated terranes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2120 - BASIN ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
The integrated study of sedimentary basins as geodynamic entities, including tectonic environment, geologic history and associated strength of the lithosphere, rock weathering and erosion, and sediment transport. The class will give students a background in driving mechanisms for basin formation and subsidence, sedimentary record preservation and alteration, sedimentary geometry, facies and petrology and provide a basic understanding of the continuum mechanics equations that approximate basin formation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: GEOL 1100 and GEOL 1020; LVL: Graduate or PhD

GEOL 2150 - SURFACE WATER HYDROLOGY

Minimum Credits: 4
Maximum Credits: 4
This course shall provide an Earth systems science overview of the processes that govern the hydrologic cycle including precipitation, evapotranspiration, runoff and discharge, infiltration, and groundwater. The course shall emphasize the movement of water through the atmosphere, over the land surface, and within the unsaturated and saturated zones.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2151 - GROUNDWATER GEOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course focuses on physical and chemical processes controlling water movement and composition in sub-surface environments. The lab focuses on practical field methods for the characterization of groundwater.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 2309 - LIMNOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will explore the physicochemical and geological aspects of inland waters (lakes, rivers, springs, and wetlands). Specifically, the course will examine the origin and evolution of lakes, the physical and chemical properties of fresh and saline waters, watershed hydrology, and the biogeochemical cycling of major elements and nutrients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2312 - ENVIRONMENTAL LAW AND POLICY

Minimum Credits: 3
Maximum Credits: 3
The survey course will examine the role of law and policy in regulating human impact on the environment. topics include the history and development of U.S. environmental law; theoretical approaches to environmental protection; mechanisms employed in environmental laws and regulation; the roles of the legislative, executive, and judicial branches of government in developing and implementing environmental law and policy; an overview of the principal environmental laws at the federal and state levels; the role of citizens in development and enforcement of environmental law; and constitutional constraints on government authority.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2316 - ENVIRONMENTAL JUSTICE

Minimum Credits: 3
Maximum Credits: 3
What is Environmental Justice (EJ)? How does this change our approach to the environment and environmental issues? This seminar course will introduce students to environmental justice (EJ) theory and frameworks for analyzing environmental inequities. We will explore the historical, social, political, and economic causes for disproportionate environmental burdens. The course is organized into seven topic modules. The first three will focus on the history of the environmental movement, EJ theory, and intersectional environmentalism to situate EJ within US environmentalism. Four to six will examine specific EJ issues - housing, food security, air, and water quality - and focus on SWPA and Pittsburgh communities as case studies, learning how communities are impacted and the actions being taken to promote the wellbeing of communities. The seventh and final module will address the current state of the environmental movement and EJ initiatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2410 - EARTH SYSTEM MODELING AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course will equip you with the fundamental knowledge to construct numerical models for your own research applications. We will work through classical problems involving differential equations, focusing on their numerical approximation and application to Earth Systems problems (e.g., mass balance, population dynamics, orbital dynamics, isotopic exchange, heat transfer, contaminant flow and transport). This analysis will require using linear algebra and computational tools (e.g., MATLAB®, R, Python) to solve and visualize solutions to differential equations. Students will work on a self-guided, semester-long project that involves the construction of a numerical model for a system of their choosing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2446 - ADVANCED GEOGRAPHICAL INFORMATION SYSTEM

Minimum Credits: 3
Maximum Credits: 3
Using advanced geographical information systems technologies and geospatial analysis techniques students will extend their knowledge of geographical information systems to include raster, geostatistical, network, model, and 3d/4d based analysis completing complex analysis of real world data sets.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: GEOL 2449

GEOL 2449 - GIS, GPS, AND COMPUTER METHODS

Minimum Credits: 3
Maximum Credits: 3
The goals of this course are to gain expertise in spatial analysis and geographical information systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

GEOL 2461 - ADVANCED REMOTE SENSING

Minimum Credits: 3
Maximum Credits: 3
This course is offered in conjunction with the introduction to remote sensing (geol-1460) - this course provides a foundation in the theory and techniques of remote sensing and geospatial data visualization spanning the electromagnetic spectrum from the ultraviolet to microwave wavelength region. Topics will include light/matter interaction, optics and sensor design, image analysis using commercial software, as well as current applications of remote sensing to science and engineering problems. The course and integrated image-processing laboratory are designed to provide you with an appreciation of current remote sensing issues, the geologic and human processes that impact remotely-gathered data, and how those processes can be measured using remote sensing. Students taking this course will participate in an independent research project involving remote sensing theory/data analysis. Students with no prior remote sensing background will also be required to participate in the geol-1460 lecture and computer labs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2462 - GEOMORPHOLOGY: DYNAMIC EVOLUTION OF EARTH'S SURFACE

Minimum Credits: 4
Maximum Credits: 4
This course aims to introduce students to the geomorphologic processes that shape the surface of Earth, the physical mechanisms by which they operate, and the landforms they create. It will combine qualitative and quantitative descriptions of land-shaping processes such as river erosion, glaciers motion, and landslides. The course builds on in class discussions and assignments to train students in applying basic physical and mathematical tools to explore geomorphological processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2468 - QUANTITATIVE RESEARCH METHODS IN EARTH SCIENCE IN MATLAB

Minimum Credits: 4
Maximum Credits: 4
Quantitative methods are essential for solving problems in Geologic and Environmental Sciences and are often implemented by programming in specialized software. This course focuses on methods for quantitative data exploration and hypothesis testing with Mat lab. The course will introduce students to programming with Mat lab, and use Mat lab to implement and explore a variety of quantitative methods, including: uni- and multi- variate statistics, dimensional analysis, signal processing, spatial extrapolation, and numerical modeling. Classes will include lectures and group assignments that will use various methods to detect patterns in data, pose hypotheses regarding these patterns, and test them.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2469 - TOPOGRAPHIC ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Topographic analysis: Landscape topography can reveal valuable information about the processes, evolution, and external conditions that formed a landscape. This class will introduce students to different methods of topographic analysis and the information they can provide. It will include examination of algorithms for analysis of digital elevation models (DEMs), ways for filtering DEMs for features of interest, and analysis of different topographic attributes and how they relate to factors such as climate, tectonics, and anthropogenic modifications. Methods will be executed and developed using Matlab and ArcGis. The class will focus on the analysis of a specific environment (the specific environment/s will vary from year to year and may include: urban areas, mountain-ranges, Arctic vs Tropical topography etc.). It will use the analyses methods we will learn, together with literature on this specific environment to explore questions regarding the topographic characteristics and environmental conditions that prevail in this environment. Knowledge of Arc GIS and Matlab required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2501 - ORGANIC AND STABLE ISOTOPE BIOGEOCHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
This is mainly a lecture course that will examine the carbon cycle and the life cycle of the organisms that are responsible for the eventual accumulation of organic materials in sediments. The processes involved in the simultaneous preservation and transformation of organic materials into coal, petroleum, natural gas, kerogen and other dispersed organics will be reviewed in light of modern concepts of thermal maturation processes. The structures of naturally-occurring organic materials in sediments will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 2510 - AQUATIC AND SEDIMENTARY GEOCHEMI

Minimum Credits: 3
Maximum Credits: 3
THIS COURSE WIILL EXAMINE THE CHEMISTRY AND GEOCHEMISTRY OF MODERN AND ANCIENT AQUATIC AND SEDIMENTARY SYSTEMS, INCLUDING OCEANS AND FRESH WATERS. STUDENTS WILL GAIN AN UNDERSTANDING OF THE BIOGEOCHEMICAL PROCESSES OCCURING IN AQUATIC SYSTEMS, AND THE GEOCHEMICAL SIGNATURES THEY LEAVE IN THE SEDIMENTARY RECORD.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (CHEM 0110 and GEOL 0055) or GEOL 0800 or 0860

GEOL 2518 - INTRODUCTION TO ATMOSPHERIC CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
This course will apply the basic principles of physics and chemistry to describe the complex system of the Earth's atmosphere. We will cover fundamental concepts such as atmospheric structure, transport, chemical kinetics, and photochemistry to address topics including stratospheric ozone, the oxidizing capacity of the Earth's atmosphere, and air pollution via tropospheric ozone, aerosols, and acid rain. We will also study the role of atmospheric composition and chemistry in mediating Earth's climate through topics such as the greenhouse effect, and feedbacks between chemistry, air quality, and climate. The course will familiarize students with the current state of the research through interactive projects and is open to both graduate students and advanced undergraduates.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2520 - RADIOGENIC ISOTOPE GEOLOGY AND GEOCHRONOLOGY

Minimum Credits: 3
Maximum Credits: 3
Introduction to isotope systematics (including mass dependent fractionation, radioactive decay, generation of cosmogenic nuclides, and nucleosynthesis), and application of isotope systems to problems in geochronology, geology, hydrology, oceanography, biology, and Cosmo chemistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2525 - STABLE ISOTOPE BIOGEOCHEMISTRY

Minimum Credits: 3
Maximum Credits: 3

This course focuses on stable isotope biogeochemistry and their use in understanding Earth and environmental systems, including lab-based sample preparation and analysis, and a research-oriented project. The curriculum includes both theoretical knowledge and hands-on experience with techniques like mass spectrometry, sample preparation for different matrices (water, tissues), data analysis, and presentation. Students will gain skills in designing sampling strategies and interpreting results in the context of ecological, geological, and hydrological processes. The course will provide students with an introduction to the stable isotope systematics of light elements including hydrogen, carbon, nitrogen, oxygen, and sulfur.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CHEM 0110 and GEOL 2520

GEOL 2700 - INTRODUCTION TO SPACE SCIENCE

Minimum Credits: 3
Maximum Credits: 3
Introduction to Space Science is cross-disciplinary course created as a foundation for students interested in space research in the natural sciences and the new Space Science Certificate Program. The course will encompass multiple subject areas of the science of space and the natural phenomena that occur there. It is intended to provide an overview of the current state of the art, link with similar courses/programs in Space Engineering and Space Medicine, and focus on the themes of Astrophysics, Planetary Geoscience, and Astrobiology within the broader discipline of Space Science.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 2750 - VOLCANOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course focuses on a specific but different topic of volcanology each time it is offered. The course is offered dependent on student demand. Courses that have been offered in the past include: describing and interpreting pyroclastic rocks, exploring explosions and glaciovolcanism. All the courses include discussion in the classroom, especially of recent volcanological literature, study of hand samples and microscope study of thin-sections.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 2960 - FIELD CAMP

Minimum Credits: 6
Maximum Credits: 8
Graduate geology summer field camp is six to eight weeks long and includes a substantial component of geologic mapping and report writing. Graduate students should enroll at an accredited field camp offering at least six semester units of credit and transfer the credits to the University of Pittsburgh.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

GEOL 2961 - WATER IN A CHANGINGTOPICS: WATER IN A CHANGING WORLD WORLD

Minimum Credits: 1
Maximum Credits: 1
This course is a forum for learning about water in a rapidly changing world. The course features weekly speakers from industry, academia, and government. Each meeting will center on a distinct water topic, include student-centered interaction, and discussion. Readings, software or other workshops, data discussions, and field trips may be included dependent on the semester
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
This course permits graduate students to explore specific topics in the geological sciences. The course is designed in a more flexible format than a directed study, stressing a higher degree of independent library research.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

GEOL 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 12
This course is designed to permit graduate students the opportunity to accomplish research necessary for the completion of a PhD degree in geology.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Geology and Planetary Science (PHD) or Geology and Environmental Sci (PHD)

GEOL 3410 - EXPLORATION GEOPHYSICS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on exploration geophysics including reflection seismic, well log, gravity, electromagnetic, magnetic, electrical, and other methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 3853 - ECOSYSTEMS: LAND-WATER-ATMOSPHERE INTERACTIONS

Minimum Credits: 3
Maximum Credits: 3
Understanding the science of watersheds is critical to improving water quality. This course will examine surface water hydrology, biogeochemistry, and management of watersheds. In addition, we will focus on how varying land uses influence the dynamics of hydrology and biogeochemistry across these systems. Student will develop an understanding of the biogeochemistry of various major elements in watersheds, including nitrogen, carbon, sulfur, and mercury, and how these elemental fluxes are exchanged through atmospheric-terrestrial-aquatic interactions. Students will be expected to demonstrate critical thinking, communication, and analytical skills through student-led lectures, journal discussions, and projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

GEOL 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
This is a course designed to permit graduate students an opportunity to explore facets of research possibly leading to project/thesis/dissertation topic.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

GEOL 3904 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
This is a course designed to permit graduate students an opportunity to explore facets of research possibly in the area of information science systems related to their project/thesis/dissertation topic.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

GEOL 3908 - TOPICS GEOLOGY

Minimum Credits: 3
Maximum Credits: 3
This is a course designed to permit the teaching of new and significant developments in the field of geology. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 3923 - TECTONIC GEOMORPHOLOGY SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Participants read and discuss recent and foundational literature in tectonic geomorphology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 3931 - TOPICS IN PALEOENVIRONMENTAL

Minimum Credits: 1
Maximum Credits: 1
This is a course designed to permit the teaching of new and significant developments in the field of paleo environmental analysis. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 3946 - PYTHON SCRIPTING

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to gain expertise in programming methods using environmental systems research incorporated arcobjects and the visual studio .net programming environment of microsoft. Arcobjects is a software technology based on the com protocol and can be used within any com-compliant programming language. Our goal in this class is to gain fundamental skills in visual basic programming using the microsoft developers studio visual basic environment through applied examples and homeworks. After students have gained some programming expertise they will immediately begin programming the arcgis desktop using arcobjects technology.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PREQ: GEOL 2449

GEOL 3949 - ANALYTICAL APPLICATIONS IN THE GEOSCIENCES

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis
Course Requirements: LVL: GRAD

GEOL 3951 - TOPICS IN GEOCHEMISTRY 2

Minimum Credits: 1
Maximum Credits: 1
This is a course designed to permit the teaching of new and significant developments in the field of geochemistry. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 3952 - TOPICS IN BIOGEOCHEMISTY & GEOBIOLOGY

Minimum Credits: 1
Maximum Credits: 1
This is a course designed to permit the teaching of new and significant developments in the field of geochemistry. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 3953 - TOPICS IN GEOCHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
This course will focus on environmental and water resource issues related to energy extraction in the Appalachian Basin. Topics will include the environmental effects of oil and gas drilling, hydraulic fracturing, coal mining, waste from coal fly ash and abandoned mine discharges, and other topics of interest to students. The course will involve readings from the literature, guest lectures from local professionals, and student-led discussions and presentations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: GEOL 1030 and 1641

GEOL 3956 - TOPICS IN NITROGEN BIOGEOCHEMISTRY

Minimum Credits: 1
Maximum Credits: 1
This is a course designed to permit the teaching of new and significant developments in the field of nitrogen biogeochemistry. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 3958 - TOPICS IN GEOCHEMISTRY: CURRENT RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course will focus on recent research in the area of near-surface biogeochemistry, element cycles, and sustainable resource recovery. Classes will consist of readings and student-led discussions and presentations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

GEOL 3970 - REMOTE EXPLORATION OF THE MOON AND MARS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the theory, technology and science of the recent remote sensing data sets from the moon and mars. Numerous missions from rovers to orbiters have produced datasets that span the electromagnetic spectrum, and these will be the focus of this graduate-level, seminar-style class. Students should have had a remote sensing course and will also complete an independent study utilizing either lunar or mars remote sensing data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GEOL 3974 - TOPICS IN VOLCANOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will provide an in-depth analysis of different volcanology topics each time it is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

German

GER 1550 - DIGITAL METHODS FOR HUMANISTIC RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Texts hide secrets from us humans that are manifestly obvious to computers: all we need to do is crack the code. This course teaches students with zero coding experience to use computers to reveal hidden insights from digitized texts. Students will learn to make those texts "speak" by transforming them into dynamic visuals and interactive websites: in this manner, Hamlet becomes a chart of gender-coded language; a history of Rome becomes a map of the empire's most frequently referenced battles; and much more. Over the course of the semester, students will apply digital methods to a research project of their own choosing. In addition to adding a valuable tool to their research repertoire, students will leave with coding and web design skills highly sought after in other career contexts.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

GER 2000 - MA THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research

Grade Component: Grad SN Basis
Course Attributes: West European Studies

GER 2882 - TOPICS IN GERMAN CINEMA

Minimum Credits: 3
Maximum Credits: 3
This course will use the German cinema to examine the relationship between films, social change, and questions of national identity and to assess the emergence of certain artistic movements, film genres, and models of authorship along these lines. Depending on the semester in which it is taught, the course will address these issues through topics like the representation of the masses, gender anxieties, film and the other arts, the historical film, film auteurs, images of the other, or war and cinema.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies, West European Studies

GER 2892 - APPARATUS THEORY

Minimum Credits: 3
Maximum Credits: 3
Apparatus Theory was central to the debates that generated contemporary film studies. This seminar will review the history of those debates and engage contemporary efforts to reinvigorate discussions of the full apparatus that brings the moving image to the screen.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Attributes: Film Studies

GER 2902 - DIRECTED M.A. STUDY

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

GER 2904 - MA PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This practicum is for students involved in organized graduate coursework (not independent or directed study) that is less than a 3-credit seminar, but that merits academic credit (i.e. Mini-seminars, lectures, films, or similar events).
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

GER 2970 - TEACHING OF GERMAN

Minimum Credits: 3
Maximum Credits: 3
This course examines and evaluates current pedagogical theories in language teaching and gives practical information on subjects such as teaching the four basic skills, lesson planning, vocabulary building, pattern drills, games, student-teacher interaction, textbook evaluation, testing, grading, visual aids, and culture. Theoretical discussions are augmented by practical sessions devoted to micro teaching demonstrations.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

GER 2975 - ADVANCED TOPICS IN FOREIGN LANGUAGE LEARNING AND TEACHING

Minimum Credits: 3
Maximum Credits: 3
In this course intended for experienced foreign language teachers, students will focus on pedagogical issues encountered in advanced-level teaching in the areas of language, literature, and culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GER 2990 - M.A. INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

GER 3000 - PH.D. DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Attributes: West European Studies

GER 3892 - APPARATUS THEORY

Minimum Credits: 3
Maximum Credits: 3
Apparatus Theory was central to the debates that generated contemporary film studies. This seminar will review the history of those debates and engage contemporary efforts to reinvigorate discussions of the full apparatus that brings the moving image to the screen.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

GER 3902 - PH.D. DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

GER 3904 - PHD PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This practicum is for students involved in organized graduate coursework (not independent or directed study) that is less than a 3-credit seminar, but that merits academic credit (i.e. Mini-seminars, lectures, films, or similar events).
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

GER 3975 - ADVANCED TOPICS IN FOREIGN LANGUAGE LEARNING AND TEACHING

Minimum Credits: 3
Maximum Credits: 3
In this course intended for experienced foreign language teachers, students will focus on pedagogical issues encountered in advanced-level teaching in the areas of language, literature, and culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GER 3990 - PH.D. INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

Gerontology

GERON 2000 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
A student initiated educational experience, guided by a faculty member, that significantly supplements the core curriculum of the certificate and provides specialized, focused training in aging.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2001 - ETHICS AND AGING

Minimum Credits: 3
Maximum Credits: 3
This course offers an overview of ethical issues in aging. Early sessions will explore the ethical implications of stereotypes and myths regarding aging. Turning to the context of health care, students will identify and analyze moral dilemmas that arise in the long-term and end-of-life care of older adults. Concepts and topics to be critically examined include: autonomy, dependency, elder abuse, and just resource allocation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2002 - PREVENTION AND HEALTHY AGING

Minimum Credits: 3
Maximum Credits: 3
Prevention and healthy aging is an online course that provides the guidance and rationale for promoting health, prevention, and effective risk factor management in the adult population (50+) in respect to rising health care costs, decreasing benefits, and the aging of our population. This course offers a general overview of various aging issues (physical, cognitive, social, cultural, and economic) that impact the individual, community, and society. This course will prepare students to integrate optimal preventive practice into their professional context and translate evidence-based strategies into community outreach services that are designed to prevent or delay the common conditions of aging and ones that emphasize the importance of healthy behaviors throughout the lifespan.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2003 - INTERGENERATIONAL STUDIES

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2004 - MENTAL HEALTH AND MENTAL ILLNESS IN LATE-LIFE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2005 - PERSPECTIVES IN AGING

Minimum Credits: 3
Maximum Credits: 3
Designed as an upper level course for students to learn about the aging process in our society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2006 - MULTI-DISCIPLINARY ASPECTS OF DEMENTIA

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2008 - HUMAN PERFORMANCE, NUTRITION AND AGING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2009 - AGING AND COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2010 - SEMINAR IN AGING

Minimum Credits: 1
Maximum Credits: 1
This course allows for critical review and discussion of current scientific literature. Assigned readings will focus on a topic that is of interest to the students enrolled, with application to their particular professional roles. The teaching methods used by the instructor will include directed review and discussion of specific research and/or review articles. On designated Mondays, each student in the course will be asked to select an article of interest and submit it for critique by the rest of the class. Following the guidelines provided by the instructor, the students will post to the discussion board a critical review and discussion of these assigned readings on/or before the Sunday of the following week.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2011 - NAVIGATING GRIEF AND LOSS IN OLDER ADULTS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2012 - ETHICS AND AGING FOR SCHOOL OF HEALTH AND REHABILITATION SCIENCES STUDENTS

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

GERON 2013 - EVIDENCE-BASED APPROACHES TO SUPPORT FAMILY CAREGIVERS

Minimum Credits: 3
Maximum Credits: 3
Evidence-Based Approaches to Support Family Caregivers, is an online course that provides a more in-depth look at research-informed approaches and interventions in supporting family caregivers. By delving into these approaches, which is based on the most recent research, helping professionals will be better equipped to assist family caregivers in providing care, maximizing self-efficacy, and infusing increased knowledge to family caregivers who are the primary source of support for older adults with chronic illness and disability. By

investigating evidenced-based interventional approaches, students will examine psychosocial, psychotherapeutic, technologically-based interventions, as well as coordination care services & resources. Our study will also focus on the experiences of family caregivers and walking the journey alongside them, while also being able to assist in interventional approaches and tools for best care practices. In this work, students will envelope a view of holistic approaches of caring for the caregiver, but also in giving voice to the care recipient and understanding their needs during this journey of being cared for. The exploration of several dimensions and approaches to caregiving will include psychological and physical health, as well as social relationships and support. In focusing on these areas, we will not only look at risk factors for adverse outcomes but also positive aspects of caregiving. This course will briefly touch on special populations for caregiving which will include looking at families who care for their children due to illness or disability. The information attained in this course will enable helping professionals to apply approaches and concepts learned to carers and care recipients in comprehending the multi-faceted dynamics that come along with the role of caregiving.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2013 - EVIDENCE-BASED APPROACHES TO SUPPORT FAMILY CAREGIVERS

Minimum Credits: 3
Maximum Credits: 3
Evidence-Based Approaches to Support Family Caregivers" is an online course that provides a more in-depth look at research-informed approaches and interventions in supporting family caregivers. By delving into these approaches, which is based on the most recent research, helping professionals will be better equipped to assist family caregivers in providing care, maximizing self-efficacy, and infusing increased knowledge to family caregivers who are the primary source of support for older adults with chronic illness and disability. By investigating evidenced-based interventional approaches, students will examine psychosocial, psychotherapeutic, technologically-based interventions, as well as coordination care services & resources. Our study will also focus on the experiences of family caregivers and walking the journey alongside them, while also being able to assist in interventional approaches and tools for best care practices. In this work, students will envelope a view of holistic approaches of caring for the caregiver, but also in giving voice to the care recipient and understanding their needs during this journey of being cared for. The exploration of several dimensions and approaches to caregiving will include psychological and physical health, as well as social relationships and support. In focusing on these areas, we will not only look at risk factors for adverse outcomes but also positive aspects of caregiving. This course will briefly touch on special populations for caregiving which will include looking at families who care for their children due to illness or disability. The information attained in this course will enable helping professionals to apply approaches and concepts learned to carers and care recipients in comprehending the multi-faceted dynamics that come along with the role of caregiving.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2014 - CAREGIVING IN AGING

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students to learn about the evolving role of caregiving in our society. This course will examine the challenges and responsibilities associated with caring for an older adult in the home setting, and the supportive options and resources that are available.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2015 - DIGITAL INEQUALITY IN OLDER ADULTS

Minimum Credits: 3
Maximum Credits: 3
As the world population ages, older adults comprise a growing proportion of current and potential Internet users. Yet outdated attitudes about older adults prevent markets and institutions from seeing them as worthy and relevant consumers and citizens. This course will examine the state of research on Internet use among older adults including how social inequalities have both evolved and remain in relation to who goes online and what they do once connected. We will explore generational differences in the ways people use the Internet as well

as examine the relationship between Internet use and well-being. The goal is for students both to gain exposure to this area of work and identify aspects of Internet use among older adults that warrant further inquiry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2016 - DIVERSITY IN AGING

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of diversity in aging from a multidisciplinary perspective. Key concepts, current research findings, and important polices concerning older adults are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Greek

GREEK 2202 - ADVANCED READINGS IN GREEK TRAGEDY

Minimum Credits: 3
Maximum Credits: 3
In this course students undertake close study in the area of Greek tragedy. The course may be repeated for credit provided the specific material covered is different.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

GREEK 2217 - ADVANCED READINGS IN GREEK HISTORIANS

Minimum Credits: 3
Maximum Credits: 3
In this course students read selected works by Greek historians. The specific authors and works vary from term to term; the course may be repeated for credit when the material covered is different.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

GREEK 2219 - GREEK SEMINAR: ORATORS

Minimum Credits: 3
Maximum Credits: 3
In this course students undertake close study in the area of Attic oratory. The course may be repeated for credit provided the specific material covered is different.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

GREEK 2220 - GREEK SEMINAR: PHILOSOPHERS

Minimum Credits: 3
Maximum Credits: 3

In this course students undertake close study in the area of Greek philosophy. The course may be repeated for credit provided the specific material covered is different.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

GREEK 2902 - DIRECTED STUDY FOR M.A. STUDENTS

Minimum Credits: 1
Maximum Credits: 9
Directed study on classical topics for students in the M.A. Program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

GREEK 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
In this course a student undertakes study in Greek in consultation with a member of the faculty.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

GREEK 2992 - PHD READING EXAMINATION

Minimum Credits: 0
Maximum Credits: 0
Permits graduate students from other departments to demonstrate competence in the reading of ancient Greek through examination.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

GREEK 2995 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Directed study on Greek topics for students in the graduate program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Health Informatics

HI 2011 - CLINICAL SCIENCES FOR HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course (formerly known as A&P, Pathophysiology, Medical Terminology and Pharmacology) has multiple topics, including an introduction to the structure of human cells, tissues, organs and organ systems, and functions associated with them; a general overview of the predisposing factors and direct causes of disease, as well as their effects on the human body; an introduction to pharmacology; and word construction, pronunciation, spelling, definition and use of terms related to all areas of medical science, hospital service and health related professions.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2021 - PRACTICAL STATISTICS AND PROGRAMMING USING R

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to statistical methods and computer programming in R that are essential for data scientists. This course covers practical statistics from the perspective of data science in health care and how to apply various statistical methods to data analytics projects. In addition, this course introduces the most widely used statistical programming tools in data science: R. Prior experience in R is not expected in this course, however, familiarity with basic statistics concepts and modern programming language will be very useful. The approach of this course is practical, hands-on and project oriented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HI 2022 - INTRODUCTION TO PYTHON FOR HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to Python for students in health informatics. It aims to provide students with an understanding of the modern computer programming and to help students learn how to use computer programs to solve real-world problems in health sciences. Students will be guided to write Python programs to process multiple types of data in health informatics, such as electronic health records, clinical data, and clinical texts. In addition, this course practices basic concepts and applications of artificial intelligence, machine learning, and natural language processing in health care using Python. The approach of this course is practical, hands-on and project oriented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM

Minimum Credits: 3
Maximum Credits: 3
This course will introduce the student to the healthcare system and health information management as well as the integrity of the health data that is used by healthcare organizations. It will also introduce the student to the importance of the quality of healthcare and health information and the need for risk management and patient safety in healthcare organizations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2230 - FINANCIAL MANAGEMENT AND HEALTH CARE REIMBURSEMENT

Minimum Credits: 3
Maximum Credits: 3
This course introduces key principles of financial management and reimbursement in the health care industry. The aim is to provide an understanding of financial and reimbursement language, concepts, and processes to enhance the daily management performance of current and future leaders in healthcare. Students will be offered tools to develop a working knowledge of financial statements, dashboard metrics and industry financial issues. Students will learn reimbursement methodologies, health care compliance regulations and tools for managing all aspects of the revenue cycle. Course modules and exercises offer insight into the development of operational budgets, understanding financial trends and variances, developing financial negotiating strategy, quantifying productivity, interpreting reimbursement analytics, ensuring compliance, understanding healthcare reimbursement, and managing the revenue cycle.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2231 - TALENT MANAGEMENT AND HUMAN RESOURCES

Minimum Credits: 3
Maximum Credits: 3
This course is a practical guide to human resource management in health care, and covers topics such as recruitment, compensation and benefits, training, discipline, termination, legal issues, labor unions, and multi-human interactions that emerge in the workplace. It is also an overview of the laws and regulations that guide every decision related to managing people in the complex society that we exist in today.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2236 - QUALITY AND PERFORMANCE IMPROVEMENT IN HEALTHCARE: METHODOLOGIES, CORE SKILLS, AND LEAN GREEN BELT C

Minimum Credits: 3
Maximum Credits: 3
In this course, you will examine healthcare's quality movement over the last 20-25 years and survey the major methodologies for performance improvement. These methodologies include: the IHI Improvement Cycle, Lean (the Toyota Production System), Six Sigma, High Reliability, Positive Deviance, and the Baldrige and Shingo frameworks. In the second part of the course, you will do a deeper dive into the philosophy and tools of Lean Healthcare. This online course includes workshop exercises that allow you to practice core improvement skills like problem definition, process mapping, root cause analysis, setting target conditions, selecting appropriate metrics, and driving rapid cycles of experimentation. The course culminates in a final project in which you will document an actual improvement project of your choice. You can also earn a Green Belt in Lean Healthcare if you earn at least a B grade in the course and pass an optional final lean competency exam.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course introduces health informatics, providing an overview of the important topics and a foundation for other courses in the master's and certificate programs in health informatics. Students will learn what health informatics is, the challenges in health informatics, career in and profession of health informatics. Students will be briefly introduce to important concepts in health informatics including computing and networking in health informatics, digital health, data analytics and machine learning, data science, health technology intervention, electronic health record, healthcare standard, privacy and security, and bioinformatics and digital imaging.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HI 2251 - HEALTHCARE ANALYTICS, MACHINE LEARNING, AND DATA VISUALIZATION

Minimum Credits: 3
Maximum Credits: 3
Healthcare data has been generated constantly from various sources, such as government offices, hospitals, research organizations, and patients themselves. This course is a tool-based data analytics and visualization that teaches students how to analyze and visualize large data using software such as Excel, SPSS, Tableau, and Orange. These tools allow us to conduct desired data analysis and machine learning

without programming. This course will provide an introduction to descriptive and predictive data analytics and visualization methods using those tools, along with a number of solid examples in healthcare.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HI 2310 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE INNOVATION & CLASSIFICATION

Minimum Credits: 3
Maximum Credits: 3
This course examines how AI is transforming the healthcare data lifecycle from intake and documentation to imaging, coding, and registries. Students will explore the integration of classification systems (ICD, CPT) with AI tools like NLP and machine learning to streamline workflows and support data-driven care. Through case studies and hands-on use of no-code platforms, learners will design and evaluate AI solutions while addressing ethical and equity challenges in healthcare AI adoption.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2411 - REVENUE CYCLE ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to familiarize the student and prepare the learner to analyze revenue cycle data. In this course, we will explore available public healthcare data sets and the data mining process. We will examine data through the 4P (patient, provider, payer, population) perspective and introduce methods and tools for integrating and analyzing data. We will also explore both business and research options for interpreting data through visualizations and predictive analytics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HI 2450 - SECURITY, PRIVACY, LEGAL, AND ETHICAL ISSUES IN HEALTH INFORMATION SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce basic knowledge of security, privacy, legal and ethical issues in health information systems. In the first half of the course, the major focus will be on security techniques, including basic concepts, encryption and decryption methods, program operating systems, databases, and network security. In the second half of the course, we will shift our attention to the application of the concepts of privacy and security in the healthcare industry. Legal and ethical issues around the privacy and security of health information will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
The ability to capture, organize, and analyze data is critical to healthcare organizations and to biomedical research. Database is arguably the most important tool in supporting data capture, organization, and analysis of outcomes, both for regular, transactional data as well as big data. This course will provide students with opportunities to learn data and big data management skills: principles in database, approaches

to manage data, as well as provide a place to discuss and analyze key issues in data management. The course will have two sections. The first section will emphasize on the theoretical and technical aspects of database, specifically in data modeling, design of database, as well as learning the 'language' to manage database. The second section will address advanced topics in database and big data, including transforming data, data warehousing and data mining, as well as analysis and visualization of data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2452 - DIGITAL HEALTH AND ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
The advancement of informatics in health has allowed a convergence of digital technologies with health and healthcare, with the goal of improving the efficiency and effectiveness of health services as well as making medicines more personalized and precise. These technologies include solutions for both healthcare providers and patients, ranging from Electronic Health Records, Telemedicine, Mobile Health, Wearable Devices, as well as many emerging Internet-of-Things devices and sensors. Interventions through digital health require a multi-disciplinary domain team involving both informatics and social sciences. This course will provide students with opportunities to explore, analyze, and discuss key issues, principles (both from technical and social science perspectives), approaches, and policies surrounding digital health. The final assignment of this course will task student to work with key health service stakeholders (who would actually share their knowledge throughout the course as well) to investigate and propose a practical digital health solution to tackle a specific health issue.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2453 - MACHINE LEARNING IN HEALTH SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students who want to learn data analytics and machine learning, and their applications in health science. Data analytics tools and methods, machine learning procedure and tools, and their applications in health science will be discussed in this course. Students who finish this course should be able to use statistical and machine learning methods and tools to analyze various types of data sets in health science, and make predictions and recommendations according to the obtained results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (HI 2020 or HI 2022) and HI 2454; PLAN: Restricted to Health Informatics students only; SUBPLAN: HDA-TR or OHDA-TR or HIC-TR or OHIC-TR or RCM-TR or ORCM-TR or LHI-TR or OLHI-TR

HI 2454 - DATA SCIENCE IN HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course to data science. Data sources, types, data collection methods, data processing and analysis methods, and analysis result interpretation will be covered in this course. Students will learn these skills by finishing several assigned projects. By finishing the course, students will have the skills to analyze various types of data sets using different methods and have the ability to interpret the meaning the results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2455 - DATABASE DESIGN AND MANAGEMENT FOR HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
This course covers two main topics. The first topic is on database design and data modeling in a relational database environment, and database manipulation using structured query language (SQL). The second topic is on data analytics that includes transformation of transactional database into analytical database (data warehouse), and data analytics and visualization. This course does not require Python programming.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2456 - HEALTHCARE IT TRENDS AND INNOVATION

Minimum Credits: 3
Maximum Credits: 3
This course discusses current trends in modern healthcare, as well as innovations that can be used in providing better patient treatments, medical research, and outcome analysis. The introduction of innovative new healthcare technologies will have a major impact on the industry. AI, Big Data, Novel Medicines, and Cloud infrastructure will provide environments where both clinical medicine and research can reside and flourish. With emerging technologies, data management needs will grow. We will discuss keeping data safe, available, and usable for analytics to facilitate innovation and improve healthcare and patient outcomes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HI 2457 - APPLIED AI & DESIGN THINKING FOR HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
Creativity and innovation remain essential for tackling healthcare's toughest challenges: reducing inefficiencies, improving outcomes, and advancing equity. Applied AI and Design Thinking for Health Informatics blends an empathy driven design thinking cycle (from empathizing to defining to ideating to prototyping to testing) with the practical power of modern artificial intelligence tools. Students learn to use applied AI tools and no code wireframing platforms as creative collaborators, generating insights, concepts, and rapid prototypes that keep human needs at the center. The group design project culminates in a proof of concept and portfolio ready deliverables that showcase each student's ability to unite human centered design with practical, hands on AI expertise to produce impactful health informatics solutions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HI 2458 - GENERATIVE ARTIFICIAL INTELLIGENCE IN HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
This graduate course provides a comprehensive overview of the foundational theories underlying Generative Artificial Intelligence (GenAI) and its transformative applications in healthcare. Designed for students with prior exposure to data science and machine learning, the course begins with an introduction to large language models (LLMs) and explores a broad range of GenAI technologies. Through a combination of lectures, demonstrations, and critical discussions, students will examine how GenAI tools can be leveraged to advance healthcare delivery, research, and decision-making, while also addressing ethical, legal, and social considerations. By the end of the course, students will be equipped to evaluate and select appropriate GenAI tools for specific healthcare tasks and to apply these technologies responsibly and ethically in professional practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HI 2459 - ARTIFICIAL INTELLIGENCE FOR MEDICAL IMAGING INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the foundational concepts and cutting-edge applications of AI in medical imaging informatics. Topics include medical image formation, deep learning architectures for radiology and pathology, multimodal imaging analysis, image quality and annotation challenges, privacy-preserving AI (e.g., federated learning), and regulatory frameworks such as HIPAA, GDPR, and FDA standards for Software as a Medical Device (SaMD). Through hands-on labs, students will work with real-world imaging datasets (plain radiographs, MRIs, and WSIs) and open-source AI frameworks to build, train, evaluate, and interpret AI models for diagnostic purposes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (HI 2020 or HI 2022); PLAN: Restricted to Health Informatics students only; SUBPLAN: HDA-TR or OHDA-TR or HIC-TR or OHIC-TR or RCM-TR or ORCM-TR or LHI-TR or OLHI-TR

HI 2460 - DATA SCIENCE AND MACHINE LEARNING IN HEALTH SCIENCES

Minimum Credits: 3
Maximum Credits: 3
This course introduces data science and machine learning in health informatics. Students will learn methods and tools for health data preprocessing, data visualization, exploratory data analysis, statistical modeling, and machine learning algorithms. The course will include advanced machine learning techniques such as neural networks and deep learning. Students will grasp these skills by finishing several assignments and a few projects. By finishing the course, students will have the skills to analyze various types of data sets using different methods and have the ability to interpret the meaning of the results. They will also be able to make predictions and recommendations according to the obtained results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (HI 2020 or HI 2022); PLAN: Restricted to Health Informatics students only; SUBPLAN: HDA-TR or OHDA-TR or HIC-TR or OHIC-TR or RCM-TR or ORCM-TR or LHI-TR or OLHI-TR

HI 2461 - NATURAL LANGUAGE PROCESSING AND LARGE LANGUAGE MODELS IN HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
This course introduces natural language processing (NLP) and large language models (LLMs) with an emphasis on their applications in healthcare. Students will learn key concepts in computational linguistics, machine learning, and deep learning, alongside core NLP techniques such as information extraction, information retrieval, and question answering using biomedical texts and electronic health records (EHRs). The course will cover recent advances in LLMs and their transformative role in clinical and biomedical contexts. It also offers hands-on exercises (using Python) and projects, enabling students to build both theoretical knowledge and practical skills to develop and evaluate NLP applications in real-world healthcare scenarios.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (HI 2020 or HI 2022); PLAN: Restricted to Health Informatics students only; SUBPLAN: HDA-TR or OHDA-TR or HIC-TR or OHIC-TR or RCM-TR or ORCM-TR or LHI-TR or OLHI-TR

HI 2462 - ETHICAL, LEGAL, AND SOCIAL ISSUES (ELSI) OF AI IN HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
This course examines the ethical, legal, and social implications of artificial intelligence (AI) and generative AI in healthcare. Students will explore key concepts such as bias, fairness, transparency, and trustworthiness in clinical AI systems, as well as the ethical challenges that arise when deploying AI in patient care, public health, and administrative settings. The course also addresses legal and regulatory considerations, including privacy, confidentiality, data governance, accountability, and liability. This course incorporates case studies, current research, and relevant policy frameworks. Students will examine how AI influences clinical decision-making, health equity, patient

autonomy, and broader societal expectations. Students will be prepared to critically assess AI technologies and contribute to responsible, ethical, and socially informed AI practices in healthcare.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Leadership and Project Management is a course designed to introduce and develop leadership behaviors as well as manage the project management process. The goal of this course is to advance the capabilities in meeting current healthcare organizations challenges through both leader and leadership development. It is not intended to provide a background on the evolution of thought on leadership or leadership theory. The course takes a developmental "not training" approach by providing a leadership development framework that helps guide one in acquiring the characteristics and behaviors associated with good leadership. This course will study how technology, people, and economics of software projects interact and the impact these elements have on managing software projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2650 - PRACTICAL RESEARCH AND EVALUATION METHODS

Minimum Credits: 3
Maximum Credits: 3
The ability to measure and describe issues in health informatics is vital in the process of decision making in healthcare. The process of evaluation itself depends on the questions and the contexts in which the issue arises. This course will study the methods of evaluation in health informatics, specifically the practical application of well-established research and evaluation techniques to problems in health informatics. Different situations in healthcare will necessitate the use of different evaluation methods, therefore in this course students will be exposed to approaches to develop measurement instruments, design study, analyze result, as well as presenting the result of the study in health informatics evaluations. Case studies will be used to facilitate active learning, including conducting usability evaluation and cost evaluation of health informatics resource. By the end of the course, students will be able to develop a working evaluation 'contract', which can be used to guide the evaluation process as well as to validate the result of the evaluation process itself -that the result is indeed what the stakeholders want/need to know to make a decision.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2670 - INTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
Supervised practical experience providing an opportunity for students to learn new skills and to apply previously learned skills and theories in the analysis, design, implementation, and evaluation of health information systems.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

HI 2680 - CAPSTONE

Minimum Credits: 3
Maximum Credits: 3
This course serves as the culminating academic experience for students in the Health Informatics program, bringing together the skills,

knowledge, and competencies acquired across all courses in the curriculum. Students will demonstrate integrated mastery of the professional competencies developed throughout the program. Working in teams under faculty supervision, students will identify, analyze, and propose a solution to a defined problem in a health informatics context. The project requires students to establish clear requirements, a realistic timeline, and defined deliverables in line with professional practice expectations. The final solution will be presented in a format determined by the program, challenging students to synthesize, apply, and articulate their full academic preparation. Upon completion, students will have a tangible project to represent their work in job applications and interviews.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

HI 2902 - DIRECTED STUDIES

Minimum Credits: 1
Maximum Credits: 9
Under the direct supervision of a faculty member, the student carries out specific research pertinent to the student's and/or faculty member's interests.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: Restricted to Health Informatics students only

HI 2999 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
Provides students an opportunity to explore in depth an area of particular interest to them. It is the student's responsibility to find a faculty member willing to undertake such a tutorial.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: Restricted to Health Informatics students only

Health and Human Development

HHD 2003 - REFLECTIVE CONSULTATION

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

HHD 2005 - INFANT DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2006 - INFANT MENTAL HEALTH INTERVENTIONS I

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2007 - FOUNDATIONS OF INFANT MENTAL HEALTH 1

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2008 - FOUNDATIONS OF INFANT MENTAL HEALTH 2

Minimum Credits: 3
Maximum Credits: 3
This course in the second part of the introduction and overview of Infant Mental Health (IMH). Core theoretical concepts related to the practice of IMH will be examined. Emphasis will be placed on understanding how IMH principles provide a foundation for working with infants, toddlers, and families across cultural, setting and discipline contexts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2009 - INFANT MENTAL HEALTH INTERVENTIONS 2

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2011 - IMH INTERVENTIONS 2

Minimum Credits: 3
Maximum Credits: 3
You will learn Principles of infant and early childhood mental health. Develop skills to support the social-emotional development of very young children and their families. Learn about the scope of infant-mental health practice and opportunities for advocacy and action. Learn with researchers and community-based faculty engaged in the early childhood workforce. Learn how to apply infant mental health theory into practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2023 - DEATH AND DYING

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the study of death and dying as well as the value of human life. Students will examine theories and concepts of death education and demonstrate the ability to accurately apply them to grief and coping. In addition, cultural and religious perspectives will be discussed. Particular emphasis will be given to strategies for working with children and adolescents as well as those who are terminally ill. These strategies include coping and preparation for the funeral, burial, and end of life-process. Students will also be encouraged to share their own experiences with death, dying and coping.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2024 - FAMILY DYNAMICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2040 - HEALTH AND WELLNESS FOR INFANT, TODDLERS AND YOUNG CHILDREN

Minimum Credits: 3
Maximum Credits: 3
This class provides the future pre-k ' grade 4 classroom teacher with a knowledge base in motor development, health and physical education curriculum planning, and appropriate selection of health knowledge and skills and physical activities for infants, toddlers, and young children. Included are labs and field experiences in the pre-k-grade 4 classroom setting.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2113 - DEVELOPMENTAL PSYCHOPATHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course explores the emergence and progression of psychological disorders from a developmental perspective. Emphasizing the interplay of biological, psychological, and environmental factors, students will examine how risk and protective influences shape mental health outcomes across childhood and adolescence. Key topics include the classification and diagnosis of disorders, trajectories of atypical development, and the implications for prevention and intervention. Through an integrative and research-based approach, the course encourages critical thinking about the complexity of mental health in developmental context.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2127 - HUMAN LEARNING

Minimum Credits: 3
Maximum Credits: 3
Presents students with an understanding of various learning theories and their application in a wide variety of settings. Consideration is given to current research focusing on biological aspects of learning, classical and operant conditioning, social cognitive theory, information processing and selected cognitive concepts in learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2143 - CHILD AND YOUTH DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course expands and deepens on themes introduced in Child and Youth Work I. Topics include the challenges of ecological approaches to learning and development; the roles of decision-makers at multiple levels (government, program directors, youth workers, youth themselves); and the benefits and challenges of youth-adult partnership approaches to child and youth work.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2197 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
Independent study for students in psychology in education.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

HHD 2198 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Student pursues study of various topics under the direction of faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

HHD 2233 - COMMUNITY-BASED ACTION RESEARCH 1

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HHD 2234 - COMMUNITY-BASED ACTION RESEARCH 2

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HHD 2261 - ADOLESCENT DEVELOPMENT 1

Minimum Credits: 1
Maximum Credits: 1
The adolescent development course sequence for teacher education students covers developmental pathways from middle childhood through adolescence across multiple contexts (e.g. Individual, family, peers, school, community, and cultural) and the important considerations and relationships in these contexts. This first course in the sequence for teacher education students focuses on the importance of and considerations for forming authentic, meaningful relationships with all adolescents and the vital role such relationships play in promoting positive outcomes. Students will learn about developmental theories and concepts that are important in forming such relationships and will apply the concepts in their work with adolescents in educational settings. Key developmental tasks for adolescents are introduced in the context of understanding adolescent thinking and behavior. In addition to reading about development from a variety of sources, students will have the opportunity to apply the new information in their practice settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2262 - ADOLESCENT DEVELOPMENT 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Instruction and Learning (MAT, MED, MA, or ND)

HHD 2263 - ADOLESCENT DEVELOPMENT 3

Minimum Credits: 1
Maximum Credits: 1
The adolescent development course sequence for teacher education students covers developmental pathways from middle childhood through adolescence across multiple contexts (e.g. individual, family, peers, school, community, and cultural) and the important considerations and relationships in these contexts. This class is the third course in the sequence for teacher education students. The course focuses on the nature and types of atypical development, especially as they relate to educational settings. Topics covered include learning, emotional, developmental, and behavioral disabilities, as well as psychological difficulties, with a continuing focus on the importance of positive relationships and the particularly vital role such relationships play in promoting positive outcomes for youth with disabilities. Students will learn about the ways in which 'typical' development is impacted by a disability and the potential implications of these impacts on adolescents' educational, social, and psychological functioning and development. Using a developmental framework, students will analyze and evaluate current interventions and/or teaching methods and apply knowledge of development to improve these approaches. Students will have the opportunity to apply the concepts in their work with adolescents in applied settings
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2265 - ATTENTIONAL TEACHING PRACTICES 1

Minimum Credits: 1
Maximum Credits: 1
Attentional teaching practices (ATP) aims to train pre-service teachers to cultivate a safe psychological space for learning, so students can make the greatest academic gains possible. In ATP I, preservice teachers will (1) learn to recognize the psychological dynamics that occur in classrooms and that may enhance the effectiveness of instruction, will (2) learn principles of adolescent development to improve their ability understand adolescent perspectives, and will (3) begin to build a toolbox of strategies to improve their psychological competence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

HHD 2266 - ATTENTIONAL TEACHING PRACTICES 2

Minimum Credits: 1
Maximum Credits: 1
Attention teaching practices (ATP) aims to train pre-service teachers to cultivate a safe psychological space for learning, so students can make the greatest academic gains possible. In APT II, preservice teachers will (1) learn how to shift the psychological dynamics in the classroom when needed, will (2) practice interacting with adolescents in ways that build on knowledge of adolescent development, and will (3) continue to strengthen their toolbox of strategies to improve their psychological competence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HHD 2267 - PHYSIOLOGICAL BASIS-FITNESS AND SPORT CONDITIONING

Minimum Credits: 3
Maximum Credits: 3
This course is aimed at developing an understanding of the physiological adaptations to fitness or long term physical training with emphasis on metabolic, strength and conditioning principles. Through the awareness of the body's responses to chronic and acute exercise. The student will be able to organize and design a physical training or fitness program for young adults, athletes and special populations. This course provides preparation for the American college of sports medicine health fitness instructor or national strength and conditioning exams.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (HPRED-MS)

HHD 2268 - PHYSICAL ACTIVITY AND HEALTH

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to expose the student to the topics related to the role of physical activity in the prevention and treatment of chronic diseases and additional health-related outcomes according to the most current literature. Students will become aware of all aspects of physical activity epidemiology, including the different methods to measure physical activity, evaluating the strengths and weaknesses of each, and understanding the analysis of physical activity data and research. In addition, this class will cover the physiology and mechanisms through which physical activity and exercise may affect the primary and secondary prevention and/or treatment of various health conditions, and will examine the risks and benefits associated with physical activity participation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2269 - OBESITY PREVENTION AND TREATMENT

Minimum Credits: 3
Maximum Credits: 3
This course will provide students opportunities to understand issues related to obesity. Topics may include prevalence rates, dietary considerations, exercise considerations and special population considerations. Behavioral strategies to enhance obesity treatment outcomes will also be addressed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (HPRED-MS)

HHD 2316 - ADP PROFESSIONAL SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
This course, taken concurrently with Community-Cased Practice Learning I, engages students across all specializations in their practice learning placements. The ADP professional seminar will develop students' sense of identity as an applied developmental scientist and will help them to actively develop professional ethics and standards in this process. As part of the ADP professional seminar, students will collaborate with faculty, agency supervisor, and master student colleagues to progress with completion of the master's written capstone project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HHD 2317 - ADP PROFESSIONAL SEMINAR 2

Minimum Credits: 1
Maximum Credits: 1

This course, taken concurrently with community-based practice learning ii, engages students across all specializations in their practice learning placements. The ADP professional seminar will develop students' sense of identity as an applied developmental scientist and will help them to actively develop professional ethics and standards in this process. As part of the ADP professional seminar, students will collaborate with faculty, agency supervisor, and master student colleagues to progress with completion of the master's written capstone project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH

Minimum Credits: 3
Maximum Credits: 3
This course will increase students' understanding of the diverse personal, socio-cultural, and institutional factors that influence health, physical activity, and nutrition-related behaviors, and ultimately intervention design and approach. The course will cover the social determinants of health and health disparities, theoretical models of health behavior change, and intervention/behavior change strategies and tools. Students coming away from this course will have a better understanding of how to apply health behavior change models to promote physical activity and healthy eating in diverse populations through tailored interventions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (MS)

HHD 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING

Minimum Credits: 3
Maximum Credits: 3
Team based course designing health promotion programs at local large, medium and small organizations. The course presents students an opportunity to design a real health promotion program that has the potential to impact their career trajectory. Students are encouraged to seize the opportunity with enthusiasm. To maximize the opportunity students need to be flexible and demonstrate initiative to travel to the organizational site to meet according to staff schedules. The course is linked with the HPA 2990 course offered in the Spring.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2349 - CHILD LIFE PRACTICE IN HOSPITALS

Minimum Credits: 3
Maximum Credits: 3
This seminar identifies important concepts and practices to working as child life specialists in medical/hospital settings. Given the complex interdisciplinary nature of the child life specialist's role, and the need for ongoing consultation and collaboration with a variety of professionals involved in a child's care, this course will cover a range of practical and professional topics. These topics include family coping strategies, hospital policies and practices (e.g. charting, notes, supervision, etc.), death and dying, medical terminology, and interdisciplinary consultation and communication. Students will gain an understanding of the theories and concepts underlying practices, the necessary and important day-to-day practices in hospital settings, and strategies for successful collaborations with medical professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2371 - ADVANCED EXERCISE PHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Theory experiences relating to the mechanisms by which the body adapts physiologically to selected conditions of muscular performance

within the context of (1) physical education and sport, (2) work environments and (3) disease prevention and rehabilitation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2373 - INTRODUCTION TO EXERCISE ASSESSMENT AND PROGRAMMING

Minimum Credits: 3
Maximum Credits: 3
This course examines exercise therapy for the cardiac patient and individuals with chd risk factors. Topics include functional capacity assessment (central and peripheral adaptations, graded exercise testing, electrocardiography), exercise prescription (dosage, format, energy cost, case studies), exercise supervision (phase 1, 2 and 3, practical leadership experiences, emergency procedures, nutritional counseling, psychological considerations) and factors that influence the exercise responses are presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (MS)

HHD 2374 - EXERCISE TESTING, PRESCRIPTION, AND SUPERVISION

Minimum Credits: 3
Maximum Credits: 3
An introductory lecture, laboratory course in cardiac rehabilitation. Topics presented include: the pathophysiology and epidemiology of coronary artery disease, coronary anatomy, basic and advanced electrocardiography, principles of graded exercise testing, exercise prescription and supervision, nuclear diagnostic techniques, current considerations in pharmacological treatment of coronary artery disease and cardiac rehabilitation in a clinical setting.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (HPRED-MS)

HHD 2375 - RESEARCH AND EXPERIMENTAL DESIGN IN EXERCISE PHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the development of experimental design and methodologies in exercise physiology research. The designs are explored within the context of ergogenic aids, training strategies, selected disease states, temperature regulation, and isokinetic strength and energy metabolism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (NCDEG, MS, PHD) or Health Physical/Recreation Ed (MED)

HHD 2380 - BEHAVIOR CHANGE AND HEALTH COACHING

Minimum Credits: 3
Maximum Credits: 3
This course focuses on applying evidence-based behavioral strategies to interactions with health-fitness participants and patient populations to enhance engagement, adherence, and sustainability of lifestyle behaviors related to health. The course will include interaction strategies with patients, listening skills of health coaches, strategies to enhance compliance, strategies for working with non-compliant patients, and application to specific health-fitness and healthcare setting.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2381 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
This is an advanced course in clinical exercise physiology designed to provide knowledge and understanding of the most recent advances in exercise physiology for the healthy adults as well as for special populations across the lifespan. Emphasis will be placed on mechanisms underlying metabolic and cardiorespiratory responses and adaptation to exercise and on the metabolic determinants of human adaptation and performance under normal conditions as well as during various environmental and physiological changes. Additional emphasis will be on taking in depth look at the acute and chronic responses to exercise in children and adolescents, pregnancy, and older adults. Instruction includes both didactic and laboratory experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2382 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
This course is an extension of the Clinical Exercise and Physical Activity Physiology 1 course. This is an advanced course in clinical exercise physiology designed to provide knowledge and understanding of the most recent advances in the application of exercise physiology to clinical populations. Particular emphasis is placed on the acute and chronic responses to exercise in patients at risk for or having cardiovascular, endocrine, pulmonary, and metabolic diseases. Additional topics include clinical exercise physiology for cancer, disorders of the bone/joints, and neuromuscular disorders. Instruction includes both didactic and laboratory experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2383 - ADVANCED CLINICAL HEALTH AND PHYSICAL ACTIVITY ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
This course includes training on advanced assessment of fitness and health-related measures that can be implemented across various settings including clinical, public health, health-fitness, worksite, etc. Measures will include fitness, physical activity and sedentary behavior, body composition, and a variety of health-related measures. Instruction will include both didactic and laboratory-based experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2384 - MOVEMENT SCIENCE IN HEALTH AND PHYSICAL ACTIVITY

Minimum Credits: 3
Maximum Credits: 3
This course examines human movement across the lifespan (youth, adults, older adults), health conditions, and exercise-related activities. Student will learn how to assess movement patterns and how to apply this knowledge to prevention, treatment, and rehabilitation situations. This course will be a combination of classroom and laboratory experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2385 - INTERNSHIP IN HEALTH AND PHYSICAL ACTIVITY

Minimum Credits: 3
Maximum Credits: 3

Supervised experience for the master's degree student. Student placement is to a clinical setting, applied health-fitness setting, or health promotion setting that is appropriate to the pursuit of the intended degree. Students are also required to attend didactic and online course-related sessions with the instructor throughout this experience. Students intending to take this course need to coordinate the placement with the supervising faculty instructor at least 1 term in advance of registering for this course to allow for appropriate placement.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

HHD 2386 - HEALTH AND PHYSICAL ACTIVITY PROMOTION AND MARKETING

Minimum Credits: 3
Maximum Credits: 3
This course provides students with the conceptual background and practical skills necessary to address how to introduce and market health and physical activity programs and initiatives, and how to identify and implement channels of distribution of these programs and initiatives. This course will include both didactic and practical experiences for students to obtain and apply the necessary knowledge.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2387 - MEDIA AND TECHNOLOGY IN HEALTH AND PHYSICAL ACTIVITY

Minimum Credits: 3
Maximum Credits: 3
This course address the application of media and technology in health and physical activity program implementation. Examples include the application of video, audio, online programming, etc. Students will have opportunities to uses the various technologies across various applications related to health and physical activity programming.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: HPRED-MS

HHD 2390 - NUTRITION IN SPORT AND EXERCISE

Minimum Credits: 3
Maximum Credits: 3
A lecture and laboratory class in which the principles of nutrition are applied to sports performance and exercise. Topics presented include energy release and substrate utilization, energy metabolism during exercise, fluid intake and athletic performance, body composition, ergogenic aids, vitamins and minerals, the pre-game meal, sports anemia, nutritional considerations for the diabetic individual, lipid metabolism and coronary heart disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (MS)

HHD 2410 - STATISTICS IN HPA RESEARCH

Minimum Credits: 3
Maximum Credits: 3
A general knowledge of computer hardware/software and its use in physical education research is the major focus of this class. Software packages are examined for word processing and statistical analysis. An introduction to basic programming is given.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (MS)

HHD 2490 - SUPERVISED RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1
Maximum Credits: 18
The student demonstrates ability to apply research skills by planning and completing a research project under direction of an appropriate faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

HHD 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD

Minimum Credits: 3
Maximum Credits: 3
Focuses on developmental pathways from conception through early childhood within contexts of family, daycare/school, community and culture. Pathways are considered with regard to developmental changes in transactions between individuals and social life conditions, with focus on patterns of change in participation in social-cultural practices. Besides a review of current literature, students will be engaged in qualitative investigations of the social lives of young children.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HHD 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Minimum Credits: 3
Maximum Credits: 3
You will be teaching adolescents, or youth ages 11 - 18 years old. How your students think, feel, and experience the world around them will be unique to their own life histories and perspectives, but developmental psychology can provide some helpful insights into typical and normal thoughts, feelings and experiences during adolescence. This hybrid course (focuses on the cognitive, social, and biological changes from middle childhood, youth ages 6 - 10 years old through adolescence within the contexts of family, peers, community, school, and culture. Assignments will focus on observing in your field placements and applying theory to practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2510 - ASSESSMENT OF CHILDREN'S DEVELOPMENT IN REAL WORLD CONTEXTS

Minimum Credits: 3
Maximum Credits: 3
The course is intended for interdisciplinary graduate students (masters and doctoral) from such programs as applied developmental psychology, developmental psychology, social work, early childhood special education, health and rehabilitation sciences, and nursing. The course content and applied group activities will help prepare graduate students as emerging leaders to understand 'best practices' in the measurement of both children's development and the quality and impact of services and interventions that are applied to them and to their families. These 'best practices' are both professionally sanctioned by the major national early childhood professional organizations and many also have a research evidence-base that supports their use. Thus, this course will help students to understand and use various applied assessment strategies that can: (1) describe the development and progress of children (birth to adulthood) and families in functional ways; (2) sensitively monitor children's progress in intervention programs; (3) be applied by teachers and other direct care professionals; (4) collect evidence of children's daily functioning in natural everyday settings; (5) be selected to conduct applied program evaluation research for schools, agencies, and human service programs; and (6) document the impact and outcomes of intervention programs. The course will help students who are interventionists, but is not primarily clinical in orientation. Rather, it is designed to prepare future leaders-researchers, program administrators, program evaluators, and policy specialists-in best practices and their implications. It is a required course in the ADP MS course sequence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HHD 2520 - INTRODUCTION TO COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course will include theoretical models of counseling; units on crisis intervention, family support and intervention, home based models of support and intervention, the reflective practitioner; and counseling skills for child and youth care practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2521 - THEORY, MEANING AND PRACTICE OF PLAY AND ACTIVITY

Minimum Credits: 3
Maximum Credits: 3
This course provides a comprehensive overview of the role of play and activity in human development, with a particular focus on ways of utilizing play and activity to promote positive growth in social, emotional, physical, and cognitive domains; and on interpreting the meaning of individual and group play and activity. Play and activity in the lives of persons of all ages will be considered with some emphasis on the early and school years. While academic learning is essential in this course, the focus will be on hands-on, real play as the ideal way to learn about it, and encouragement of a life-long playful spirit.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2524 - BEHAVIORAL ASSESSMENT AND INTERVENTION

Minimum Credits: 3
Maximum Credits: 3
This course helps graduate students respond to the needs of K-12 students with emotional and behavioral problems in school settings. These problems include disruptive, oppositional and aggressive behaviors, limited interpersonal and study skills, and behaviors caused by learning difficulties, mental illness and stressful life events. The emphasis of the course is on research-based positive behavioral supports and interventions. In addition, students learn consulting strategies to assist those who teach challenging youth.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2530 - APPLIED DEVELOPMENTAL PSYCHOLOGY (ADP): PROFESSIONAL IDENTITY AND LEADERSHIP

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to introduce the field of applied developmental psychology (ADP). This course focuses on helping students to develop a professional identity, ethical reasoning skills, and leadership skills that align with ADP. Students will gain knowledge of the overall field, reading an advanced textbook and related literature, while getting to know how developmental thinking is being applied in our local community of practice. Attention will focus on the relations and partnerships that are necessary for the development, implementation, and evaluation of programs and policies that effectively support the positive biopsychosocial & spiritual development of children and youth in contexts of their families, schools and communities. The course introduces students to local experts who apply developmental thinking in different systems of practice, including education, juvenile justice, child welfare, and behavioral health. In this process, students will frame their own professional development, considering their goals in relation to needed competencies and opportunities in the field, and think critically about ethical principles and their applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2532 - PSYCHOSOCIAL ASPECTS OF ILLNESS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to enable students to understand the nature of and dynamics of pediatric illness, appreciate the impact an acute or prolonged health care experience may have upon children throughout the developmental process, better understand a family health care philosophy and gain an understanding of the multi-faceted role child life specialists play in today's health care environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HHD 2538 - ADVANCED COUNSELING SKILLS

Minimum Credits: 3
Maximum Credits: 3
Course will teach indirect communication techniques, methods for dealing with secondary gains, methods to help clients develop a sense of empowerment and the therapeutic use of visual imagery. The course will emphasize hands-on practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: PSYED or HHD 2520

HHD 2542 - EVIDENCE-BASED INTERVENTIONS IN REAL WORLD CONTEXTS I

Minimum Credits: 3
Maximum Credits: 3
Evidence-based interventions (EBIs) are the foundation of effective and high-quality prevention and intervention programs in education, human services, and healthcare. Both pre-service and continuing education of interdisciplinary professionals must emphasize the acquisition of knowledge and applied competencies about diverse EBIs in this continuously evolving area. Many forms of prevention and intervention are used in education, human services, and healthcare, but few such practices have 'practice-based evidence' conducted in real-world settings which validate their continued use. Thus, in this course, students will gain knowledge and skills in evidence-based contextual and individual interventions, their content, methodology, implementation, and evaluation. The course will help students who are interventionists but is not primarily clinical in orientation. Rather, it is designed to prepare future leaders ' practitioners, researchers, program administrators/directors, program evaluators, and policy specialists - in best practices and their implications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2543 - EVIDENCE-BASED INTERVENTIONS IN REAL WORLD CONTEXTS 2

Minimum Credits: 3
Maximum Credits: 3
Evidence-based interventions (EBIS) are the foundation of effective and high-quality prevention and intervention programs in education, human services, and healthcare. In this second part of a 2-course sequence, students will: learn about and apply qualitative and quantitative data-based decision-making techniques and measures to collect evidence of child/youth daily performance and to assess the dimensions of various home, school, and community contexts which hinder or promote progress; create EBI plans for individuals and groups to promote progress in real-world settings; apply a short-term EBI in a real-life case situation; and evaluate the quality, impact, or outcomes of the data-based decision making methods and process.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2557 - COGNITIVE-BEHAVIOR THERAPY

Minimum Credits: 3
Maximum Credits: 3
This course introduces the theory and practices of cognitive-behavioral therapy (CBT) to help students develop a basic therapeutic skill set.

The CBT approach applies to a variety of clinical problems and practice settings. CBT is a flexible approach and is used in diverse settings such as inpatient, outpatient and partial hospital programs as well as in schools and community-based programs. Students will learn about how CBT may be used to address issues such as depression, anxiety, attention-deficit/ hyperactivity disorder, and other emotional and behavioral disorders. In addition to clinical practice, many people find the principles of the cognitive-behavioral model useful in maintaining a healthy emotional outlook in their own lives. This course will emphasize both theory and practice of cognitive-behavioral skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2562 - PLAY THERAPY AND FIELD WORK

Minimum Credits: 3
Maximum Credits: 3
Supervised experience in direct interaction with children on an individual basis in play interviews with concomitant consideration of children's developmental dynamics as revealed in a one-to-one relationship. An ongoing weekly seminar is a part of the course.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

HHD 2565 - PROGRAM DESIGN AND EVALUATION

Minimum Credits: 3
Maximum Credits: 3
An integration of child development theory and research in the design of programs for children, youth, and families. Focus is on skills in designing developmentally appropriate and interventive programs, structure of service models, and program evaluation. The major paper for the graduate program will be part of this course's requirements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PSYED or HHD 2540

HHD 2589 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 3
This is a special topics course for the ADP Program at the graduate level.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

HHD 2590 - MASTER'S RESEARCH TEAM

Minimum Credits: 1
Maximum Credits: 1
This weekly course is designed for students who are pursuing a research project as their option for their master's program. Topics include discussions and hands-on support for how to design, conduct and write-up results for a research project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

HHD 2596 - INTERNSHIP IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1
Maximum Credits: 6
A university-approved agency based supervised internship in developmental/interventive practice with and/or for children, youth and families.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

HHD 2598 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
Directed study provides an opportunity for focused work with faculty supervision. The student must present a plan for the independent study for approval by the supervising faculty member prior to registration for the course.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

HHD 2599 - THESIS

Minimum Credits: 1
Maximum Credits: 6
Designed to help the student to carry out his or her research or creative project and to write an acceptable thesis. This course is subject to repeated registration.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

HHD 2622 - CHILD LIFE PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
Credits for approved hospital-based child life practicum experience.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

HHD 2632 - APPLIED RESEARCH DESIGN

Minimum Credits: 3
Maximum Credits: 3
This introductory methods seminar focuses on applied research design including developing conceptual definitions, applying models of theory testing and theory building, and developing relevant policy and practice research questions. This course will cover key debates occurring in the field of applied research in terms of producing evidence to support policy, practice, and program development, and is designed to encourage practical skill development; experiential learning opportunities are integrated into course content. Students will gain an understanding of applied research design and an improved skill set in proposing, designing, and evaluating applied studies of interventions and programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 2722 - CHILD LIFE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
Credits for approved hospital-based child life internship placement.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

HHD 2765 - COMMUNITY-BASED PRACTICE LEARNING 1

Minimum Credits: 1
Maximum Credits: 3
This course provides students with the opportunity to participate in an individual community-based practice learning experience with a partner agency. As part of the placement, students engage in activities that lead to the production of an agreed-upon, tangible product to meet an identified need for the agency. This product will also meet the requirements for the student written capstone project for the master's program and will serve as the presentation topic for the master's comprehensive exam. This course is taken concurrently with the ADP Professional Seminar I & II.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

HHD 2766 - COMMUNITY-BASED PRACTICE LEARNING 2

Minimum Credits: 1
Maximum Credits: 3
This course provides students with the opportunity to participate in an individual community-based practice learning experience with a partner agency. As part of the placement, students engage in activities that lead to the production of an agreed-upon, tangible product to meet an identified need for the agency. This product will also meet the requirements for the student written capstone project for the master's program and will serve as the presentation topic for the master's comprehensive exam. This course is taken concurrently with the ADP Professional Seminar 1 & 2.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

HHD 2990 - RESEARCH SEMINAR IN HPA

Minimum Credits: 3
Maximum Credits: 3
This course is required of all non-thesis master's degree candidates and includes the development and presentation of an original research paper. The student works in cooperation with a graduate advisor in their area of content specialization. The nature of acceptable projects includes the following: data based research; expanded literature review; development of software and/or hardware, development of instructional materials (i.e., Video tapes, slide series, films, etc.); Journal article.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

HHD 2996 - CLINICAL INTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
Supervised clinical experience for the master's degree student. The student is placed in a clinical setting appropriate to his/her degree interests and career goals and must complete a minimum of 25 hours of clinical work per credit hour. Supervision is provided by the cooperating clinical supervisor and the university clinical advisor.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

HHD 2997 - CLINICAL EXERCISE PHYSIOLOGY PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
This course will provide practical shadowing and hands-on experiences in clinical exercise physiology settings.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

HHD 2998 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

HHD 2999 - MASTER'S THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 9
He student prepares a proposal for an original research project, has that project approved by an appropriate faculty thesis committee, completes proposed project, and defends the completed report in a thesis final oral examination.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

HHD 3001 - MAJOR TRANSITIONS IN CONTEXT

Minimum Credits: 3
Maximum Credits: 3
This class focuses on understanding the interplay of social, physical, cognitive changes within shifting cultural systems that limit and create affordances for change. In particular, the course involves an exploration of four foundational oppositions: 1) learning and development is highly differentiated by developmental phase vs. all learning and development has underlying regularities; 2) learning is fundamentally cognitive vs. learning is fundamentally social; 3) learning and development are slow and continuous vs. subject to large changes in the face of major transitions/life events; 4) learning and development proceed similarly across contexts vs. learning and development critically involve complex interplay of formal and informal learning. These themes and oppositions are explored through a deep dive on three foundational transitions: early childhood -> middle childhood; middle childhood -> adolescence; adolescence -> young adulthood. Students will also critically examine methods and challenges to such methods to understand contextual effects and longer-term developmental patterns in learning.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HHD 3002 - COMMUNITY ENGAGED SCHOLARSHIP

Minimum Credits: 3
Maximum Credits: 3
In this course, students will be exposed to multiple research design principles that center community engagement and foster research collaborations with individuals outside of the academy. Students will have the opportunity to create mini-proposals that are guided by specific research design and informed by real-world contexts. This course takes a case-study approach to broaden and deepen student understanding and engagement with research conceptions, design, and implementation. Class experiences will also employ experts (scholars and community partners) within varying research designs to dialogue with students about the promises and challenges of using

each design with existing projects.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HHD 3006 - FUTURE OF OUT OF SCHOOL LEARNING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3022 - ORGANIZATIONS, NETWORKS, AND POLICY IN INFORMAL LEARNING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HHD 3023 - YOUTH DEVELOPMENT IN OUT-OF-SCHOOL SETTINGS

Minimum Credits: 3
Maximum Credits: 3
Organized activities for children and youth that occur outside of school are a big deal. A bigger deal than they used to be. Participation rates are soaring, innovative programs are thriving, and research shows that, in many cases, attendance can benefit young people. In this course, we'll apply a developmental lens to the vibrant and growing out-of-school learning field. We'll explore the current realities and future promise of organized activities as important settings for child and youth development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3024 - INFORMAL LEARNING: THEORY AND FOUNDATION

Minimum Credits: 3
Maximum Credits: 3
This course is an overview of how we have thought about and address learning in and out-of-school learning settings. How do we define it? How do we know when it happens? What's the time scale? How do we support it? The course will highlight contemporary trends as well as trace the historical foundations of the field, paying particular attention to how the field connects with research on learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3114 - EVIDENCE BASED LIFESTYLE PROGRAM DESIGN AND EVALUATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3115 - HEALTH PROMOTION POLICY AND PROGRAM IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course investigates the impact of legislation, policies, and implementation on individuals' and populations' physical activity (pa) and nutrition. Centering on students' conceptualizations of their problem of practice, this course will explore: a) pa and nutrition program implementation and challenges to implementation, b) evidence-based policies, practices, interventions, and services and c) advocacy partnerships and organizations. This course will also integrate discussions of social justice and diversity in pa and nutrition policy and program implementation. Students will analyze these problems and their causes with the goal to craft and advocate for policies that promote pa and nutrition health equity for individuals and populations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (HPRED-EDD)

HHD 3116 - RESOURCE AND FUNDING ACQUISITION FOR HEALTH PROMOTION PROGRAMMING

Minimum Credits: 3
Maximum Credits: 3
The course presents the process of developing and submitting extramural grants related to health, physical activity and nutrition. Students develop an idea and write a grant proposal linked to a funding source with the aim of providing higher quality, more efficient and less expensive health promotion and health care to populations. The potential funding sources are public sector, private sector, and non-profit sector. Furthermore, students incorporate into the grant proposal alternative funding strategies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: HPRED-EDD (Health and Physical Activity)

HHD 3117 - HEALTH PROMOTION PROGRAM TRANSLATION AND SUSTAINABILITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Related

HHD 3190 - RES SEM IN PSYCHOLOGY IN EDUC

Minimum Credits: 3
Maximum Credits: 3
Advanced seminar in research for doctoral students in psychology in education.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HHD 3197 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Independent study for doctoral students in psychology in education.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

HHD 3374 - ADVANCED LABORATORY TECHNIQUES

Minimum Credits: 3
Maximum Credits: 3
This course provides a framework that aids the advanced graduate student in acquiring knowledge and technical laboratory skills pertinent to exercise physiology research. Content includes: cardiac output, maximal oxygen uptake, isokinetic exercise testing, hydrostatic weighing, techniques for assessing core and skin temperature and plasma volume changes, combined arm and leg exercise and water immersion exercise.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (HPRED-MS)

HHD 3377 - CHRONIC DISEASE CASE STUDIES

Minimum Credits: 3
Maximum Credits: 3
His course integrates selected elements of the knowledge base in the areas of exercise science, graded exercise testing electrocardiography, pharmacology and exercise prescription in order to develop an effective and realistic therapeutic plan for individuals who have coronary disease or are at risk for its development. The principal learning experiences for the course will center on the development, interpretation and presentation of cardiovascular case studies for intervention.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (MS or PhD)

HHD 3400 - ADVANCED RESEARCH METHODS IN MOVEMENT SCIENCE

Minimum Credits: 1
Maximum Credits: 1
Provides the Ph.D. student with a team oriented process to develop, implement, present and publish experimental research in exercise physiology and health-fitness.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HHD 3402 - ADVANCED RESEARCH METHODS IN PHYSICAL ACTIVITY EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
Provides the Ph.D. student with a team oriented process to analyze, develop, implement, present and publish experimental and epidemiological research in exercise physiology, physical activity epidemiology, and related disciplines.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HHD 3404 - COLLEGE TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Hands-on teaching practicum course for graduate students to learn about university-level teaching. Teaching methodology and theory is part of this course.
Academic Career: Graduate

Course Component: Practicum
Grade Component: Grad Letter Grade

HHD 3405 - GRANT WRITING IN HEALTH AND PHYSICAL ACTIVITY

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to provide guidance to doctoral level students on the process of developing a grant proposal for extramural funding. This course will be modeled from the NIH submission and review process.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3406 - PROFESSIONAL WRITING IN HPA

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to expose the student to the process of developing professional abstracts and manuscripts that can be submitted for peer-review related to health and physical activity. This course will focus on developing empirically-based abstracts, manuscripts, the submission process, the peer-review process, and considerations for resubmission. The culminating experiences will include the submission of an abstract and manuscript for professional presentation and publication.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3450 - INTRO TO EDUCATIONAL EVALUATION

Minimum Credits: 3
Maximum Credits: 3
Issues relevant to doing evaluation and utilizing results are addressed. Both evaluation "theory" and practical experience are utilized to prepare people who will be providing or using evaluation information. Special emphasis is given to: a) differences between evaluation and research; b) problems in using quantitative or qualitative methods when assumptions are not met; and c) issues that affect the usefulness of information in decision making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3531 - FAMILY INFLUENCE ON CHILD DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course provides an analysis of the multiple pathways through which parents, siblings, and families shape child development. Each of several pathways--the determinants of parenting, parental influences, marital influences, and sibling influences--is examined and discussed across three developmental periods: infancy, early childhood, and middle childhood. Primary attention will be paid to the unique impact of parental care on early development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3535 - CULTURE AND COGNITION

Minimum Credits: 3
Maximum Credits: 3
This course will examine cultural influences on children's cognition. Students will be introduced to thinking and research in cross cultural

psychology. The implications of this work for the assessment of children's learning and development will be discussed. A multicultural perspective on the education of minority children in the United States will be presented and evaluated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3587 - SPECIAL TOPICS 2

Minimum Credits: 3
Maximum Credits: 3
This course has two aims: (1) to understand how risk and resilience processes and competence develop in social contexts and (2) to explore how preventions and interventions based on this developmental information can enhance competence. The course will emphasize how developmental processes of risk and resilience are affected by social contexts. Contexts to be studied range from the small-group, organizational, and community contexts up to the level of public policy and culture. The course will review strategies and systems of prevention and intervention that target change in these social contexts, and thereby reduce risk or increase adaptation. The course will also draw on multidisciplinary content from the fields of human development, education, developmental and community psychology, psychiatry, public health, and public policy. The first part of the course will focus on developmental theories relevant to a contextual approach to risk, resilience, and competence. The second part will explore, in depth, a range of strategies for prevention, intervention, and social change that show evidence of positive impacts on child and youth development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Psychology in Education (PHD)

HHD 3589 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course will provide a psychologically safe place to develop professional writing skills that are specific to our field. We will work on refining writing that students are working on already (manuscripts, conference proposals, revise and resubmit letters, CVS, dissertation proposals, etc.). This will include self-reflection and analysis, peer-review, and whole group discussion. Weekly topics will include grammar/APA style, tone, and flow, integrating evidence, and staying motivated and engaged in your writing. Students will have many opportunities to give and receive feedback.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis
Course Requirements: PLAN: Psychology in Education (PHD)

HHD 3590 - SPECIAL TOPICS 3

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

HHD 3591 - SUPERVISED RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1
Maximum Credits: 18
Students will pursue selected topics under the guidance of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

HHD 3592 - PRACTICUM IN COLLEGE TEACHING

Minimum Credits: 3
Maximum Credits: 3
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

HHD 3598 - DIRECTED STUDY IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1
Maximum Credits: 6
Federal and state reforms in recent decades have focused on the establishment of standards and assessments as means of improving teaching and learning and closing the achievement gap between more and less privileged students. Reforms such as no child left behind, the common core state standards, and the federal race to the top competition have resulted in a proliferation of standards and high-stakes tests, and have been accompanied by both desirable and undesirable changes in school and district practices. In this course we will explore the debates surrounding these various standards and assessment reforms. The topics this course will address include the use of assessments to lever instructional change, the assumptions about learning that underpin different types of assessments and test-based accountability, and research investigating the influence of high-stakes testing on instruction and learning. This course also will consider research pertaining to high-stakes teacher evaluation including value-added models, pay for performance, and direct assessment of teaching quality.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

HHD 3599 - DISSERTATION RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1
Maximum Credits: 18
Student registers for this course while conducting research for a doctoral dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

HHD 3632 - APPLIED RESEARCH DESIGN

Minimum Credits: 3
Maximum Credits: 3
This introductory methods seminar focuses on applied research design including developing conceptual definitions, applying models of theory testing and theory building, and developing relevant policy and practice research questions. This course will cover key debates occurring in the field of applied research in terms of producing evidence to support policy, practice, and program development, and is designed to encourage practical skill development; experiential learning opportunities are integrated into course content. Students will gain an understanding of applied research design and an improved skill set in proposing, designing, and evaluating applied studies of interventions and programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HHD 3995 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within either developmental movement and sport studies or exercise physiology.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity

HHD 3998 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

HHD 3999 - DOCTORAL DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 15
The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Health and Rehabilitation Scs

HRS 1000 - INTRODUCTION TO RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The study of the nature of research and the applications of the scientific approach in the research procedures. The course focuses on concepts, design techniques and interpretations, as well as limiting factors and ethical considerations.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PROG: Sch Hlth & Rehabilitation Scs; PLAN: Clinical Dietetics -Nutrition (BS, BOH, BS-H) or (NDNUTR-ND) or (NS-BS)

HRS 1006 - INTRO TO HUMAN NUTRITION

Minimum Credits: 3
Maximum Credits: 3
This course will cover an overview of the scientific principles of nutrition and application of these principles to humans throughout the life cycle. Major focuses of the course are the classification and function of the six major nutrients, review of current nutrition standards, safety of the food supply, and nutrition misinformation.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

HRS 1020 - ANATOMY AND PHYSIOLOGY

Minimum Credits: 4
Maximum Credits: 4

Introduces the structure of human cells, tissues, organs and organ systems, and functions associated with them. Range of topics extends from gross anatomical features to considerations of chemical processes that serve as the basis for cellular controls, gene expression and energy metabolism. Emphasis on relationship of structure to function and on understanding how structural or functional disturbances can become the basis for disease processes.
Academic Career: UGRD
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 1023 - HUMAN PHYSIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course has been designed in an effort to provide pre-clinical students with a foundational scientific knowledge base and conceptual understanding of physiological processes. Each organ system, and its contribution to the maintenance of homeostasis, will be discussed. Further, the essential components of each system will be explored, to the extent that life is supported. Some disease states will be discussed, in order to exhibit certain processes.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Clinical Dietetics-Nutrition(BS or BSH or BPH)

HRS 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

Minimum Credits: 4
Maximum Credits: 4
This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the life span.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2020 - ANATOMY AND PHYSIOLOGY

Minimum Credits: 2
Maximum Credits: 2
Introduces the structure of human cells, tissues, organs and organ systems, and functions associated with them. Range of topics extends from gross anatomical features to considerations of chemical processes that serve as the basis for cellular controls, gene expression and energy metabolism. Emphasis on relationship of structure to function and on understanding how structural or functional disturbances can become the basis for disease processes.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN

Minimum Credits: 3
Maximum Credits: 3
This is a basic science course covering the principles of drug action for several important classes of drugs. A basic knowledge of principles of chemistry and biochemistry will be used to explain the chemical basis of drug receptor interactions. The course begins with the fundamentals of pharmacodynamics, pharmacokinetics and pharmacogenomics, and then covers the pharmacology of the central nervous system, respiratory system, gastrointestinal system, renal/cardiovascular system, endocrine system, immune suppression and antibiotic, antifungal, antiviral therapies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HRS 2071 - ADVANCED GRANT WRITING PART 1

Minimum Credits: 3
Maximum Credits: 3
The purpose of the integrated methods course is to build on the skills learned in the methodological core and provide a hands-on research experience. Trainees will learn the phases of the research process from conception to design and, ultimately, to implementation of the research. Through a combination of group sessions and independent work, trainees will use a research topic of their choice to develop their own research proposal in the form of an NIH grant application. The application will include sections on specific aims, background and significance, previous work, and methods. In addition, trainees will review and critique the work of their peers. Mentor must be identified prior to enrollment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HRS 2074 - ADVANCED GRANT WRITING PART 2

Minimum Credits: 1
Maximum Credits: 1
The purpose of the integrated methods course is to build on the skills learned in the methodological core and provide a hands-on research experience. Trainees will learn the phases of the research process from conception to design and, ultimately, to implementation of the research. Through a combination of group sessions and independent work, trainees will use a research topic of their choice to develop their own research proposal in the form of an NIH grant application. The application will include sections on specific aims, background and significance, previous work, and methods. In addition, trainees will review and critique the work of their peers. Mentor must be identified prior to enrollment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HRS 2084 - SPECIAL TOPICS IN OSTEOARTHRITIS

Minimum Credits: 1
Maximum Credits: 2
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2089 - CHILDREN W/DISABILITIES: CLIN 2

Minimum Credits: 2
Maximum Credits: 2
Course provides an interdisciplinary clinical training experience to graduate students from nursing, medicine, public health, psychology, social work, education, early intervention, nutrition, physical therapy, speech/language pathology, occupational therapy, and audiology. Students have the opportunity to learn about the impact of disabilities on children, families, schools, communities, and society thru clinical activities as part of the university, community leaders for individuals with disabilities (UCLID) center's leadership training program.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2092 - MATERNAL AND CHILD HEALTH LEADERSHIP 2

Minimum Credits: 2
Maximum Credits: 2
This interdisciplinary leadership course addresses specific knowledge, skills, personal characteristics, and values necessary for maternal and child health (MCH) leadership. There is a primary focus on leadership development and styles through examination of public policy, advocacy, ethics, and social determinants of health across systems of care with diverse populations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2310 - ADVANCED MUSCULOSKELETAL DISSECTION ANATOMY

Minimum Credits: 2
Maximum Credits: 2
This course will provide students with an opportunity to study and dissect specified anatomical regions of the human musculoskeletal system and present their dissection to the class with particular emphasis given to clinical applications of that anatomy. Students will be given guidelines and basic instruction in the dissection process and will then work independently throughout the semester to complete their dissections. Through this experience students will gain a mastery of select regions of musculoskeletal anatomy and a greater understanding of the clinical applications of that anatomy.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2312 - SEMINAR IN NEUROLOGIC PHYSICAL THERAPY

Minimum Credits: 2
Maximum Credits: 2
A series of papers will be presented with interactive discussion related to novel interventions. Students will be responsible for reviewing the paper and presenting the case to the class. Each student will "teach" the class once and lead the discussion. Topic areas will be assigned by the instructor.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2314 - FUNDAMENTALS OF NEUROSCIENCE FOR THE ORTHOPEDIC CLINICIAN

Minimum Credits: 4
Maximum Credits: 4
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2315 - ADVANCED MUSCULOSKELETAL DISSECTION ANATOMY

Minimum Credits: 1
Maximum Credits: 1
This course will provide students with an opportunity to study and dissect specified anatomical regions of the human musculoskeletal system and present their dissection to the class with particular emphasis given to clinical applications of that anatomy. Students will be given guidelines and basic instruction in the dissection process and will then work independently throughout the semester to complete their dissections. Through this experience students will gain a mastery of select regions of musculoskeletal anatomy and a greater understanding of the clinical applications of that anatomy.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

HRS 2317 - SHRS INTERPROFESSIONAL HEALTHCARE IN ST. KITTS: BRIDGING DISCIPLINES FOR GLOBAL HEALTH EQUITY

Minimum Credits: 2
Maximum Credits: 2
This program is an interdisciplinary service-learning and global and local learning experience for SHRS graduate students. The students would register for a semester long learning travel course. The start of the learning travel course would include enriched learning in the culture of St. Kitts and Pittsburgh; it's history and health care needs. The course would include a cultural emersion of these populations, land, and environment. The middle portion of this course would include a weeklong excursion to the island of St. Kitts during the spring break week. Once on the island, the students and the clinical educators would assess and evaluate the needs of the people of St. Kitts, perform the recommended assessments and evaluations, commence in facilitator training (as requested and needed) for the family members and caregivers of the identified underserved population. Clinical therapy interventions will then be provided and/or taught to facilitate carryover after the trip has ended for the students. Once students are back stateside, reflective assignments and projects will be expected to address future needs for the populations that were seen during this study abroad course experience. Additionally, opportunities for local interprofessional clinical care will be facilitated at the Community Engagement Center with in the SHRS Wellness Pavillion in Homewood, PA. Future global and local learning experience courses will be planned based on requested information and learned understanding of the needs of the people of St. Kitts and Pittsburgh.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: OT-MS or OT-OTD or OT-CSD or CSD-MA/MS or CSD-PHD or AUDIO-AUD or ND-MS or PAS-MS or PAS-DMSC

HRS 2364 - EVIDENCE BASED MEDICAL AND PHYSICAL THERAPY INTERVENTIONS FOR PERSONS WITH NEUROMUSCULAR DISEASE

Minimum Credits: 3
Maximum Credits: 3
This course will focus on an evidence based comparison of newer vs. Older `techniques' used in the field of neurologic rehabilitation. Students will be asked to explore the evidence basis that supports or refutes use of these various approaches and techniques currently in use. Newer approaches to neurological rehabilitation will also be discussed-these include: constraint induced movement therapy, virtual reality, robotics, and deweighting. Lab and clinic visits will be incorporated into this course so that students will be able to see some of the techniques `in action'.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2365 - CASE STUDIES OF PERSONS WITH NEUROMUSCULAR DISORDERS

Minimum Credits: 3
Maximum Credits: 3
A series of cases will be presented with interactive discussion related to interventions that have been shown to demonstrate evidence and efficacy to address the person's functional limitations and impairments. Students will be responsible for preparing for the case prior to each session and will bring 'evidence' to support ideas for intervention. Innovative physical therapy and medical interventions will be discussed. Lecture and interactive discussion are the teaching methods of choice. Advanced clinicians will participate in the course to bring 'real life' cases to the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2374 - CLINICAL ROUNDS AND CASE PRESENTATION

Minimum Credits: 1
Maximum Credits: 1
Weekly rounds will be presented by various speakers/clinicians/researchers in both the fall and spring terms. These presentations will consist of case presentations, relevant clinical and/or research updates pertaining to the clinical practice of physical therapy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2380 - EVIDENCE BASED PRACTICE: CLINICAL CONSIDERATIONS FOR CERVICAL AND THORACIC SPINE

Minimum Credits: 3
Maximum Credits: 3
This course will include evaluation and treatment of musculoskeletal conditions involving the cervical spine, the tempoRomandibular joint, the thoracic spine and rib cage. Emphasis will be placed upon enhancing clinical decision making and integrating manual therapy skills into the plan of care for the patient. Classes will consist of lecture, laboratory, and clinical experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2403 - MEDICAL TERMINOLOGY, PHARMACOLOGY, & PATHOPHYSIOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course is a basic study of the professional language of medicine. It is designed to include word construction, pronunciation, spelling, definition, and use of terms related to all areas of medical science, hospital service, and health related professions. This ONLINE course is designed to give the student a knowledge of words frequently used in the medical field and provides examples through the review of basic anatomy, physiology, surgical procedures, diagnostic procedures, and symptomatology. Coverage of the pathology of each body system is will take place along with an introduction to pharmacology, and the pharmacological treatment of frequently occurring conditions of each body system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2475 - DISABILITY RELATIONS AND SERVICES INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
Supervised practical experience, usually in a clinical facility or agency, permitting the student to observe and participate in existing specialized programs and to develop, apply, and evaluate new clinical procedures.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2501 - FUNCTIONAL ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
Course focuses on functional assessment from the perspective of body structures and functions, activity and participation as defined by the international classification of functioning, disability, and health of the world health organization. Students may focus on infants, children, adults, or older adults.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2503 - HUMAN PRFORMANCE: ADAPTATION

Minimum Credits: 3
Maximum Credits: 3
Course focuses on locating and synthesizing evidence supporting rehabilitation interventions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2504 - DIRECTED READINGS IN OT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on research design for evidence hierarchies in the context of occupation therapy research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2510 - FUNDAMENTALS EVIDENCED-BASED OT

Minimum Credits: 3
Maximum Credits: 3
Course focuses on the skills for asking occupational therapy clinical questions, searching for the best evidence to answer questions, and critically appraising the evidence. It emphasizes the research methodologies associated with hierarchies of evidence.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2514 - HUMAN PERFORMANCE: COMPENSATION

Minimum Credits: 3
Maximum Credits: 3
Course examines the interface between functional impairment, activity, and societal participation. Emphasis is on person-task environment analysis and adaptation to compensate for dysfunction during self-care, home management, school/ work, and play/leisure occupations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS)

HRS 2525 - SPECIAL TOPICS SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Course focuses on the principles and practices of therapeutic use of self, clinical reasoning, and evidence-based practice as they are applied in diverse practice environments (e.g., Hospital, school systems, community agencies).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS)

HRS 2555 - BIOMECHANICS OF BALANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PROG: Sch Hlth & Rehabilitation Scs or School of Medicine or Swanson School of Engineering; LEVEL: Graduate

HRS 2579 - OT AND HEALTH POLICY

Minimum Credits: 2
Maximum Credits: 2
Course content focuses on healthcare trends, reimbursement regulations, legislative policies, practice environments, strategies for maintaining continued competence, and emerging professional issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS)

HRS 2582 - ANAL CLIN DATA/EVDNC FUNCT CHNG

Minimum Credits: 3
Maximum Credits: 3
Course focuses on how to design and carry out single-subject design studies and use quantitative methods of analysis (celeration line, 2 SD band, c-statistic) to document functional changes in client performance.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2583 - OT MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2590 - SPECLZD PRECEPTORSHIP: CLINICAL

Minimum Credits: 1
Maximum Credits: 6
Course provides experiential learning in a specialized area of occupational therapy practice (e.g., pediatrics, assistive technology, home healthcare, hand therapy, case management) for the purpose of developing advanced skills related to a specialty practice area.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

HRS 2591 - SPECLZD PRECEPTSHIP: EDUCATION

Minimum Credits: 1
Maximum Credits: 6
Course provides experiential learning in the teaching-learning process applied to entry-level professional education, distance education, client/patient education, consumer education, or knowledge application to clinical settings.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2592 - SPECIALIZED PRECEPTORSHIP: MANAGEMENT

Minimum Credits: 1
Maximum Credits: 6
This course addresses the role of the occupational therapist as manager of occupational therapy services. The focus is on the principles and practices of administration and supervision as they are applied in diverse practice environments (e.g., hospital, school systems, and community agencies).
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2594 - SPECLZD PRECEPTORSHIP: RESEARCH

Minimum Credits: 1
Maximum Credits: 6
Course provides experiential learning in coordinating occupational therapy research, including obtaining IRB approval, getting informed consent, participating in data collection, and managing data quality.
Academic Career: Graduate

Course Component: Credit Laboratory
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2612 - ADVANCED MEDICAL NUTRITION THERAPY 2

Minimum Credits: 3
Maximum Credits: 3
This is the second of a two-course sequence in advanced medical nutrition therapy. This course will build on the student's knowledge of medical nutrition therapy from her/his undergraduate coursework and HRS 2623 and will focus on the application of the nutrition care process at the practitioner level. The course will cover pathophysiology and treatment, nutrition implications, nutrition assessment and diagnosis, and nutrition interventions, including nutrition support, for acute and chronic diseases based on evidence-based research and guidelines. Teaching approaches for the course include lectures, guest speakers, assigned readings, in-class discussions, and problem-based learning through case studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ND-MS;

HRS 2623 - ADVANCED MEDICAL NUTRITION THERAPY 1

Minimum Credits: 3
Maximum Credits: 3
This is the first of a two-course sequence in advanced medical nutrition therapy. This course will build on the student's knowledge of medical nutrition therapy from their undergraduate coursework and will focus on the application of the nutrition care process at the practitioner level. The course will cover pathophysiology, nutrition implications, nutrition assessment and diagnosis, and nutrition interventions for acute and chronic diseases based on evidence-based guidelines. Teaching approaches for the course include lectures, assigned readings, in-class discussions and activities, and problem-based learning through case studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ND-MS

HRS 2625 - COUNSELING METHODS

Minimum Credits: 3
Maximum Credits: 3
This is an advanced course that emphasizes counseling as a supportive process, characterized by a collaborative counselor-patient relationship that involves behavior and attitudinal change. It will focus on the conceptual foundations and philosophy of behavior change theories, with an emphasis on motivational interviewing, including application in practice to provide the learner with a collection of evidence-based strategies and counseling skills to promote behavior change in patients/clients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nutrition and Dietetics (ND-MS)

HRS 2629 - DIETARY SUPPLEMENTS FOR HEALTH AND PERFORMANCE

Minimum Credits: 3
Maximum Credits: 3
This course will integrate classroom lecture and discussion to help students learn how research evidence supports or negates the use of dietary supplements for health and performance. Emphasis of course will be interpreting research evidence on dietary supplements, ergogenic aids and other performance enhancing methods, and adapting the evidence into clinical practice recommendations/guidelines.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2631 - NUTRITION FOCUSED PHYSICAL EXAMINATION

Minimum Credits: 3
Maximum Credits: 3
Introduction to professional knowledge and skills in nutrition focused physical examination. The course is based on the knowledge/application of the NCP and Model in professional practice. Learning experiences will include formal class presentations, class discussions, case-based problem solving and simulation laboratory sessions. Knowledge based learning leading to examination technique simulations for anthropometric measurements for body composition, nutrition focused physical examination for malnutrition diagnosing and examination techniques, e.g., vital signs, head and neck exam, intra and extra-oral exams, heart and lung auscultation, as well as, abdominal auscultation and palpation are included. At the completion of the course competency in application of nutrition focused physical examination techniques will be assessed on an individual basis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Coordinated Mster in Dietetics (MS) or Nutrition and Dietetics (MS)

HRS 2633 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course provides students with opportunities to explore through study, discussion and practical application, the issues and trends that are affecting food and nutrition professionals and the profession of dietetics. Included is an introduction to the history and structure of the profession of dietetics and to existing and emerging roles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Coordinated Mster in Dietetics (MS) or Nutrition and Dietetics (MS)

HRS 2639 - ADVANCED MATERNAL AND PEDIATRIC NUTRITION

Minimum Credits: 3
Maximum Credits: 3
This seminar course provides students with an evidence-based understanding of the anatomical, physiological, and biochemical changes that occur during pregnancy, human lactation, and development from infancy to adolescence. Students will learn about nutritional and lifestyle factors associated with fertility, pregnancy outcomes, and other high-risk groups in the pediatric population. Students will obtain advanced knowledge on the medical nutrition therapy for management of diseases specific to these life-stages. Teaching approaches for the course include lectures, guest speakers, assigned readings, in-class activities and discussions, and site visits.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nutrition and Dietetics (ND-MS)

HRS 2646 - INTRODUCTION TO FUNCTIONAL NUTRITION WITH LAB

Minimum Credits: 3
Maximum Credits: 3
This introductory course to functional nutrition is based on a food first approach to promotion of optimal health. Lectures and class activities will explore the scientific basis of medicinal foods and herbs used in cooking. Students will demonstrate practical application by incorporating 'health promoting foods and herbs' into meal planning and preparation with the goal of optimizing health for the prevention and treatment of diet and lifestyle related diseases.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nutrition and Dietetics (ND-MS)

HRS 2649 - QI RESEARCH PROJECT DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
During this course the student will begin to develop and construct their Quality Improvement (QI) Research project. This project will give each student the opportunity to work independently on a QI project at the primary clinical site. The project should focus on an area that is relevant to the students specialty rotation.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nutrition and Dietetics MS

HRS 2652 - EXPERIENTIAL PRACTICE 3

Minimum Credits: 3
Maximum Credits: 3
The experiential practice experience activities for HRS 2652 are planned to provide the student with the opportunity to assume increased responsibility for the management of nutrition care to hospitalized patients. In this course, the student will function as a clinical dietitian at the clinical site and will independently conduct all phases of the nutrition care process.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Nutrition and Dietetics MS

HRS 2653 - QI RESEARCH PROJECT

Minimum Credits: 1
Maximum Credits: 1
During this course the student will complete their Quality Improvement (QI) Research project. This project will give each student the opportunity to work independently on a QI project at the primary clinical site. The project should focus on an area that is relevant to the students specialty rotation.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nutrition and Dietetics MS

HRS 2655 - RESEARCH METHODOLOGY AND APPLIED STATISTICS

Minimum Credits: 3
Maximum Credits: 3
This introductory course in research methods and applied statistics will address research study design and descriptive and inferential statistics related to the research process. Inferential statistics will include one-sample, two-sample and multi-sample inference. Topics covered will include issues related to measuring variables (reliability/validity), an introduction to epidemiology and measures of association, and interpreting scientific literature. The course will include hands-on practice in running statistical tests previously taught in class. This course provides awareness about research methods and statistical analysis considerations needed by health sciences students. There are no pre-requisites.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2658 - CAPSTONE PROJECT

Minimum Credits: 2
Maximum Credits: 2
This is part one of a two-semester course sequence (HRS 2658 Fall Term and HRS 2674 Spring Term), fulfilling a student-directed capstone project by developing a research question and grant proposal. This course sequence will coordinate online lectures and discussions on the basic research skills and concepts needed to develop a grant proposal as part of a quality improvement research initiative. Students will develop a quality improvement research question, perform a literature review, and develop defined components for the proposal for the Final Grant. Citations and references should follow the Journal of the Academy of Nutrition and Dietetics (JAND) formatting guidelines.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

HRS 2659 - PRACTICUM IN DIETETICS 2

Minimum Credits: 2
Maximum Credits: 2
This self-guided course prepares students for their planned, experiential practicums completed at an assigned clinical facility. Online teaching approaches include quizzes, lectures, group discussions, student presentations, and problem-based learning through case studies. Active participation in the online components is a requirement of the course. This course includes planned supervised experiential learning (SEL) hours. Each student is expected record their hours in our CBE portal.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade

HRS 2672 - EXPERIENTIAL PRACTICE 2

Minimum Credits: 7
Maximum Credits: 7
This course provides advanced experiential practice experience in clinical nutrition and long-term care setting. It provides the students with the opportunity to apply their knowledge of nutrition assessment and medical nutrition therapy to the practice of dietetics in the acute care setting.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

HRS 2674 - CAPSTONE PROJECT

Minimum Credits: 3
Maximum Credits: 3
This is part two of a two-semester course sequence (HRS 2658 Fall Term and HRS 2674 Spring Term). This course sequence will coordinate online lectures/discussions on the basic research skills and concepts needed to develop a grant proposal as part of a quality improvement research initiative. Students will develop a quality improvement research question, perform a literature review, and develop defined components for the proposal for the Final Grant. Citations and references should follow the Journal of the Academy of Nutrition and Dietetics (JAND) format.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

HRS 2675 - PRACTICUM IN DIETETICS 1

Minimum Credits: 2
Maximum Credits: 2

This self-guided course prepares students for their planned, supervised experiential practicums completed at an assigned clinical facility. Online teaching approaches include quizzes, lectures, group discussions, student presentations, and problem-based learning through case studies. Active participation in the online components is a requirement of the course. This course includes planned supervised experiential learning (SEL) hours. Each student is expected record their hours in our CBE portal.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade

HRS 2676 - EXPERIENTIAL PRACTICE 1

Minimum Credits: 11
Maximum Credits: 11
This course will provide experiential practice experience in the area of food service management and clinical nutrition. The purpose of the learning activities and assignments is to provide the student with the opportunity to apply knowledge and skill in food service management and clinical nutrition in a health care setting.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

HRS 2680 - EVIDENCE BASED PROFESSIONALISM IN DIETETICS

Minimum Credits: 2
Maximum Credits: 2
This course will provide students with the tools and resources to facilitate personal and professional development. It will expose students to systems and processes to develop professionally throughout their career, to stay current with research and developments that take place within the profession. Students will gain an understanding of what it means to be a competent professional in the field of nutrition and dietetics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HRS 2705 - PRACT REHAB ENGR & ASSISTV TECHN

Minimum Credits: 3
Maximum Credits: 3
Develop the clinical skills needed to apply at and re solutions to help persons with disabilities achieve their goals in the area of productivity, education, employment, communication, and environmental access. Students will match knowledge of at products gained in HRS 2704 to the needs of individuals. Taught using a model for assessing the individual, the context, the technology-user interface and an interdisciplinary team approach. A 3 hour a week commitment to serving learning & a journal is integrated with lectures, guide learning and semester case-based learning project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2709 - MANUAL WHEELCHAIR DESIGN

Minimum Credits: 2
Maximum Credits: 2
Covers the basic nomenclature used to describe and order wheelchairs. Wheelchair adjustment, assembly, training and operation will be covered. Students will be introduced to wheelchair standards and government controls. The focus on manual wheelchairs. Various types of manual wheelchairs will be used during the course. Students will participate in lectures and laboratory experiences.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2718 - PROJECT BASED TECHNOLOGY DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course is the second course in a two-course sequence on Rehabilitation Engineering Design. HRS 1706/2706 is in the Fall, and 1718/2718 is in the Spring. HRS 1718/2718 is a project-based design course in which students use design methods and tools learnt in 1706/2706, follow an iterative design and testing process with clients and experts, and develop assistive technology device prototypes for their clients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2719 - FUNDAMENTALS OF REHABILITATION ENGINEERING & TECHNOLOGY 1 LAB COMPONENT

Minimum Credits: 1
Maximum Credits: 1
This is the 1-credit lab component associated with HRS 2704. It is optional, for those who wish to get the hands-on experience in a clinic setting. Do not register for this course if you have not also registered for HRS 2704. Introduction to fundamental principles and practices related to multiple areas of assistive technology. Technology areas include: seating and wheelchair mobility, augmentative communication, environmental control, computer access, transportation safety, prosthetics, worksite ergonomics, and man/ machine modeling. In addition, common terminology, disability ethics and models of service delivery related to assitive technology are discussed.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2748 - ASSISTIVE TECHNOLOGY PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
Practicum involves a minimum of 100 clock hours of super vised assistive technology experience including assessment, development, training, evaluation and follow-up regarding rehab technology. Practicum designed to provide specific experience and supervision in the provision of assistive technology to rehab consumers.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2778 - RESEARCH SEMINAR IN PROSTHETICS AND ORTHOTICS

Minimum Credits: 1
Maximum Credits: 1
This course includes reading and discussion of research related to the practice of orthotics and prosthetics. Case studies, along with the evidence for the chosen or alternative orthotic or prosthetic treatments, will be presented by students and faculty. Students will formulate a research or scholarly paper topic related to orthotics and prosthetics, identify a mentor, and begin research on the topic.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2828 - STUDY ABROAD PROGRAM IN PROSTHETICS AND ORTHOTICS

Minimum Credits: 1
Maximum Credits: 1
The objectives of the course are to let the students to observe and practice prosthetics and orthotics techniques of fabrication and clinical assessment in the treatment of patients with limited sources in Ecuador. Review of conditions and symptoms indicating treatment with lower extremity prosthetics below and above the knee as well as upper extremity prosthetics below and above the elbow, lower extremity orthotics for the foot, ankle, knee and hip as well as spinal orthoses. Review of evidence for effectiveness of treatment. Patient evaluation for prescription and design of spinal orthoses, upper and lower extremity prostheses and ortheses. Impressions, measurements and fabrication of the prosthetic and orthotic devices. Fitting, delivery and evaluation of effectiveness. A local prosthetics and orthotics company in that country will provide the logistic support of equipment and tools during the program. This experience will reinforce the concepts and knowledge acquired during the past terms in prosthetics and orthotics, and also prepares those who decide to take advantage of this opportunity with better tools of experience before their residence.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2906 - HIST MED AND HEALTH CARE

Minimum Credits: 3
Maximum Credits: 3
This course examines the origins and evolution of both traditional medical systems and alternative health-care patterns in West civilization from the earliest society to the present. Particular attention is placed on the impact of religion, warfare, and other societal factors on the development of medicine. Special sessions cover the role of the physician in defining society's treatment of women, minorities, and the mentally retarded.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.
Course Attributes: Global Studies

HRS 2920 - ADMINISTRATIVE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
Supervised practical experience providing an opportunity to learn new skills in administration of a service or facility and permitting the application of previously learned skills and theories.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2921 - CLINICAL INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
Supervised practical experience, usually in a clinical facility or agency, permitting the student to observe and participate in existing specialized programs and to develop, apply, and evaluate new clinical procedures.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2922 - TEACHING INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
Supervised experience in a health-related educational program permitting the student to develop and present instructional materials, to experiment with innovative methods of instruction, and to evaluate the effectiveness of the presentations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2924 - GRADUATE RESEARCH PROPOSAL

Minimum Credits: 1
Maximum Credits: 6
Graduate student writes thesis proposal, receives committee approval and institutional review board (IRB) approval for thesis study.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2925 - GRADUATE RESEARCH

Minimum Credits: 1
Maximum Credits: 6
An original in-depth investigative study of a selected area of professional interest. A research report suitable in format and content for publication is required.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2926 - SCHOLARLY PAPER

Minimum Credits: 1
Maximum Credits: 6
A research oriented paper based on work the student has done in his or her area of study. Students will be encouraged to submit honors papers for publication or presentation at a national or state professional meeting. The adviser and an appropriate faculty reader will supervise the student's work on the scholarly paper.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2927 - STATISTICAL METHODS FOR HEALTH SCIENCE RESEARCH 1

Minimum Credits: 3
Maximum Credits: 3
Statistical methods for health science research i. This is the first of a two-course series in statistical methods. Topics covered include measurement, frequency distributions, histograms, bar graphs, stem-and-leaf displays, boxplots, scatterplots, measures of central tendency, measures of variability, point estimation, interval estimation, sampling distributions, one and two-sample tests of hypotheses for means and an introduction to non-parametric tests.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: CSD-PHD (Comm Science and Disorders), or REHSCI-PHD (Rehabilitation Science), or AUDIO-AUD (Audiology), or SLPATH-CSD (Speech-Language Pathology), or PT-DP (Physical Therapy), or OT-CSD (Occupational Therapy) or MACAUD-SP (Audiology)

HRS 2928 - STATISTICAL METHODS FOR HEALTH SCIENCE RESEARCH 2

Minimum Credits: 3
Maximum Credits: 3
This is the second of a two-course series in statistical methods. Topics covered include one and two way analysis of variance, multiple comparisons for main effects and interactions, analysis of co-variance, multiple comparisons for adjusted means, correlation, simple linear regression, multiple regression, and meta-analytic methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: CSD-PHD (Comm Science and Disorders), or REHSCI-PHD (Rehabilitation Science), or AUDIO-AUD (Audiology), or SLPATH-CSD (Speech-Language Pathology), or PT-DP (Physical Therapy), or OT-CSD (Occupational Therapy) or MACAUD-SP (Audiology)

HRS 2930 - ADVANCED TOPICS IN STATISTICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Advanced topics in statistical methods. This course focuses on applied longitudinal data analysis. Topics include: the multilevel model for change, with an emphasis on individual change over time; applied data analysis using the multilevel model with random and fixed effects; evaluation of model fit; and the discrete-time hazard model.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: REHSCI-PHD or CSD-PHD

HRS 2999 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
Provides students an opportunity to explore in depth an area of particular interest to them. It is the student's responsibility to find a faculty member willing to undertake such a tutorial.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3000 - DOCTORAL SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Faculty and students in the rehabilitation doctoral program will participate in this seminar series. Research will be presented and critiqued by faculty and students. Topics related to grantmanship, ethics in research, and issues related to survival in an academic/research environment will be addressed in this seminar series. Doctoral students must present their research for critique by faculty prior to their dissertation defense.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Rehabilitation Science (PhD)

HRS 3001 - DISSERTATION RES PHD DEGREE

Minimum Credits: 1
Maximum Credits: 12
Students will formulate, design, propose, carry out, analyze, interpret, and write up an approved research project, under the direction of a dissertation committee, and in particular the chairperson.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Rehabilitation Science (PhD)

HRS 3002 - METHODS OF INQUIRY FOR REHABILITATION SCIENCES I

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: (REHSCI-PHD) or (CSD-PHD) or; SUBPLAN: (PHDHIM-TR) or (PHDOT-TR) or (PHDPT-TR) or (PHDRST-TR) or (PHDSMN-TR)

HRS 3003 - CORE CONCEPTS IN DISABILITY AND REHABILITATION 1

Minimum Credits: 2
Maximum Credits: 2
This course is the first course in a two-course sequence examining core knowledge in disability and rehabilitation sciences. In this first course, we will review models of disability and rehabilitation. We will focus on aspects of concepts of functioning and disability, including body structures, body functions, activities and participation. We will examine how these concepts are applied in ongoing research within field of rehabilitation sciences. Students will learn through faculty presentations (from among the various research programs throughout the school of health and rehabilitation sciences), facilitated discussion, assigned readings, short written papers, short oral presentations, and peer-review of written products.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: (REHSCI-PHD) or (CSD-PHD) or; SUBPLAN: (PHDHIM-TR) or (PHDOT-TR) or (PHDPT-TR) or (PHDRST-TR) or (PHDSMN-TR)

HRS 3004 - METHODS OF INQUIRY FOR REHABILITATION SCIENTISTS II

Minimum Credits: 1
Maximum Credits: 1
Course focuses on foundational knowledge regarding methods of inquiry for rehabilitation science. The first segment emphasizes outcome measures and the second segment emphasizes prognostic studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HRS 3002 (MIN GRADE "B"); PLAN: Rehabilitation Science(PHD) or Comm Science and Disorders(PHD); SUB: PHDHIM-TR or PHDOT-TR or PHDOT-TR or PHDPT-TR or PHDRST-TR or PHDSMN-TR

HRS 3005 - CORE CONCEPTS 2

Minimum Credits: 2
Maximum Credits: 2
This course is the second course in a two-course sequence examining core knowledge in disability and rehabilitation sciences. In this

second course, we will focus on individual and contextual factors that influence disability and rehabilitation, and implications for research. We will examine how these concepts are applied in ongoing research within field of rehabilitation sciences. We will also synthesize concepts and principles and discuss their application in individual student research programs. Students will learn through faculty presentations (from among the various research programs throughout the school of health and rehabilitation sciences), facilitated discussion, assigned readings, short written papers, short oral presentations, and peer-review of written products.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HRS 3003 (MIN GRADE "B"); PLAN: Rehabilitation Science(PHD) or Comm Science and Disorders(PHD); SUB: PHDHIM-TR or PHDOT-TR or PHDOT-TR or PHDPT-TR or PHDRST-TR or PHDSMN-TR

HRS 3006 - ADVANCED NEUROMUSCULAR PHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3
At the turn of the twentieth century, the pioneering neuroscientist and Nobel Laureate Charles Sherrington said that "To move things is all that mankind can do... for such the sole executant is muscle, whether in whispering or felling a tree". The smooth and effortless movements we produce in everyday life are the result of exquisite neuromuscular interactions that we are only beginning to understand. The goal of this course is to develop a working knowledge of neurophysiological principles and techniques fundamental to successful movements in health and disease. The course will begin with a basic overview of the anatomical components of voluntary movement followed by three modules. Module 1 will cover neurophysiological principles of movement. Module 2 will provide knowledge about non-invasive techniques used to study neuromuscular function in humans. Module 3 will convey new perspectives on pathologies of the neuromuscular system based on the integration of course concepts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: ACADEMIC PLAN: REHSCI-PHD (Rehabilitation Science) ACADEMIC SUBPLAN: PHDSMN-TR (Sports Medicine and Nutrition)

HRS 3325 - FEMALE PHYSIOLOGY SPORT

Minimum Credits: 3
Maximum Credits: 3
This course provides an in-depth examination of female physiology as it relates to sport, exercise, and physical performance. Emphasis is placed on sex-based physiological differences and the unique biological, hormonal, and metabolic factors influencing exercise response, training adaptation, health, and athletic performance in females. Topics include endocrine function and the menstrual cycle, reproductive physiology, musculoskeletal health, and energy metabolism. The course also addresses physiological considerations across the female lifespan, including puberty, pregnancy, postpartum, and menopause, as well as the impact of hormonal contraceptives and endocrine disorders on performance and health. Applied perspectives will include training, recovery, injury risk, and performance optimization for female athletes, along with evidence-based strategies for research design and clinical practice involving female participants. Students will critically evaluate current scientific literature and discuss implications for coaching, clinical exercise physiology, sports medicine, and public health.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HRS 3702 - SOFT TISSUE BIOMECHANICS

Minimum Credits: 3
Maximum Credits: 3
Soft tissue responses to external mechanical loading are of interest in the prevention and treatment of pressure-related tissue injuries. These injuries include ulcers occurring on the plantar surface of diabetic feet, wounds at the inter face between a PROSTHeses and a residual limb and pressure ulcers over the bony prominences of immobile individuals with neuromuscular impairments.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3705 - WHEELCHAIR BIOMECHANICS

Minimum Credits: 1
Maximum Credits: 1
Discuss all areas of wheelchair biomechanics including stability of wheelchairs and propulsion biomechanics. Students will use kinetic and kinematic analysis to determine the forces and moments occurring in upper extremity joints during the propulsive stroke. Clinical correlates to the biomechanical studies will be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3710 - CLINICAL APPLICATIONS AND SEATING

Minimum Credits: 4
Maximum Credits: 4
Course will cover the clinical aspects of seating and mobility intervention for four diverse populations. First, the special needs of children will be addressed. Include various disability specific goals of intervention. Second are people with acquired spinal cord lesions. Seating and mobility intervention from the time onset - through rehab to independent living. The final two populations are people with musculoskeletal disorders and the elderly.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HRS 2704 and 2705; PROG: Sch Hlth & Rehabilitation Scs

HRS 3713 - REHABILITATION ENGINEERING DESIGN

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3895 - RDG NEUROMUSCLR ASPCT SPRT INJRY

Minimum Credits: 3
Maximum Credits: 3
The course contains in depth study, readings, and critical discussion related to the role of the sensorimotor system in providing joint stability and how these sensorimotor mechanism are altered with orthopedic sport injury.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3998 - CLINICAL TRIALS IN REHABILITATION: INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 2
The clinical trials independent study is for students who want to learn more about the design and analysis of clinical trials in rehabilitation. The trainee must choose which path of the independent study they will pursue; option 1: an introduction to clinical trials methodology or

option 2: in depth study of a particular aspect of clinical trial designs or methods relative to rehabilitation research. If option 1 is chosen, the student must have an idea for a randomized controlled trial even if hypothetical. The trainee will follow a structured set of learning objectives on research questions, justification, methodological procedures, data management, ethics, safety, monitoring, statistical considerations, and dissemination of clinical trials. The student will develop a clinical trial protocol during the independent study, applying the concepts learned during the readings and meetings with the instructor. If option 2 is chosen, each trainee is encouraged to work with an experienced clinical researcher (investigator) who agrees to provide the trainee mentorship. The investigator must be planning a clinical trial, conducting a clinical trial, or have conducted a clinical trial. Trainees are expected to become part of the research team and learn how studies or trials are designed, implemented, managed, and analyzed. Trainees are expected to provide an outline of readings relevant for the independent study objectives and at the end provide summaries of their experiences and reading materials.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: PREQ: Option 1: completion of HRS 3002 with a B or better OR Option 2: completion of CLRES 2800 and 2810 and 2820, OR BIOST 2062, each with a B or better

HRS 3999 - DOCTORAL INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
Provides students an opportunity to explore in depth an area of particular interest to them. It is the student's responsibility to find a faculty member willing to undertake such a tutorial.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

Health Policy and Management

HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
The core course is designed to give students an overview of the disciplines and competencies associated with the field of health policy and health care management. Understanding the role of leadership in a public health environment is a unifying theme in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2005 - CURRENT ISSUES IN HEALTH LAW

Minimum Credits: 1
Maximum Credits: 1
Current Issues in Health Law is an interdisciplinary course for students of public health and law. In this course, students will be introduced to cutting-edge issues in public health law, health law and policy. The course focuses on developments in health care and public health, particularly as they affect medically under-served populations, with implications for lawyers and public health practitioners as policy makers. It will also introduce students to the variety of settings in which lawyers and public health practitioners are involved in law. Classes will be taught by leading experts in the field as well as student led discussions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA,MPH) or Health Services Res and Policy (MS,PHD)

HPM 2010 - ORGANIZATION STUDIES: THEORY AND APPLICATIONS TO HEALTH CARE SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Focus on the understanding and application of fundamental concepts, principles and models associated with organization theory within healthcare, rehabilitation, and long-term care. Content will encompass the traditional foci of organization theory, e.g. Structure and functions, authority relationships, coordination and control processes, as well as constructs associated with related disciplines of organization behavior e.g motivation theory, leadership, etc. Emphasis on real-world applications. Organization design discussed in contemporary organization structures and processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
Introduction to selected finance and accounting topics of health care professional, supervisor and department head. No previous knowledge of accounting or financial management required. First half emphasis on basic financial accounting concepts to provide organization-level understanding language, concepts, processes and functions of financial management. Second half emphasizes managerial accounting principles and techniques including cost accounting and budgeting. Focus shifts to departmental level financial management and role of supervisor process including budget development and control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: PPBHL; PLAN: HPM-MHA or HPM-MPH

HPM 2014 - APPLICATIONS AND ISSUES IN FINANCIAL MANAGEMENT OF HEALTH CARE INSTITUTIONS

Minimum Credits: 3
Maximum Credits: 3
This curriculum is designed to expand on the concepts presented in the financial management foundations for health care and public health course (HPM 2012). The focus of the instruction will be less book-learning and, instead, primarily be comprised of real-life, practical situations faced in today's healthcare industry. Teachings will be a mix of guest speakers from the local area's leaders and the instructor's experiences. The first part of the semester will revolve around understanding what's behind the data contained in an organization's financial statements. The course will also cover alternative revenue opportunities, such as philanthropic initiatives and investment earnings. Once these concepts have been presented, the instruction will change its focus to managing within a healthcare organization concentrating on budgeting, determining how/what programs to invest in or implement, and balance sheet management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2017 - QUANTITATIVE METHODS: DECISION TECHNOLOGIES AND OPERATIONS MANAGEMENT IN HEALTH CARE

Minimum Credits: 3
Maximum Credits: 3
This course gives an introduction to decision technologies and to the art of successfully using them in practice. Part i: focus on methodologies for optimizing and for predicting the consequences of decisions. Health care applications are considered: resource allocation, scheduling, project management. Part ii: focus on operations management issues in health care. Topics include: forecasting, inventory management and quality control.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy & Management (MHA or MPH) or Health Services Res and Policy (MS)

HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
The Professional Development Seminar is designed to optimally prepare students to enter the health industry workforce. The primary goal of the Professional Development Seminar is to help ensure that all students fully leverage the career services provided by the university, are exposed to the broad array of settings and roles within the health industry, and gain exposure to health industry professionals from our key external stakeholder organizations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Health Policy and Management (MHA or MPH)

HPM 2021 - PROFESSIONAL DEVELOPMENT SEMINAR 2

Minimum Credits: 1
Maximum Credits: 1
The Professional Development Seminar is designed to optimally prepare students to enter the health industry workforce. The primary goal of the Professional Development Seminar is to help ensure that all students fully leverage the career services provided by the university, are exposed to the broad array of settings and roles within the health industry, and gain exposure to health industry professionals from our key external stakeholder organizations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Health Policy and Management (MHA or MPH)

HPM 2025 - HPM PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
The student may register for the HPM practicum upon approval of the faculty of the department of health policy and management. The HPM practicum is designed to provide the student already employed in a healthcare organization with exposure to executive management, leadership, and policy- making processes and activities. Typically, the student will complete the practicum at their employing organization.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: Plan: HPM-MHA or HPM-MPH or HPMLAW-MPH

HPM 2028 - MICROECONOMICS APPLIED TO HEALTH

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to microeconomics, the study of resource allocation with particular emphasis on the role of markets. The course focuses on the competitive model. Examples of the use of economic concepts are drawn primarily from the health and medical care delivery systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA,MPH) or Health Services Res and Policy (MS,PHD)

HPM 2029 - HEALTH MANAGEMENT INFORMATION SYSTEMS

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide future health care managers and policy-makers a conceptual framework for understanding and managing an integrated health management information system (HMIS). Primary attention will be given to the overall architecture of HMIS and issues related to health information management. The course focuses on the health care manager's role in the design, implementation and control of an effective HMIS. Instructional methods include lectures by regular faculty and guest resources, class discussion, case analyses and an applied field site study.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA)

HPM 2037 - ESSAY-HA

Minimum Credits: 1
Maximum Credits: 3
The essay is designed to provide the student with an opportunity to integrate the major components of the health administration learning experience. The student is expected to demonstrate analytical ability and technical proficiency in expository writing.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: Plan: HPM-MHA or HPM-MPH or HPMLAW-MPH

HPM 2049 - HUMAN RESOURCES MANAGEMENT FOR HEALTH CARE AND PUBLIC HEALTH PROFESSIONALS

Minimum Credits: 2
Maximum Credits: 2
This course encompasses both personnel administration and labor relations concepts, processes and issues presented within a broad human resource management perspective. The emphasis of the course is on behavioral implications of legal-regulatory, economic, cultural, and technical forces affecting the management of people in health care organizations viewed as an open system. Perspectives of organization theory and behavior, personnel and labor law will be applied to the analysis of human resource/labor relations problems and effective management and supervisory practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2050 - HEALTH SYSTEMS ENGINEERING SEMINAR

Minimum Credits: 1
Maximum Credits: 1
The seminar supplements the education provided by health policy and management and industrial engineering departments by creating a forum for exposure and discussion of healthcare systems engineering issues. Students become aware and are exposed to the role of vendors/consultants that bring solutions for healthcare delivery processes. The standards for professional leadership required for health management are reinforced.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: PLAN: Health Policy and Management (MHA or MPH)

HPM 2051 - HEALTHCARE APPLICATIONS OF OPERATIONS RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The Healthcare Applications of Operations Research course provides students with an understanding of operations research concepts and how to appropriately apply those concepts in healthcare settings. Students will develop skills in analyzing and improving healthcare systems and processes through the application of health systems engineering and operations research techniques. The course will feature a mix of didactic instruction followed by small group breakouts using primarily healthcare-related examples to apply concepts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2011 or BIOST 204. HSEPH-ACM students only. COREQ: Must be enrolled in IE 2000

HPM 2055 - MANAGING HEALTH PROGRAMS AND PROJECTS

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to prepare students to effectively manage health programs and projects. The course is lecture/discussion based, but with ample analytical and written assignments. Extensive use is made of internet resources. A conceptual model of core (strategizing, designing, and leading) and facilitative (communicating, managing quality, marketing, and decision-making) management activities is used to structure the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy & Management (MPH)

HPM 2063 - THE POLITICS OF HEALTH POLICY

Minimum Credits: 2
Maximum Credits: 2
This 2-credit course is designed to provide an understanding of the key political dimensions of the health policy-making process in the united states. The course is designed for students with an interest in health policy, although no previous formal training in policy or politics is required. We will examine the roles of government institutions and political actors both inside and outside government in developing and implementing health policy. Past and present health care policy debates will be used to illustrate the concepts and theories discussed in class. Students will acquire an understanding of the political processes in which health policies are considered, and gain practical experience executing political strategies in the context of health policy campaigns.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2064 - HEALTH POLICY ANALYSIS

Minimum Credits: 2
Maximum Credits: 2
The aims of this course are to provide students with 1) an overview of the U.S. Health care delivery system and current policy challenges, and 2) an introduction to policy analysis tools useful for defining policy problems, assessing alternative solutions and examining effects of health policies. The framework used for achieving these aims will be to consider health policy from the perspective of the main stakeholders in the system: patients, providers, health plans, suppliers (e.g. Pharmaceutical and manufacturing industry), and payers. Course materials include a policy analysis text book, peer-reviewed articles, and case studies of contemporary health policy issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2075 - NAVIGATING THE PHYSICIAN-ADMINISTRATOR RELATIONSHIP

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide the student with an introduction to the role of physician administrators in the emerging healthcare matrix based organizational model. Physicians, by virtue of their training and clinical experience, bring a background and orientation to administrative roles that differs significantly from the traditional orientation of the non-physician administrator. This often results in a clash of cultures which if not properly managed can negatively impact organizational efficiency. It is imperative that non-physician administrators develop the skill sets that will facilitate the merging of the physician's primarily clinical culture with the non-physician administrator's more traditional business and operational culture in support of an organization's overall mission. The course will emphasize the physician administrator's approach to C-Suite management and provide the student with exposure to and practical knowledge of the administrative and operational issues which commonly engage physician administrators. This course should prepare the student to function within a C-Suite environment that is led or populated by physicians in either a combined clinical and administrative or purely administrative role. Additionally, the student will gain exposure to the myriad of regulatory, quality/safety and patient centric issues for which physician administrators commonly assume overall responsibility. Commonly, while these issues are championed by the physician administrator, the day to day responsibility for the design and implementation of focused resolution strategies becomes the responsibility of the non-physician administrator. This mandates the development of the ability to prioritize, for strategic planning purposes, and to have sufficient competency with the identification and analysis of relevant metrics and the ability to utilize this type of data to formulate effective action plans. This course focuses upon this skill set and is structured to afford the student the opportunity to develop project specific strategies based upon operational metrics for clinical initiatives that impact operational efficiency and excellence. The student will also be provided the opportunity to develop resolution strategies based upon operational metrics for clinical initiatives that impact operational efficiency and excellence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA,MPH) or Health Services Res and Policy (MS,PHD)

HPM 2081 - PUBLIC HEALTH AGENCY MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
The course public health agency management focuses on the areas of knowledge and skills necessary to manage public health agencies. The course covers topics such as core functions and public health practice, legal basis for public health, public health interventions, configuring health departments, fundamentals of management theory and application, agency budgeting and public health constituencies. Classes include a lecture and class discussion of a case study or related question. The class ends with a final group report and group presentation of a class project relative to the development of a county health department.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy & Management (MPH)

HPM 2082 - PUBLIC HEALTH AGENCY MANAGMENT

Minimum Credits: 2
Maximum Credits: 2
The course Public Health Agency Management focuses on the areas of knowledge and skills necessary to manage public health agencies. The course covers topics such as core functions and public health practice, legal basis for public health, public health interventions, configuring health departments, fundamentals of management theory and application, agency budgeting and public health constituencies. Classes include lecture and class discussions of a case study or related questions. The class ends with a final group report and group presentation of a class project related to the development of a county health department.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: HPM-MPH

HPM 2090 - INNOVATION IN THE BUSINESS OF HEALTH

Minimum Credits: 2
Maximum Credits: 2
This course will introduce students to the discipline of innovation and how it may apply in future healthcare leadership roles. Students will draw on a wide range of academic and real-world content, including texts, case studies, web sites and industry publications. We will examine innovation in both the business and care delivery aspects of healthcare, setting a foundation by understanding market forces in policy and payment that may constrain or accelerate innovation in consumer adoption, new technologies and business models. The course will feature a mix of didactic instruction followed by small group breakouts using healthcare examples and case studies to apply concepts. The course will culminate with student-led presentations in which they 'think like an innovator' on a health innovation opportunity of interest, provided by the instructor or selected by student(s), to demonstrate the utilization of design thinking research methods to propose a solution to the identified need. Innovation is an oft-discussed yet poorly understood discipline in the business vernacular. Throughout this course we will provide operating definitions and examine how both established healthcare institutions and new market entrants respond to evolving markets, consumer needs and scientific discoveries. Students preparing to become successful healthcare leaders will benefit from understanding how regulatory and market dynamics drive or hinder change and how to identify and adopt innovations at the right time for their business.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: HPM-MHA; SUBPLAN: MHAMBA-TR

HPM 2091 - VALUE-BASED MODELS OF CARE DELIVERY: THE INTERSECTION BETWEEN POLICY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course will provide a fundamental understanding of the evolution of changing models of payment, clinical interventions, and best practices needed to simulatively reduce healthcare costs, improve health, and tackle health disparities. It will allow students to articulate the drivers for change and acquire the skills necessary for adopting the kind of large-scale transformations needed to succeed in a value-based model of care delivery.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Master of Health Administration Program

HPM 2100 - HEALTH ANALYTICS

Minimum Credits: 2
Maximum Credits: 2
This course provides future health care managers and policymakers with a conceptual framework for understanding and engaging in analytics work. Primary attention will be given to the interactions between information technology infrastructure, data sources, and the various analytical domains common to healthcare. The course focuses on the health care manager's role in the design, implementation, and utilization of common analytical methods and processes. Instructional methods include lectures by regular faculty and guest resources, class discussion, case analyses and conducting analytical exercises.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2101 - ADVANCED HEALTH ANALYTICS

Minimum Credits: 2
Maximum Credits: 2
This course will build on the concepts introduced in Health Analytics and will provide additional detail and practical experience for students seeking an advanced understanding of the role of analytics and its application to the various aspects of the health policy and industry. Students will draw on a wide range of academic and real-world content, including texts, case studies, web sites, data sets, BI tools, and interactions with industry leaders. This course will prepare students to conduct analytics projects in their roles including problem structuring, common analytical methods, available data sets, feature engineering, the use of analytical tools, and the visualization and

presentation of findings for an executive audience.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM 1

Minimum Credits: 1
Maximum Credits: 1
Introduction to the US Healthcare Delivery System 1 is a required course for first year HPM MHA and MPH students. This course is the first of a two part sequence that will: provide an historic and current overview of basic elements of the US healthcare delivery system, review HPM practical experiences in the context of professional and leadership competencies, and include current perspectives provided by selected guest healthcare executives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (HPM-MHA or HPM-MPH) or Health Services Res and Policy (MS or PHD)

HPM 2106 - HEALTH SYSTEMS LEADERSHIP AND PROFESSIONAL DEVELOPMENT 2

Minimum Credits: 1
Maximum Credits: 1
This is a required spring course for the first year MHA that covers additional elements of us healthcare system. Review in great depth of the management residency process, expectations and opportunities continues in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA or MPH) or Law (LAWMPH-JD)

HPM 2108 - LEADERSHIP

Minimum Credits: 1
Maximum Credits: 1
This is a required course for MPH and MHA students related to the fundamentals of three areas: leadership, which focuses on teamwork, managing and leading people, and communication best practices. The second, professionalism, focuses primarily on principles of etiquette, professional dress, communication best practices and setting oneself apart in the professional setting. Finally, career development principles are covered and this touches on career paths, decision making for career success, and optimizing various work and professional organization experiences for professional growth. The course is primarily interactive in lectures and also requires the students to keep a journal for self-reflection on the topics. A dinner etiquette consultant joins the class as well as an executive from the field to give their perspectives on the three main principles. Accountability, communication, leadership, self-development, and professionalism are the competencies covered in the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA or MPH)

HPM 2114 - ADVANCED LEADERSHIP PHILOSOPHY

Minimum Credits: 1
Maximum Credits: 1
This course is a transformative journey into the identity and impact of the individual leader within the healthcare ecosystem. Building upon previous courses focusing on leadership theory and application, students will engage in deep reflective practice to uncover their unique leadership style and strengths. Students will explore the intersection of their personal values and the professional demands of health administration. Key topics include mastering emotional intelligence, developing an authentic communication style, and managing the

conflict between personal ethics and organizational policy. The course culminates in the creation of a formal Personal Leadership Philosophy-a comprehensive roadmap for guiding teams and making principle-based decisions in a volatile, complex industry.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Grad SN Basis

HPM 2115 - HEALTH POLICY AND MANAGEMENT RESIDENCY

Minimum Credits: 1
Maximum Credits: 1
The course is designed to provide the student with an educational experience in the student's field of interest. It is a field experience performed under the supervision of a preceptor (i.e., A respected professional manager in the health field). Potential sites include a broad range of organizations such as hospitals, multi-unit systems, HMO's, consulting firms, insurance organizations, health policy and planning agencies, and health divisions of corporations.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: Plan: HPM-MHA or HPM-MPH or HPMLAW-MPH

HPM 2123 - ADVANCED TOPICS IN DECISION AND COST-EFFECTIVE ANALYSIS IN HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate/advanced level course on using simulation models in health decision sciences and cost-effectiveness analyses. Simulation models have been used widely in healthcare to address important policy questions, such as cancer screening recommendations and efficient organ allocations among transplant patients. The emphasis of this course is on applications and methods that are particularly applicable to issues of medical decision making and public health. Students will learn how to choose a model that best fits their applications. They will learn how to construct, parameterize, and analyze complex decision models, including calibration and validation. In addition, the student will be introduced to state-of-the art methods in uncertainty analysis, value-of-information analysis, and diagnostic test evaluations. Although advanced topics will be discussed, the focus will not be on programming and mathematical notations will be kept to a minimum. Some familiarity with programming and linear algebra are helpful, but not required. Class sessions will be a combination of lecture format, case discussion, and computer labs with expectations of class participation. It is expected that all students will keep up with the required readings and homework assignments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2124 - AN INTRODUCTION TO SIMULATION MODELING IN PUBLIC HEALTH

Minimum Credits: 2
Maximum Credits: 2
This is an introductory level course on introducing simulation models in public health. Simulation models have been used widely in healthcare to address important policy questions, such as cancer screening recommendations, the spread of social behavior, and the dynamics of infectious disease transmission.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2130 - HEALTH LAW AND ETHICS

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to introduce students to the legal and ethical issues which impact the administration and delivery of health

services. This course is designed to provide students with the practical knowledge needed to identify legal issues inherent in health care and public health administration and to understand the legal ramifications of administrative and management decisions. Through lecture and class discussion four main subject areas are presented: an introduction to the legal system, legal issues in managing health care organizations, regulating quality of care and public health legal authority. Specific course topics include: sources of law, the court system and legal procedures, professional and institutional liability, governmental regulatory methods, antitrust law, corporate compliance programs, emergency care, and issues concerning informed consent, credentialing of medical professionals, confidentiality of health information, and termination of care, family planning, and public health law.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA)

HPM 2131 - PUBLIC HEALTH LAW AND ETHICS

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to introduce students to public health law and policy and the legal environment in which public health is practiced. The course is designed to familiarize students with the process by which laws are created, interpreted and enforced, and to introduce them to the substantive areas of law most relevant to the field of public health. Through lecture, case analysis, class discussion and student presentations, five main content areas will be presented. 1) The legal basis for public health practice; 2) the law and core public health functions; 3) the law and controlling and preventing diseases, injuries, and disabilities; 4) public health emergency law; and 5) the ethical issues impacting public health practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy & Management (MPH)

HPM 2134 - HEALTH CARE FRAUD, ABUSE, AND COMPLIANCE

Minimum Credits: 2
Maximum Credits: 2
As one of the most highly regulated industries in the United States, health care entities are required to comply with numerous statutes and regulations, including those related to fraud and abuse. These laws are increasingly complex, thereby exposing health care entities to liability for non-compliance. Thus, individuals involved in the administration and delivery of health care and lawyers who wish to practice health law must be well-versed in the laws and regulations that govern health care fraud, abuse, and compliance, as well as the strategies health care entities employ to address these concerns. In this experiential course, public health and law students will explore the major federal civil, administrative, and criminal laws that have been used to combat health care fraud and abuse, including the False Claims Act, the Anti-Kickback Statute, the Physician Self-Referral Law, and the Civil Monetary Penalties Law. Related compliance strategies and the practical compliance issues faced by health care providers will also be covered, including the seven elements of effective compliance programs, governance and accountability, repayments and disclosures, and corporate integrity agreements. Students will work in teams comprised of a mix of public health and law students to complete real-world projects directly with the UPMC Compliance Department, culminating in a final presentation and project deliverables.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2141 - MANAGERIAL EPIDEMIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Epidemiology is concerned with the measurement of the health of populations and understanding the determinants of that health. It is one of the fundamental disciplines of public health, and provides the basis for much of what we know about health and disease. As a required MHA course managerial epidemiology takes a broad view of the definition of, population, and will include the study of multiple populations of interest, such as the population: cared for in the service area of a hospital, covered by a particular insurance carrier, and

larger populations such as a state, nation and the world. The course provides students with the knowledge and skills required to analyze, understand and interpret the data produced by health care organizations and identify the managerial implications of the data by summarizing data appropriately, understand the characteristics of mechanisms (methodologies) that created the data, and know when data observed is a common/expected or rare occurrence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2145 - MARKETING HEALTH SERVICES STRATEGY AND BUSINESS PLANS

Minimum Credits: 3
Maximum Credits: 3
Analysis of concepts vital to the creation of superior competitive marketing planning strategies for health services providers. Emphasis, using principles of epidemiology, on effective measurement of need in service area.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA)

HPM 2150 - STRATEGIC MANAGEMENT OF HEALTH SERVICE ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
This "capstone" course for the program stresses the application and integration of knowledge and techniques learned in the context of specific functions and disciplines focuses on identifying strategic issues in complex environments, and formulating realistic responses. The emphasis throughout is on understanding how to improve the major patterns of resource allocation within the organization in order to create lasting value.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: HPM-MHA; OR SUBPLAN: MHAMBA-TR

HPM 2160 - MARKETING AND STRATEGIC MANAGEMENT OF HEALTH INDUSTRY ORGANIZATIONS

Minimum Credits: 4
Maximum Credits: 4
This 'capstone' course for the MHA program stresses the integration and application of knowledge and techniques focused on understanding strategic issues in complex market environments to formulate realistic plans of action to achieve organizational goals. This course combines market analysis, business plan development, and strategic problem solving based on empirical data, resulting in the creation of superior competitive marketing and strategic plans for health industry organizations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2205 - INDEPENDENT STUDY-HA

Minimum Credits: 1
Maximum Credits: 3
Students with major interests in specialized areas participate in individual study, research activities, or advanced readings with a specified faculty member.
Academic Career: Graduate
Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2207 - QUALITY ASSESSMENT AND PATIENT SAFETY

Minimum Credits: 3
Maximum Credits: 3
Examines the definition of quality in healthcare from the perspectives of providers, health plans and consumers. Healthcare standards of JCAHO, NCQA, and HEDIS are reviewed. The role of clinical pathways, outcome measures, technology and the internet are explored as they impact the quality of healthcare.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA,MPH) or Health Services Res and Policy (MS,PHD)

HPM 2215 - COMPUTER METHODS IN DECISION AND COST-EFFECTIVENESS ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
This course expands on topics introduced in cost-effectiveness analysis in health care and in clinical decision analysis and provides additional guidelines for using decision sciences in larger, more complex applications. Topics include modeling clinical processes and systems; discrete event simulation; advanced sensitivity analysis and confidence limits; controversies surrounding the use of cost-effectiveness analyses; and multi attribute utility theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Health Policy and Management (MHA,MPH) or Health Services Res and Policy (MS,PHD)

HPM 2216 - HEALTH INSURANCE: FINANCING HEALTH CARE

Minimum Credits: 3
Maximum Credits: 3
Course examines the concerns and practices of private health insurance; the relationships and activities established by the insurance contracts among the insurer, insured, and providers; the insuring process of marketing, underwriting and pricing; the interrelationships of private and public insurance programs; and the varied government activities related to insurance. The objective of this course is to increase understanding of the access, funding, and insuring issues surrounding health care and to explore the alternate strategies being pursued in response to environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2217 - CLINICAL DECISION ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
This course provides an introduction to the use of decision sciences in health care. In addition to developing a conceptual understanding of medical decision-making, the course will develop technical skills in decision analysis including the creation/evaluation of decision trees, the use of sensitivity analysis, and the incorporation of specific patient preferences through the use of utility analysis. The advantages and disadvantages of formal mathematical models for the analysis of clinical conditions will be presented. Examples from current medical literature will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Health Policy and Management (MHA,MPH) or Health Services Res and Policy (MS,PHD)

HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE

Minimum Credits: 1
Maximum Credits: 1
Provides an introduction to and develops technical skills in the economic evaluation of health care programs. A brief introduction to the economic foundation of cost effectiveness and cost benefit analysis is followed by an examination of the methodologies involved in performing cost effectiveness analyses. Topics include: definitions of cost and benefits, effect of the perspective of the analysis, calculation of cost-effectiveness ratios, performance of sensitivity analysis, discounting of costs and benefits, and discussions of current controversies in conduct of cost-effectiveness analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Health Policy and Management (MHA,MPH) or Health Services Res and Policy (MS,PHD)

HPM 2240 - CASE STUDY ANALYSIS AND PRESENTATION IN HEALTHCARE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to foster crucial skills for healthcare leaders including persuasive public speaking, assessment and analysis skills of case studies, as well as the ability to work in teams to solve problems. This course focuses not only on the ability to increase skill in these areas but also develop professionally by presenting in front of healthcare executives and conveying messages effectively and creating buy-in on their proposed solutions to problems. The course is a prep course for the students to also attend the University of Alabama at Birmingham case competition in the winter, a prestigious competition of most mha programs in the country. The course will include three cases, analyzed and prepared by students broken into teams, where after preparation and analysis will present to executives in the community for scoring and judging. The team will be selected based on student performance from the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA or MPH)

HPM 2275 - HPM SPECIAL STUDIES

Minimum Credits: 1
Maximum Credits: 3
Properly qualified students may undertake advanced study under the guidance of an HPM faculty member(s).
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Policy and Management (MHA,MPH) or Health Services Res and Policy (MS,PHD)

HPM 2700 - SEMINAR IN HEALTH SYSTEMS LEADERSHIP

Minimum Credits: 1
Maximum Credits: 1
This course will consist of a series of cased-based examinations of specific managerial and leadership problems and decisions that have faced local health systems leaders in Western Pennsylvania. Health care reimbursement, licensing and accreditation, and measuring health care quality has become both more complicated and more important as pressures to reduce expenses and improve quality increase. Simultaneously, there has been a steady increase in the number of clinicians who have assumed managerial positions, such as medical directors of clinical units, directors of quality measurement and improvement programs, utilization review and many others, as well as the appearance of clinicians in the "c-suite" of many hospitals and health care organizations. Utilizing adjunct faculty who are currently (or very recently have been) executive leaders in health systems, this course will examine a series of collaborations, problems, conflicts and solutions that developed between health system administrators and clinical leadership in health care organizations in the Western pa area. The mechanics of the course will be a series of cases, based on an actual recent issue in health care management in which the senior adjunct faculty member was involved. Students (individually or in groups) will evaluate the case, prepare a response, and make a short presentation of their 'solution' to the problem to the health system executive and clinical leader involved in that case. An interactive discussion will

follow. This is a required course for students in the certificate in health systems leadership and management program, and can be used as an elective course by other students with permission of the instructor.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Plans: HPM-MHA or HPM-MPH or HPMLAW-MPH or HSRP-MS or HSRP-PHD

HPM 2905 - QUASI-EXPERIMENTAL DESIGN FOR HEALTH SERVICES RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide students with the research design skills drawn from the social science tradition as applied to the delivery of health services. This course provides a survey of research design, selection and development of research questions, conceptualization, measurement, and data collection/acquisition. The focus is on the application of quasi-experimental and observational approaches to research in applied health care settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Services Res and Policy (MS or PHD), or instructor permission

HPM 3000 - DOCTORAL RESEARCH AND PROFESSIONAL DEVELOPMENT SEMINAR PART 1

Minimum Credits: 1
Maximum Credits: 1
The purpose of this two-term Doctoral seminar is to provide a forum for HPM Doctoral and MS students to (a) gain exposure to current research in the field of health services research and policy and closely related disciplines, (b) develop and enhance professional competencies in preparation for post-graduate job search and career pathing, and (c) critically review and present topical articles in the field to faculty and peers. Doctoral and MS students will be required to enroll for two terms (3 credits) of this seminar, typically during their 1st year in the Program.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: PLAN: Health Services Res and Policy (MS or PHD), or instructor permission

HPM 3001 - DOCTORAL RESEARCH AND PROFESSIONAL DEVELOPMENT SEMINAR PART 2

Minimum Credits: 1
Maximum Credits: 1
The purpose of this two-term Doctoral seminar is to provide a forum for HPM Doctoral and MS students to (a) gain exposure to current research in the field of health services research and policy and closely related disciplines, (b) develop and enhance professional competencies in preparation for post-graduate job search and career pathing, and (c) critically review and present topical articles in the field to faculty and peers. Doctoral and MS students will be required to enroll for two terms (3 credits) of this seminar, typically during their lst year in the Program.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: Plan: HSRP-PHD, or instructor permission

HPM 3010 - SEMINAR ON ORGANIZATIONAL STUDIES: HEALTHCARE ORGANIZATIONS AND ENVIRONMENTS

Minimum Credits: 3
Maximum Credits: 3
This seminar is intended to facilitate the mastery of conceptual approaches to health care organizations. Through a combination of in-class

discussions, self-directed research, written analyses, and oral presentations, students will clarify complex issues and evaluate innovative ideas. The course content will include such topics as organizational design, organizational behavior, and organizational environments. The primary approach to analyzing organizational phenomena will be the theoretical basis of causality, and the level(s) of analysis addressed by the theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 3064 - HEALTH POLICY ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course is the doctoral version of HPM 2064. Doctoral students have supplemental reading and writing requirements for this course. The aims of this course are to provide students with 1) an overview of the U.S. Health care delivery system and current policy challenges, and 2) an introduction to policy analysis tools useful for defining policy problems, assessing alternative solutions and examining effects of health policies. The framework used for achieving these aims will be to consider health policy from the perspective of the main stakeholders in the system: patients, providers, health plans, suppliers (e.g. Pharmaceutical and manufacturing industry), and payers. Course materials include a policy analysis text book, peer-reviewed articles, and case studies of contemporary health policy issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Services Res and Policy (PHD), or instructor permission

HPM 3065 - ADVANCED HEALTH POLICY ANALYSIS: IMPLEMENTATION, EVALUATION, AND TRANSLATION

Minimum Credits: 2
Maximum Credits: 2
This course is designed to build on the principles learned in HPM 3064: health policy analysis. It is an advanced course for doctoral students in health policy and other disciplines with a focus on policy evaluation, translating the results of policy research for policy makers, and challenges to implementing health policies. Students will be expected to examine four current health policy topics in depth by examining the challenges to policy implementation, critiquing large-scale evaluations of health policies, and tracking the influence of research evidence on the policymaking process. The perspectives of policy analysts, practitioners implementing (or responding to) policies, and policy makers will be examined for each of four topics. The course format will include a combination of student-led discussions and formal presentations, lectures by the instructor, and guest lectures.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HPM 3066 - CURRENT TOPICS IN AGING, DISABILITY, AND LONG-TERM SERVICES AND SUPPORTS POLICY

Minimum Credits: 2
Maximum Credits: 2
This course is seminar in policy issues related to aging and disability. The focus will be on financing, organization and delivery of long-term services and supports to the elderly and people with disabilities. Topics include LTSS settings, financing, quality of care, quality of life, and proposals for reform. The COVID-19 pandemic exposed weaknesses in care systems for the elderly and people with disabilities; we will use this issue as a lens through which to understand long-standing challenges and opportunities for reform. Weekly discussions will be student led.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Plan: HSRP-PHD, or instructor permission

HPM 3125 - INTERMEDIATE HEALTH ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to expand on intermediate microeconomic principles and apply these more sophisticated dynamics to the health care market, both domestic and international. Familiarity with introductory economics and calculus is assumed. Course time will be spent on a combination of lectures and discussions of seminal papers to explore theoretical frameworks and their empirical applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plan: HSRP-PHD, or instructor permission

HPM 3501 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS 1

Minimum Credits: 3
Maximum Credits: 3
This is part one of a two-part course for doctoral students enrolled in health services research and policy. Other doctoral students may register with permission of the instructor. The course will cover two related competencies: research design and writing skills. The second part of the course will continue with grant proposal writing skills. The purpose of the course is to cover basic aspects of research design, selection and development of research questions, conceptualization, measurement, and data collection/acquisition. Students will also gain experience conducting literature reviews, critically reviewing manuscripts and grant proposals, and writing research questions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plan: HSRP-PHD, or instructor permission

HPM 3502 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS 2

Minimum Credits: 3
Maximum Credits: 3
This is part two of a two-part course for doctoral students enrolled in health services research and policy. Other doctoral students may register with permission of the instructor. The course will cover two related competencies: research design and writing skills. The second part of the course will continue with grant proposal writing skills. The purpose of the course is to cover basic aspects of research design, selection and development of research questions, conceptualization, measurement, and data collection/acquisition. Students will also gain experience conducting literature reviews, critically reviewing manuscripts and grant proposals, and writing research questions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health Services Res and Policy (PHD), or instructor permission

HPM 3505 - ADVANCED EMPIRICAL MICROECONOMICS METHODS WITH APPLICATIONS FOR HEALTHCARE RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course is designed to cover applied econometrics and regression methods at a fairly advanced level. The course reviews the fundamentals of econometrics, summarizes empirical microeconomics methods and discusses the applications for unique issues in healthcare research. This course will provide students with advanced tools necessary to evaluate and conduct empirical research using existing datasets. The focus is on the 'hands-on' use of economic and health data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: STAT 2131 and STAT 2132 and BIOST 2046, PLAN: HSRP-PHD, or instructor permission

HPM 3506 - DISSERTATION GRANT WRITING CAPSTONE

Minimum Credits: 1
Maximum Credits: 1
This course will provide a structured environment in which PhD students in Health Services Research & Policy can prepare competitive dissertation grants and/or fellowship applications to the National Institutes of Health (NIH), or other funders to support health services research. The class will include 3 core components: (1) Understanding the major components of dissertation grants and fellowship applications, how these grant applications are scored, and reviewing recent examples of funded grants in health services research from students at Pitt and peer institutions (2) Giving students structured writing "milestones" to facilitate progress on writing their own applications (3) Providing targeted feedback about students' grant applications, focused on "grantsmanship" Weekly written assignments will be structured to pace students through the preparation of a grant. The class will culminate in a 'mock' study section in which students and faculty reviewers critically discuss and score students' grant applications following the format of an NIH study section.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad HSU Basis

HPM 3508 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Research credits for qualified doctoral students in the department of health policy & management.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: Plan: HSRP-PHD, or instructor permission

HPM 3510 - DOCTORAL TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide doctoral students with opportunities to develop practical skills in teaching and mentoring students taking Health Policy and Management courses. As part of the teaching practicum, students may lecture, grade homework and exams, lead review sessions, hold office hours, or maintain course websites. They may also help plan, update, or expand course syllabi or teaching materials. Course goals include improvement in oral and written communication skills and exposure to the process of planning and implementing a course.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PLAN: HSRP-PHD; PREQ: HPM 2905 and HPM 3501

HPM 3511 - DOCTORAL TEACHING PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide doctoral students with opportunities to develop practical skills in teaching and mentoring students taking Health Policy and Management courses. As part of the teaching practicum, students may lecture, grade homework and exams, lead review sessions, hold office hours, or maintain course websites. They may also help plan, update, or expand course syllabi or teaching materials. Course goals include improvement in oral and written communication skills and exposure to the process of planning and implementing a course.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: HPM 2905 and HPM 3501; PLAN: HSRP-PHD

Hearing and Vision Sciences

HVS 2001 - THE NEUROSCIENCE OF HEARING AND VISION

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to discuss the neurobiology of hearing and vision, starting from the cochlea and retina to cortex and back.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HVS 2002 - METHODS FOR ASSESSING HEARING AND VISION

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to cover fundamental concepts and basic methods pertaining to quantify and assess hearing and vision in animal models and humans.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HVS 2003 - RECENT ADVANCES IN THERAPY IN HEARING AND VISION

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce students who have no significant clinical experience to the recent advances in treatment and cures in hearing and vision pathology. Surgeon- and physician-scientists along with our basic scientist faculty teach this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HVS 2004 - JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
In this course, students will present a recent research article from a range of topics in hearing and vision sciences selected by the student in consultation with a faculty advisor. Emphasis is placed on careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty during this course, which meets weekly.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

Hindi

HINDI 0200 - HINDI 1

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students who have completed HINDI 0100: Hindi 1 and/or have prior knowledge of the Devanagari writing system, very basic vocabulary, and essential grammatical structures of Hindi. In Hindi 0200, students will build on these foundational skills and continue to develop their proficiency and cultural competence in Hindi. Classroom activities and assignments continue to emphasize the use of Hindi for real-world communication and the cultural context in which Hindi is used. By the end of this course, students should be

able to use memorized phrases and short simple sentences to complete basic social communication tasks, manage a number of uncomplicated communication tasks in everyday situations, and converse at a basic level on topics that are necessary for day-to-day survival. This course, when taken in sequence with HINDI 0100 fulfills the two-course General Education language requirement. The course also counts towards the minor in Hindi.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

HINDI 2909 - SPECIAL TOPICS IN HINDI

Minimum Credits: 3
Maximum Credits: 3
This course will be a topics course, meaning that the specific content of the course will change each time the course is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

History

HIST 1030 - DIGITAL METHODS FOR HUMANISTIC RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Texts hide secrets from us humans that are manifestly obvious to computers: all we need to do is crack the code. This course teaches students with zero coding experience to use computers to reveal hidden insights from digitized texts. Students will learn to make those texts "speak" by transforming them into dynamic visuals and interactive websites: in this manner, Hamlet becomes a chart of gender-coded language; a history of Rome becomes a map of the empire's most frequently referenced battles; and much more. Over the course of the semester, students will apply digital methods to a research project of their own choosing. In addition to adding a valuable tool to their research repertoire, students will leave with coding and web design skills highly sought after in other career contexts.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

HIST 1095 - SPORT AND GLOBAL CAPITALISM

Minimum Credits: 3
Maximum Credits: 3
The history of sport and global capitalism is designed for students seeking to make their way as professionals and/or for those interested in global sport as a social and political force both in the US and around the world. Focusing on the evolution of sport as a global industry and the creation of an imposing scholastic, community, and non-profit infrastructure, it equips students to understand and navigate those arenas. If, after graduation, students venture into the sports industry, scholastic sport, or sport for development, they should do so with their eyes wide open.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

HIST 1655 - LABOR HISTORY 1

Minimum Credits: 3
Maximum Credits: 3
This course examines American working class formation, development, and recomposition during the nineteenth century, and workers' impact on American economic, political, and cultural development.
Academic Career: Undergraduate

Course Component: Lecture
Grade Component: LG/SNC Elective Basis

HIST 1725 - DISEASE AND HEALTH IN MODERN AFRICA

Minimum Credits: 3
Maximum Credits: 3
This course explores the history of health, healing, and disease in modern Africa, focusing on the social, political, economic, and environmental aspects of illness and health. The course also provides an orientation to the changing burdens of disease in Africa in the past 300 years. Seeking to understand change and continuity in Africans' experiences of health and healing, how have historical processes shaped understandings of disease, misfortune, and illness? Within what contexts should health interventions be understood? How and when did health in Africa become a global issue?
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

HIST 2000 - PROFESSIONALIZATION SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This one hour one-credit course introduces graduate students to the discipline of history and to Pitt's graduate program in history. In addition, the course will enable students to commence work on their MA essays. Our main goals are to gain a better understanding of: a) the principal intellectual strengths of the history department; b) degree requirements such as the MA thesis and the comprehensive exams; c) various methodological approaches, such as social and gender history; d) fundamental analytical skills, such as how to write a historiographical essay, how to use databases, and how to edit your own work; and e) professional issues, such as participation in conferences and academic associations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

HIST 2009 - GRADUATE TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
The History Department's Program for Graduate Training in Pedagogy aims to prepare graduate students for the job market by assuring that they have the most complete qualifications possible, including a rich teaching portfolio, the badge in pedagogy offered by the University, and specialty training provided by the History Department. This program capitalizes upon the expertise of our Department's most experienced classroom instructors as well as the offerings of the Center for Teaching and Learning. It integrates these resources in a way that is tailored to the changing obligations and dynamics of the graduate students first three years in the program. It expects students to integrate pedagogical skills and effectiveness throughout their graduate education, recognizing that the study and practice of pedagogy is best done over an extended period of time and through a variety of methods. In order to reflect this sustained effort in skill-building, students will earn one hour of independent-study credit per year for three years.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History; LEVEL: 3rd year

HIST 2010 - GRADUATE TEACHING SEMINAR

Minimum Credits: 1
Maximum Credits: 1
The History Department's Program for Graduate Training in Pedagogy aims to prepare graduate students for the job market by assuring that they have the most complete qualifications possible, including a rich teaching portfolio, the badge in pedagogy offered by the University, and specialty training provided by the History Department. This program capitalizes upon the expertise of our Department's most experienced classroom instructors as well as the offerings of the Center for Teaching and Learning. It integrates these resources in a way

that is tailored to the changing obligations and dynamics of the graduate students' first three years in the program. It expects students to integrate pedagogical skills and effectiveness throughout their graduate education, recognizing that the study and practice of pedagogy is best done over an extended period of time and through a variety of methods. In order to reflect this sustained effort in skill-building, students will earn one hour of independent-study credit per year for three years.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History; LEVEL: 1st or 2nd year

HIST 2012 - GRADUATE WRITING SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar provides graduate students, particularly Master's students, with the opportunity to design, research and write a research paper based on primary sources that will form the basis for the research paper that is required for one's Master's degree. Students will work with the instructor and another faculty member who is a specialist in their area of interest to design the topic and to discuss issues relating to researching the paper. Students are expected to write a proposal explaining the topic and justifying its importance; and to submit periodic drafts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History (MA and PhD)

HIST 2020 - INFORMATION ECOSYSTEMS: INTERDISCIPLINARY USES OF DIGITAL METHODS

Minimum Credits: 3
Maximum Credits: 3
This advanced graduate course unites students from widely varying disciplines to share the work of learning new disciplines. It explores humanities, social and natural sciences. Specific course objectives are: (1) to introduce students to a wide range of disciplines, theories, and methods; (2) to enable individual students to develop substantial strength in a new discipline and method of their choice; (3) to emphasize the historical discipline and the factor of time; and (4) to compare and contrast the various disciplines in topic, framework, data, method, analysis, and philosophy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2022 - PUBLIC-FACING HISTORY LABORATORY

Minimum Credits: 3
Maximum Credits: 3
The Public-Facing History Laboratory is a multidisciplinary graduate seminar that provides a space for experimental and collaborative student-led research designed to create historical products and tools for the public. Students from a range of disciplines will learn techniques from oral history, digital history, material history, and videography as they grapple with how to make the past speak to the present. By definition, Public-Facing History Laboratory projects cannot be limited to the academic world. We will deliberately engage with public partners, such as museums, libraries, archives, advocacy groups, non-profits and historical societies, as well as local residents and organizations whose voices have yet to be heard. However, our goal need not be to speak for others. Projects that create toolkits to enable non-academics to create their own histories would be as welcome as polished documentary films, original exhibitions, or definitive oral histories. This is a project-oriented course that requires skill building and collaboration with public-facing outcomes. We will combine well developed pedagogies for oral history with innovations in digital history. Of course, critical reflection on process and product are essential. We will analyze selected cases of public-facing history to gain an understanding of how and why these projects were created as well as the ethical, social, and cultural ramifications these projects have had. Because this course is project-based, we will begin the process of project definition immediately, followed quickly by team building, then connecting with public partners and resources before launching into structured project development, assessment, and delivery. Skill development will occur simultaneously in learning modules that will be required regardless of whether or not they are actually deployed in the student's project this term.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2023 - HISTORICAL METHODS AND APPROACHES

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2025 - TEACHING WORLD HISTORY

Minimum Credits: 3
Maximum Credits: 3
This course provides training for teaching world history surveys. Students will engage with the content of an existing world history survey and learn about available resources for the teaching of world history. Simultaneously, an ongoing dialogue between the existing survey, the analysis of the teaching resources, and the student's own ideas will result in the formulation of new world history surveys by each student based on their evolving understanding of the field, strengths, and preferences. History and education students are warmly welcome to join this workshop.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2043 - SOCIAL MOVEMENTS

Minimum Credits: 3
Maximum Credits: 3
Various theories and models to study social movements are examined. Emphasis is placed on structural conditions that contributed to the emergency of the movements. Their development over time and what changes, if any, are brought about to the social system in which the movements occurred.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, Latin American Studies, Russian & East European Studies, West European Studies

HIST 2046 - HISTORICAL INJUSTICES AND THE POLITICS OF MEMORY

Minimum Credits: 3
Maximum Credits: 3
Is it possible to repair wrongs of the past? How have different societies dealt with traumatic pasts? How are those pasts being memorialized (or de-memorialized) and reenacted in the world of art, entertainment and tourism in ways that potentially reinforce discriminatory practices? How have claims based on the past led to the creation of structures of transitional justice? What are the moral, legal and historical bases for claims for reparations and restitutions? With no intention to exhaust those questions, this seminar aims to discuss the concepts of traumatic pasts and historical injustice through philosophical, legal, political and historical lenses, discussing the role and the moral responsibility of intellectuals in this process, and analyzing and comparing specific cases, such as the Armenian genocide, the Holocaust, the enslavement of Africans, military dictatorships in Latin America, European colonialism in Africa, and the Japanese-American incarceration in the United States.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2047 - PUBLIC NARRATIVES

Minimum Credits: 3
Maximum Credits: 3
Students in this course will examine monuments, cultural centers, and museums as sites of discourse, of inclusion and exclusion, and of nation-building. Using case studies from across North America and exploring both the elements of public history sites as well as the contested histories that informed their creation, this course calls into question the ideas of indigeneity, memory, victimhood, and national identity that inform the sites we consider. Specific questions that will shape students' readings of the following sources include: Who should decide which (and whose) perspectives shape a public history site? Can and should a public history include every perspective on a narrative/event/group of people? How do public history narratives include and exclude certain people in their scope? How do nations use public history to build consensus and unity, but also to justify or expunge wrongdoing?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2048 - PUBLIC HISTORY

Minimum Credits: 3
Maximum Credits: 3
The course will introduce students to Public History's theory, methodology, and practice. Public History is the employment of professional historical methods by public and private agencies to engage communities in shaping the presentation of the past into usable histories. Through the course, students will be able to analyze how public historians and the Public collaborate to explain individual and collective human behavior through various methods and mediums, such as digital projects and websites, historical scholarship, movies, TV series, games, memorials, monuments, museums, and tourism. Moreover, students will learn how Public Historians and the Public create and express historical meaning for their local, state, national, and global communities. This course will also take a "hands-on" and experiential approach to learning about Public History, in which students will be able to develop career development skills.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2240 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
This graduate course addresses a current topic in gender, sexuality, or women's studies. Topic varies by instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HIST 2400 - APPROACHES TO ASIAN HISTORY

Minimum Credits: 3
Maximum Credits: 3
This course approaches Asia not as a geographic place but as a malleable object of study. In exploring "Asia," each week will adopt a different guide. One week will ask about the map of Asia that various Asian religions would create, depending on which religion did the mapping. Another week will ask how various modern pan-Asian movements imagined Asia. What happens to our conception of Asia if we adopt Confucianism as our guide? Or the Chinese writing system, the Devanagari writing system, the Arabic alphabet, or non-Latin alphabets put together? What happens if we think of Asia in terms of its physical environment? How have the ways in which we understand environmental history changed our understanding of what Asia might, or might not, consist of? What about early modern empires, old and new trade networks, or Asian diasporas? In this way, this course will explore a multiplicity of Asias, each of which is created as much by Asia as an object of study as by the position from which we approach it. Classes will consist of two parts. The first will discuss key works of recent scholarship and the second will think critically about primary sources. This will include thinking about what types of primary sources each of the readings has used, where these sources might be found, what they reveal, and what they obscure. But it will also encourage students to think about what other sources, whether textual, visual, quantitative, or otherwise, could provide alternative perspectives. This will include looking for datasets that can be used to think about each approach to Asia systematically. What datasets could help us map languages in Asia? How have scholars used big data to trace Confucian networks? How could data provide a different approach to Asian diasporas. In addition to weekly readings and short response papers, students will write a final paper that will seek to

integrate into their own research some of the approaches discussed in the course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

HIST 2409 - THE FORGOTTEN ASIANIST METROPOLISES: AN ASIAN INTELLECTUAL RENAISSANCE

Minimum Credits: 3
Maximum Credits: 3
Asian metropolises today are ostensibly multicultural. But there was a time when they were even more intensely multinational and international, a time when Asian intellectuals found sanctuaries to invent lofty new concepts of their nationhood and nationalisms, even as they crossed boundaries, engaged in cultural translation, and sought political and ideological affinities among co-religionists, co-continentals, and co-miserater of imperial domination. This course introduces the emergent field of inter-Asian studies, focusing on a critical moment of high imperialism, when the idea of Asia leapt off the pages of Marco Polo and Marx and began to find a vibrant new life among intellectuals of Asia's own. The course treats students to themes of inter-Asian mobility and connectivity during the late 19th century and early 20th century, enabled by the rivalry among high imperialism, coproduction of Eurasian Communism, Islamic modernism, as well as the political and intellectual energy of decolonization, Socialist revolutions, and Pan-Asianist solidarity. The course uncovers some of the untold aspects of colonial modernity in Asia, where the word "Asia" began to gain unprecedented intellectual currency. Concretely, course participants could expect to learn both the history of inter-Asian cultural exchanges and the methodology of conducting such studies. An examination of the immediate decades before the arrival of the post-colonial order in Asia, which ushered in an initial moment of jubilant triumph, invites the course participants to ponder Asia's march to the nation-state system mirroring Euramerica - as formerly dominated peoples (re)gained their monoracial, and sometimes monocultural group sovereignty, and erected tight territorial, political and cultural boundaries, has "Asia" regained itself or was it lost?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2410 - CHINA INNER ASIAN REGIONS-ETHNIC FRONTIPHERIES AT THE EDGE OF EMPIRE & ASPIRATIONAL NATION-STATE

Minimum Credits: 3
Maximum Credits: 3
Long description: By the year 1884, the Manchu Qing Empire (1644 - 1912) had formally turned China into a manifestly inter-Asian state. Under the aegis of one royal household and one imperial capital, three theocratic traditions - Confucianism, Islam, Tibetan Buddhism - and cultures embedded and transmitted by five different scripts - Sinitic, Perso-Arabic, Tibetan, Mongolian, Manchu - were demanded to recognize each other as belonging to one political entity. This acquired character made inter-Asian China of the 19th and the 20th centuries incommensurate with the largely Christian, and largely alphabetic Europe. It also made China in the first half of the 20th century a fertile ground for ethnonational aspirations and state-making attempts, which left socialist China (1949-1976) and post-socialist China with the daunting task of reining in the political energy for autonomist movements and de jure recognition of ethnonational difference in the ethnic frontipheries. This seminar introduces the historiography on the military and political processes by which inter-Asian China were formed in the 18th and 19th centuries, and the political and cultural governance methods by which the weak central state of the early and mid-20th century coped with the demands and movements for national self-determination (in the emphatic plural form). Additionally, students will learn the debates between ethnofederalism and ethnic fusionism in more recent decades of the People's Republic of China (1949-). The seminar will benefit those who have keen interests in the political and military expansion of overland empires, the regulation and control of culturally heterogeneous frontiers, and the political and cultural project of monoculturalism in so-called post-colonial nations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2420 - HISTORIES OF SCIENCE AND TECHNOLOGY IN ASIA

Minimum Credits: 3
Maximum Credits: 3

What does Asia bring to the study of science and technology? On the other hand, what does science and technology studies (STS) bring to our understanding of Asia? This course explores these two questions through a close reading of some of the latest and most influential works on STS in Asia. The first hour of every class is about the readings, while the second hour helps students develop their own research. Students will come away from the course with a grasp of the field of STS and a paper or dissertation chapter that they wrote and revised based on feedback from their classmates and the instructor.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2440 - ENVIRONMENTAL HISTORY AS WORLD HISTORY

Minimum Credits: 3
Maximum Credits: 3
This reading seminar will provide an introduction to the field of in environmental history in world historical perspective. In order to ground our understanding of environmental history, the course will begin with a review of foundational works written since the birth of the field in the mid-1970s. After establishing this intellectual foundation, we will spend the rest of the semester reading more recently published books and articles that focus on the most important themes within the field of environmental history today. We will consider how these themes have been shaped by, and shape, ongoing discussions of globalization and world historical perspectives. We will consider traditional historical categories such as race, class, and gender, but will also examine more global themes including migration, imperialism and colonialism, the spread of epidemic diseases, and global capitalism, among others.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2500 - LATIN AMERICAN READING

Minimum Credits: 3
Maximum Credits: 3
Readings in Latin American historiography.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

HIST 2509 - WOMEN, GENDER AND BLACK INTERNATIONALISM

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the complex dynamics of black internationalism, focusing on the global visions; transnational activities; and transracial political alliances of people of African descent in the United States and in other parts of the globe. Highlighting the writings, speeches, activism, and overseas travel of a diverse group of men and women, this course employs a gender analysis and moves black women from the margins to the center of the black internationalist story. The seminar examines varied expressions of black internationalism in the United States and abroad from the late 19th century to the Civil Rights-Black Power era. It engages two key questions: how was black women's engagement in internationalism similar to and/or different from their male counterparts? And to what extent did black women merge internationalism with issues of women's rights and/or feminist concerns? Course readings will represent a combination of primary and secondary sources that reflect the geographical breadth of the African Diaspora including Africa, the Americas, and Europe.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2510 - BRAZIL

Minimum Credits: 3
Maximum Credits: 3

A reading seminar, covering historical and social scientific literature on Brazil.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2515 - DEMOCRACY, AUTHORITARIANISM, AND HUMAN RIGHTS IN MODERN LATIN AMERICA

Minimum Credits: 3
Maximum Credits: 3
This graduate seminar will explore the politics and culture of democracy, authoritarianism, human rights, and memory in modern Latin America. Focusing on a variety of countries, it will consider such topics as the experience of diverse sectors of society under democratic and authoritarian rule; movements for human rights; efforts to forge truth, justice, and reparations in the aftermath of authoritarianism; and struggles over competing ideals of democracy in the twentieth and twenty-first centuries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2516 - LATIN AMERICAN REVOLUTIONS

Minimum Credits: 3
Maximum Credits: 3
This course examines the origins, course, and consequences of social revolutions in 20th century Latin America. We begin with the Mexican Revolution (1910-40) to better understand the key role peasants play in promoting revolutionary change. Next, we consider the role of indigenous peoples and mineworkers in the Bolivian Revolution (1952-64). We then turn to the Cuban Revolution of 1959, focusing on the origins and impact of its communist project. We end with the Chilean Revolution (1970-73) and Nicaragua's Sandinista Revolution (1979-90) in order to consider the complicated relationship between revolution and democracy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2530 - TRANSNATIONAL LABOR AMERICAS

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the transnational history of labor in North America, Latin America, and the Caribbean across the 19th and 20th centuries. How have geopolitical shifts and international capital flows remade local communities and regional economies? How have the actions of workers and potential workers shaped investors' possibilities? What role have ideologies of race and gender played in labor control -or struggle? To what extent have different states been able to impact outcomes within this supranational system? How different is the "globalized" present from this past?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2541 - RACE IN THE AMERICAS

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to key concepts and critical discussions about race in the Americas from the 16th through the 21st centuries. It examines the historical development and theoretical foundations of racial ideologies, as well as the role of colonialism and slavery in constructing racial hierarchies, and the emergence and sustenance of concepts of whiteness and racism. Additional topics include racial silence and the myth of racial democracy. Students will explore how race has shaped views of religion, citizenship, and immigration over time. The course also explores the persistence of racial inequalities and the diverse forms of strategies and public policies aimed at confronting racial injustices across historical periods.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2690 - IDENTITIES AND MOVEMENTS IN 20TH CENTURY NORTH AMERICA

Minimum Credits: 3
Maximum Credits: 3
Why have some social movements succeeded where others have failed? Have identity politics represented a liberatory force in the American past, or merely a "neoliberal alternative" to socially transformative politics? In this graduate seminar, we will consider the history of social movements in the "long 20th-century" United States and the role that identity politics have played in shaping social and political attitudes, strategies, and responses across the political spectrum, examining both historical narratives and competing interpretations of them. Readings will cover broad themes, diverse perspectives, and provocative interpretations. Students will be asked to think and write synthetically, critically, and analytically about the histories and historiographies of U.S. social and identity movements, with a particular focus on the last one hundred and fifty years.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2699 - POWER AND INEQUALITY IN AMERICAN HISTORY

Minimum Credits: 3
Maximum Credits: 3
"Power and Inequality in American History" is a readings course that covers the full sweep of American history from early Native America to the near-present. The course will concentrate on four themes within the broader rubric of power and inequality: race, class, gender, and capitalism. We will pay special attention to transnational approaches and to the ever-shifting politics of American historical writing. We will read classic and newer works to demonstrate how historical practice has changed over time. The course will serve as a broad survey for graduate students in any department or discipline who study any period or theme in American history.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2705 - HISTORY OF STATE SOCIALISM

Minimum Credits: 3
Maximum Credits: 3
This course is intended as an introduction to the historiography of socialist societies in the twentieth century. In addition to the works on the Soviet Union, the seminar will cover scholarship on socialist countries in Eastern Europe, Asia, and Latin America. The seminar seeks to put into dialogue historiographies of very different societies with distinct visions of socialism in order to understand the power and limits of ideology to shape economic, political and social life. The students will also examine the role state socialist societies played on the global stage.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2707 - CAPITALISM AND ITS SOCIALIST CHALLENGERS

Minimum Credits: 3
Maximum Credits: 3
Capitalism seems to be in crisis. Wealth disparities between but also within societies threaten the social fabric that makes modern life possible. Many young people in the US but also in other countries believe that they will not be better off than their parents' generation. This crisis of trust in capitalism is amplified by the looming environmental disaster. This development is astonishing since capitalism seemed to enter the new millennium victoriously and reinvigorated, having survived the many challenges posed to its existence in the 20th century. What has gone wrong? Did the rot set in recently or was the capitalist system hopelessly flawed since its inception? Do its challengers deserve a new lease of life or is capitalism reformable? In our seminar, we will try to find answers to these questions by delving deeply into

the history of the 20th century. The 20th century is often understood as a fight between capitalism and socialism embodied by the USA and the Soviet Union. There is a grain of truth to this. However, such a view is shortsighted. The terms capitalism and socialism are multi-faceted and the capitalist system in the US and the state-socialist system in the Soviet Union were just one variant of capitalism and socialism. Furthermore, such a view is too static and underestimates the ability to adapt to differing environments both of socialism and capitalism. Therefore, we will analyze the dynamic development of capitalist thinking and practice as well as the development in theory and practice of its main challengers in the 20th century. Finally, we will ask how a profound understanding of the past can contribute to present economic debates.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2709 - AGE OF REVOLUTION IN GLOBAL CONTEXT

Minimum Credits: 3
Maximum Credits: 3
The Age of Revolution has long been considered the beginning of western, and therefore of global, political modernity, the period in which liberal democracy declared victory over absolute monarchy, citizens over subjects, and imperial nation-states over composite empires, the bourgeoisie over the nobility, industrialists over landowners, and capitalism over feudalism, and wage-labor over slavery. But the rise of world history has complicated this view, drawing attention to the worldwide dimensions of many of these processes on the one hand, while questioning the utility of potentially Eurocentric frameworks within this broader global context on the other (for example, "democratic, "Atlantic," "bourgeois, " or "Industrial" Revolution). This course plans to engage with these debates by probing the conceptual, geographic, and chronological boundaries of this so-called "Age of Revolution." It is designed to appeal to students from across multiple thematic and regional fields, including power and inequality, Atlantic, world, Europe, US, Latin America, and East Asia.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2710 - GLOBAL CAPITALISM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2711 - TEXTS AND CONTEXTS

Minimum Credits: 3
Maximum Credits: 3
Texts and contexts links aspects of the history of ideas (historical, political, religious, scientific, legal and cultural) to the modes of their transmission (objects, concepts, languages; spoken, manuscript and printed texts). This course relates a wide variety of texts to the cultural as well as historical circumstances of their generation, while also introducing methodological issues of more general importance to history as a discipline.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2724 - RETHINKING THE 20TH CENTURY BLACK ATLANTIC: CIRCUITS, SPHERES, SOCIAL MOVEMENTS

Minimum Credits: 3
Maximum Credits: 3
How has the African diaspora shaped the modern world? What role did afro-diasporic intellectuals and social movements play in the post-emancipation Atlantic world? Recent scholarship in multiple disciplines has traced how men and women from the Caribbean, North

America, Brazil, West Africa, and beyond remade 20th C. politics and culture on an international as well as national level. Exploring performance, ritual, literature, social movements, and everyday life, we trace evolving ideas of race and nation, ancestry and authenticity, belonging and rights.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: African Studies

HIST 2729 - SEAS, PEOPLES, AND EMPIRES

Minimum Credits: 3
Maximum Credits: 3
This course focuses on interactions between seas, peoples, and empires in historical and comparative contexts. Using maritime history as its point of departure, the course explores the multiple ways in which contact with the sea shaped the lives of peoples and empires across the world. Beginning with Braudel's pioneering regional study of the Mediterranean and the Mediterranean World, the course moves into the Atlantic, Indian, and Pacific Oceans. In each of these contexts, students will consider how the lives of people across social hierarchies were mediated through the interpenetration of empires and maritime regions. The course also considers the extent to which enclosed maritime worlds make sense historically - as the voluminous literature on specific basins suggest that they do - and if so, what distinguished one such world from that of another? Students will explore these lines of inquiry through readings that concentrate predominantly, though not exclusively, on the early modern and modern periods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2736 - WORLD HISTORY METHODS SEMINAR: DIGITAL METHODS FOR SPATIAL ANALYSIS OF THE PAST

Minimum Credits: 3
Maximum Credits: 3
Over the past two to three decades, scholars in the humanities and social sciences have increasingly referred to a "spatial turn" of increasing attention to the place of geography and landscape in understanding society and culture. At the same time, historians have taken up the term spatial history to describe the ways in which they articulate geographical perspectives from their particular disciplinary approach. The reach of approachable desktop GIS and database design platforms, accessible satellite imagery, and online spatial visualization has amplified these trends. This seminar is an introduction to exemplary projects, applied methods, and techniques and tools for spatial analysis of the human past. At the same time, it is an effort to bring together several approaches that are not yet frequently joined. For instance, spatial history theory, method and exemplar are not well integrated, and we will approach the field from all three of these perspectives. Moreover, spatial history is seldom practiced at the global scale. World historians have not yet "put the world in world history." This class combines reading in theory and exemplars, interaction with online projects, and hands-on work with digital archives and tools. By the end of the class, students will understand the state of the art and possible future trajectories of spatial history as a field and its relationship with the field of world history. They will also be able to plan a spatial history project at the global scale, articulate its significance and scholarly contribution, and identify the sources, tools and expertise needed to complete it. Student work will include reading responses and archive and website assessments throughout the semester, and will culminate in a large-scale project prospectus.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2737 - HISTORY FROM BELOW

Minimum Credits: 3
Maximum Credits: 3
"History from Below" - also called Peoples' History and Radical History - has been an important part of the appearance and spectacular growth of social history over the past half century and one of the most important developments in the discipline and profession of history. This course is designed to introduce graduate students in a broad variety of disciplines, departments, and programs to the key theories, methods, and issues in history from below, from its origin in the 1930s, through the New Left of the 1960s and 1970s, to the present. The course will concentrate on four major themes: race, class, gender, and capitalism. We will read classic and newer works to demonstrate

how historical practice has changed over time. Special emphasis will also be given to sources, especially archival research, and to writing.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2738 - TIME KITCHEN

Minimum Credits: 3
Maximum Credits: 3
This course is a deep exploration of one of the central concepts and materials shaping the work of the historian: time. It is open to students writing about or with the past in any discipline or department. Together, we will bring together the crafts of history and creative writing in order to explore a number of key questions: How does time inhere in materials and material experience? How do material and conceptual technologies and our relations with them produce and constrain our experiences of time? How do particular conceptions of time determine particular kinds of historical experience? How do they constrain us into particular kinds of historical practice? How might thinking time differently create opportunities for us to experience time differently, and thus to expand our craft as storytellers?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2741 - MIGRATION AND CHALLENGES OF MOBILITY AND BELONGING

Minimum Credits: 3
Maximum Credits: 3
Migration has been a main feature throughout human history. The recent arrival of hundreds of thousands of refugees from the Middle East and Africa in the European Union, and the discussions on the treatment of thousands of people fleeing violence and poverty in Central and South America on the US-Mexican border are only the latest examples of its enduring occurrence. The main emphasis of the course will be on the movement of people, with a regional focus on Europe and with strong comparative views on Asia and the Americas. We will look into changing mobility patterns of the nineteenth and twentieth centuries, and how such changes transformed ways of migration and migrants' identities. Another emphasis will be on the development of the modern state border as an emerging obstacle for migrations and the closely related discussions on inclusion and exclusion. While the course is historical in scope, we will compare past processes with more recent occurrences of migration and the related debates on the issue.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2742 - EUROPEAN EMPIRES: IMPERIAL FORMATIONS AND POST-IMPERIAL SPACES FROM 1848 TO THE PRESENT

Minimum Credits: 3
Maximum Credits: 3
This course is designed to complement both chronologically and geographically the course Seas, Peoples, Empires. If the latter focuses on Western and Northern Europe's maritime empires and their expansion into the Atlantic and Pacific worlds, European Empire and Post-Imperial Spaces is mostly interested in the land empires of Central and Eastern Europe (German Reich, Austria-Hungary, Russian Empire/Soviet Union) as well as their post-imperial spaces from the March Revolution of 1848 to Russia's current war against Ukraine. The course goes beyond the established canon of the history of empire by also discussing imperial formations at unexpected places, such as the imperial ambitions of smaller nations like Poland and Czechoslovakia, or the imperial legacy that might shape the European Union and its politics in Africa and Eastern Europe.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2804 - HISTORIES OF GENDER AND SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to foundational and evolving theories of gender and sexuality, and then explores the varied array of approaches that historians have taken to writing histories of and with gender and sexuality, and the findings their research has uncovered. How have patterns of continuity and change with regard to gender and sexuality interacted with other critical dimension of social, political, economic, and cultural change? These are questions scholars have pursued at varied scales, and readings allow students to explore microhistorical, national, regional, transnational, and global approaches to histories of gender and sexuality.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2805 - HISTORY OF SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
This course is intended as a general introduction to the historiography on the history of sexuality. Students will familiarize themselves with the most influential works from the previous decades as well as recent significant publications in the field so that students get a sense of the evolution of history of sexuality as a field. The readings are organized thematically. There will be no particular geographical focus so students will have the opportunity to read about history of sexuality in different contexts. Students will also propose themes/readings for the last two sessions so that the course also reflects their own research interests.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
M.A. candidates wishing to do independent reading with a professor on a subject not dealt with in a seminar may take this course, as May M.A. candidates who wish to do one of their papers independently, rather than in a seminar.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

HIST 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
Candidates with M.A. degrees who are preparing for their Ph.D. Comprehensive examination may register for HIST 2990, a course of independent reading and study with one faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

HIST 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 12
Ph.D. candidates who have passed their comprehensive examination may register for HIST 3000 with their advisor as they undertake their research for the doctoral thesis.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

HIST 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
History 3902 is a special course designed only for one type of student and one type of work. Candidates for the Ph.D. degree who have entered this program with a M.A. from another institution register for HIST 3902 when they undertake individual study with a faculty advisor to complete the research paper required for them.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

History and Phil of Science

HPS 2000 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This is a survey course designed specifically for teaching assistants and fellows. The focus will be on practical teaching methods and techniques used in classroom recitations and lectures.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

HPS 2101 - PHILOSOPHY OF SCIENCE CORE SEM

Minimum Credits: 3
Maximum Credits: 3
This seminar is an intensive and advanced introduction to some of the main themes and problems in philosophy of science including the nature of evidence, theory comparison, and the theory-observation distinction, the meaning of theoretical terms, scientific explanation and scientific change.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History and Philosophy of Science (MA, PHD) or Philosophy (PHD)

HPS 2102 - HISTORY OF SCIENCE (CORE)

Minimum Credits: 3
Maximum Credits: 3
This is a core seminar for History and Philosophy of Science graduate students, surveying the historical development of scientific thought and providing a background in the methodology of history of science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History and Philosophy of Science (MA, PHD)
Course Attributes: West European Studies

HPS 2103 - HISTORY AND PHILOSOPHY OF SCIENCE CORE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course will consider the nature of integrated history and philosophy of science. Through key exemplars, we will critically explore different strategies for researching and writing history and philosophy of science.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2110 - HISTORIOGRAPHY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course will consider major trends in the writing of the history of science. Possible topics include intellectual histories of science, the difference between internalist and externalist approaches, and the turns to scientific practice and global and transnational histories.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2115 - HISTORY OF SCIENCE IN GLOBAL CONTEXT

Minimum Credits: 3
Maximum Credits: 3
Science has never been an exclusive practice of any one society or region. In this seminar, we will explore science as a global phenomenon by considering how different practices and traditions of science developed in disparate global contexts, how science travelled and was transformed through global circulation, and how a global and comparative perspective can inform our understandings of science, its history and its philosophy. Regions and time periods considered may vary from offering to offering. Every course offering will include a comparative component which considers how the circulation of materials, texts, technologies, and people have shaped the historical development of science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2116 - COLONIALITY AND THE DECOLONIZATION OF SCIENCE: HISTORY, PHILOSOPHY, RESPONSIBILITIES

Minimum Credits: 3
Maximum Credits: 3
This course explores questions concerned with Western science and its philosophy in light of the decolonization aspirations emerging in contemporary debates about Western colonialism, such as: Is Western science colonialist and racist? Is it possible to recover a genuine indigenous knowledge? What are the epistemological responsibilities of the Western colonialist powers? Can Western scientific modes of thought which, according to some theorists, have been affected by colonialism and racism be decolonized? Is a reparative science possible and desirable? More broadly, should scientists commit to a universal declaration of epistemic responsibility towards coloniality?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2117 - MODERN WOMEN PHILOSOPHERS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on women philosophers in the modern period spanning the late Middles Ages to the nineteenth century. The pedagogy of the seminar is student-centered and promotes intellectual and identity emancipation. Participants are welcome from all academic fields and perspectives. We will debate visibility, oppression, objectification, seclusion, the denial of sexuality, violence, institutional racism, and the role of hierarchies in marking disciplinary boundaries [place holder for participant suggestions]. We will read women scholars who have contributed to women science studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2118 - HUMAN/ANIMAL IN WESTERN CIVILIZATION

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the liminality that has continually demarcated the frontier between human and animal in the history of Western civilization. We will engage diverse historical-philosophical approaches to the question of what constitutes human as opposed to animal, beginning with ancient Greek philosophy, and tracing contemporary ideas back to their origins in the Graeco-Christian worldview. We will investigate the shifting human/animal frontier during the Renaissance and the scientific revolution of the seventeenth-century, in the Enlightenment and Romanticism, and in contemporary thought. By reconstructing the genesis of human/animal debates, we will transgress the bounds of sectarian divisions between styles of thinking and become more self-conscious about history and philosophy of science as an intellectually multi-faceted form of inquiry open to pluralism and diversity.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2121 - ARISTOTLE'S PHILOSOPHY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This seminar explores Aristotle's views on the nature of science, such as explanation, causation, demonstration, and necessity. We will study a number of Aristotle's works, including the analytics and physics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2122 - ORGANA: ANCIENT AND NEW

Minimum Credits: 3
Maximum Credits: 3
Aristotle's Organon served as foundational orienting texts for much of early Greek, Roman, Arabic, and medieval European natural philosophy. The decline of scholastic Aristotelian orientation in natural science is epitomized in Francis Bacon's pointedly named New Organon. This course compares and contrasts Aristotle's Organon with Bacon's New Organon together with additional scholastic and early modern writings on scientific method.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2123 - THE DEATH OF NATURE

Minimum Credits: 3
Maximum Credits: 3
This course traces the history of the scientific revolution from feminist and ecological perspectives. We will learn how to ask historically and philosophically informed questions from feminist perspectives regarding the emergence of modern science, the transformation of the premodern organic worldview into a mechanistic one (the death of nature), and the mutual relations of science and medicine and magic. We will value feminist perspectives, according to which the mechanistic worldview sanctioned the exploitation of nature, unrestrained commercialism, ecological risk, and the subordination of women. Finally, we will memorize narratives in outline concerning broader historical and philosophical problems raised by feminist history and philosophy in regard to magic, medicine and science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2124 - SCHOLASTICISM

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the intellectual movement known as European Scholasticism, comparing and contrasting its nature with the debates it spawned. Scholasticism inherited ancient Greek philosophy and recast it in the framework of Christianity, shaping a worldview that laid the philosophical foundations of Western civilization. History and philosophy of science, analytic philosophy, and higher education institutions such as the university have their roots in Scholasticism, which spanned the late Middles Ages to the end of the seventeenth century. We investigate the scholastic origins of fundamental philosophical categories such as method, reality, essence, science, causality, demonstration, substance, order, analysis and synthesis.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2125 - EARLY MODERN NATURAL PHILOSOPHIES

Minimum Credits: 3
Maximum Credits: 3
In this seminar we will explore the emergence of early modern natural philosophies. We will examine competing conceptions of the natural world that rose to prominence in the aftermath of the religious reforms of the sixteenth century, the Renaissance, the modern state and the formation of capitalistic economies. Our investigations will be based upon the works of major figures such as Galileo, Descartes and Newton, who referred to their style of inquiry as 'natural philosophical'. What was natural? What was philosophical? How did natural philosophy become mathematical and experimental? In sharp contrast to, or in harmony with medieval scholasticism? Was natural philosophy unified or dis-unified? What was the epistemic status of natural philosophical principles? Questions such as these will torture and nurture our minds during the seminar.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2130 - TELEOLOGY: HISTORY & THEORY

Minimum Credits: 3
Maximum Credits: 3
This course traces debates about the validity, nature and scope of teleological explanation in the study of the living world. Topics may include teleological reasoning in Ancient Greek science and philosophy, in Plato's Phaedo and Timaeus, Aristotle's biological works, the Epicurean criticism and Galen's defense of teleology; the debate between vitalism and mechanism in the 18th century; teleo-mechanism in the 19th century; debates about the place of teleology within evolutionary and developmental biology; and debates about the goal-directedness of development and behavior in the 20th century.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2150 - SCIENTIFIC REPRESENTATION

Minimum Credits: 3
Maximum Credits: 3
It is often claimed that scientific theories, when true, provide a "mirror of nature" in its representations. What counts as scientific representations (mathematical, linguistic, visual, etc.) and in what relationships do they stand to the natural world? Topics that may be considered are the variety of characterizations of the model-world relationship, including forms of similarity, structuralism, perspectivism, fictionalism and inferentialism.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2151 - CAUSALITY

Minimum Credits: 3
Maximum Credits: 3
Consideration of various theories of causality and how the theories relate to questions of metaphysics, epistemology and explanation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2152 - REALISM

Minimum Credits: 3
Maximum Credits: 3
What, if anything, makes scientific claims true or false? Is scientific language about anything? If it is, can we know which scientific claims are true, or can we arrange our beliefs to converge towards the truth? If not, what purpose can the enterprise of science serve? This seminar will examine these and related questions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2153 - MODELS AND MODELING IN SCIENCE

Minimum Credits: 3
Maximum Credits: 3
The use of models and modeling strategies in science is ubiquitous. There is, however, no generally accepted, or received view about the nature and role models play in scientific theorizing. Models are sometimes said to represent scientific targets of interest. How do they do this? Models are sometimes said to be explanatory of behaviors of targets of interest. How do they do this? Is the representative function of models related to their explanatory capabilities? If so, how? This course considers questions of these sorts, examining as well, the fact that models (almost by definition?) appear to involve idealizations of various kinds. What role do idealizations play in modeling contexts? Are they essential? Are they eliminable? . . .
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2154 - THEORIES OF CONFIRMATION

Minimum Credits: 3
Maximum Credits: 3
Survey of accounts of the confirmation of scientific hypotheses, including both Bayesian and non-Bayesian approaches.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2155 - EXPERIMENT & SCIENTIFIC PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This will be a course on the epistemology of science. An honest way to do epistemology of science is to ask, given a theory and a set of evidence: to what extent does this evidence support this theory? In this course we will not investigate the topography of evidential warrant so directly. We will turn instead to some recent studies of the experimental practices through which particular pieces of evidence emerge as evidence.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2156 - EMPIRICISM IN SCIENCE

Minimum Credits: 3
Maximum Credits: 3
In the early twentieth century, influential empiricist philosophies of science were introduced by Carnap and the logical positivists and Reichenbach and logical empiricists. This seminar will survey the earlier history of these philosophies, their early twentieth century expressions, their later developments and consequences.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2157 - EXPLANATIONS, CAUSES, AND MECHANISMS

Minimum Credits: 3
Maximum Credits: 3
The seminar will examine some recent philosophical writings on these three topics. Specifically, we will analyze the nature of explanations by mechanisms in a variety of domains and fields, including social science, cognitive science, and neuroscience. We shall also consider multi-level explanations, such as those that relate persons to sub-personal states and environments. Along the way we shall discuss the issues of reduction, emergence, the space of reasons, and the nature of information as used in some sciences. If there is interest and time we may spend a session or two on discovery of mechanisms.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2158 - REDUCTION AND EMERGENCE

Minimum Credits: 3
Maximum Credits: 3
Hierarchical and mereological relationships are often used to describe natural ontological structures. We will consider both the characterization of such structures and reductive and more holistic approaches to their explanation. Topics may include 19th century 'levels of being' and a 20th century revival of emergence with the expansion of computational technologies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2159 - FEMINIST PHILOSOPHY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
If there is a legitimate role for political values in scientific knowledge production, why should those values be feminist? In this course, we will explore the ways that feminist epistemologists and philosophers of science have characterized a positive role for feminist values in scientific theory and practice. We will ask what this means for traditional accounts of science as objective and value-free, and consider possible consequences of feminist arguments for how science ought to be done, and by whom. In particular, we'll examine feminist critiques of essentialism, biological determinism, and reductionism in science, using examples from sex differences research. We'll then consider how political values might play a role in so-called ``good science,'' focusing on underdetermination and the argument from inductive risk. We will examine arguments about the particular role(s) of feminist values in science by attending to the traditions of feminist empiricism and feminist standpoint theory. We will evaluate the consequences of these arguments for concepts of objectivity, for the structure of scientific communities, and for the authority and trustworthiness of scientific explanation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2160 - SCIENCE AND VALUES

Minimum Credits: 3
Maximum Credits: 3
This course will examine values as they appear in scientific reasoning and practice. It will deal with issues such as the distinction between

cognitive and social values, and how values enter into the selection of theories and research projects, and their subsequent applications. It will also take up the ethical assumptions and implications of scientific judgments and policy decisions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2162 - SCIENTIFIC METHODS AND DISCOVERY

Minimum Credits: 3
Maximum Credits: 3
This course will examine the rich history of attempts to describe the methods of science and the processes of scientific discovery. We may consider, seventeen century defenses of inductivism, nineteenth century attempts to codify Newtonian methods by Herschel, Whewell, and Mill , twentieth century empirico-logical methods, and twenty-first century data-driven and automated methodologies. We will consider whether and how processes of discovery and innovation can be captured by such methodological investigations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2163 - SCIENTIFIC CHANGE

Minimum Credits: 3
Maximum Credits: 3
The aim of this seminar is to examine the various attempts made by philosophers, historians, cognitive scientists and sociologists to understand the nature of historical changes in the concepts, methods and theories of the natural sciences. We will consider a range of claims regarding the causes of change, the tempo and scale of scientific change, whether scientific change entails incommensurability, and in what ways it may be progressive or degenerative
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2164 - PRAGMATISM AND SCIENTIFIC PRACTICE

Minimum Credits: 3
Maximum Credits: 3
Adopting a pragmatist stance is increasingly invoked in critiquing fundamentalism, representationalism, and unificationism in epistemology and metaphysics. Is the new pragmatist stance comprised of a set of basic doctrines, or a set of methods, or a set of problems? What are the varieties of pragmatism on offer? What are the relationships between pragmatism with pluralism, perspectivalism and the social nature of scientific practice? In this seminar we will consider recent work on pragmatism in the philosophy of science by Kitcher (2012 Preludes to pragmatism) Chang (2022 Realism for Realistic People), The Pragmatist Challenge (2023 Andersen and Mitchell eds.) and others.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2166 - EMBODIED AND EMBEDDED EPISTEMIC NORMS IN SCIENTIFIC PRACTICES

Minimum Credits: 3
Maximum Credits: 3
The debate about whether or not science is or should be value free invites a deeper investigation into how and where normative values might contribute to scientific judgments. This course will take a naturalist perspective to investigate two situational aspects to scientific judgments: embodied norms as psychological dispositions for judgment, and embedded norms as localized rules of social practices. This will include discussions of pragmatism in relation to scientific practice and the contrast between ideal and non-ideal epistemology in analytic philosophy.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HPS 2170 - LAWS OF NATURE

Minimum Credits: 3
Maximum Credits: 3
The purpose of this seminar is to critically survey recent accounts of the concept of a law of nature, including the origins of the concept of law, regularity accounts, necessitarian accounts, pragmatic and 'no laws' accounts. Depending upon the interests of participants, more specialized topics concerning the role of laws in the social, biological and physical sciences will be taken up.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2171 - THE UNITY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on the changing conceptions of the structure and unity/disunity of science as a whole in the modern era. The seminar explores how these conceptions relate to questions regarding the proper domain of the sciences, the notion of method, skepticism and foundationalism. We will read fundamental philosophical texts from antiquity through modernity to the logical positivists.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2172 - TECHNOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will address topics in the history and philosophy of technology. Possible topics may include the relationship between technology and science, the place of design in technology, technological determinism in the history of science, the role of instrumentation in science, and the ethics of various technologies, including issues of bias, fairness, and surveillance
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2175 - SCIENCE AND METAPHYSICS

Minimum Credits: 3
Maximum Credits: 3
The appropriate relationship between science, philosophy of science, and metaphysics has recently been a topic of considerable controversy. This course will selectively examine the changing historical relationship between these fields in the 20th century before turning toward contemporary debates. Our focus will be on both the broad methodological dispute(s) and certain special topics, such as causation, laws of nature, or modality, where one can see this debate play out.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2180 - TOPICS IN THE HISTORY OF PHILOSOPHY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course deals with selected topics in the history of the philosophy of science. This course may focus on particular individuals, groups, eras, traditions, or themes in the history of the philosophy of science. The contents of the course may vary from one offering to the next.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2190 - METHODS IN HPS

Minimum Credits: 3
Maximum Credits: 3
This course will address different qualitative and quantitative methods that are useful for research in HPS. This may include formal methods, such as game theory, and computational methods, such topic modeling, and methods for oral history and archival research. The contents of the course may vary from one offering to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2222 - DARWIN AND DARWINISM

Minimum Credits: 3
Maximum Credits: 3
Charles Darwin wrote The Origin of Species at a time when John Herschel, William Whewell and John Stuart Mill were attempting to articulate the inductive method of Newtonian science. This seminar explores this major revolution in biology in both philosophical and historical context examining both Darwin's texts, notebooks and letters as well as the intellectual, social and political contexts of the 19th century. We will also consider the content and contexts for subsequent developments of Darwinism in the 20th and 21st centuries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2233 - MODERN EVOLUTIONARY BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
Twentieth and twenty-first century evolutionary biology have been fertile ground for historians and philosophers of biology. This seminar will address historical and philosophical issues arising from the theory and practice of modern evolutionary biology. Topics may include the levels of selection debate, adaptationism and its alternatives, the place of chance and drift in evolution, species concepts and speciation processes, the challenges of phylogenetic inference, and the relationships between evolutionary and ethical accounts of altruism.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2244 - HISTORY OF GENETICS: MENDEL TO METHYLATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HPS 2245 - EUGENICS AND SOCIAL DARWINISM

Minimum Credits: 3
Maximum Credits: 3
This seminar will address efforts to manage human heredity and evolution. We will consider the origins social Darwinism and eugenics in the nineteenth century and its global rise in popularity in the early twentieth century. We will critically examine claims regarding the decline of eugenics in response to its uses in Nazi Germany, and consider late twentieth century efforts of population control, genetic

counseling, genetic engineering, and gene editing as forms of eugenics. We will also grapple with issues regarding the ethics of eugenics
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2260 - THE MOLECULARIZATION OF BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
The rise of molecular biology stands as one of the landmarks of twentieth century biology. In this seminar, we will come to terms with the transformative impact of molecular biology on biology in general. After reviewing different approaches to the history of molecular biology, we will consider how concepts, data, practices, and technologies from molecular biology have altered the fields of genetics, evolutionary biology, systematics, and developmental biology. This seminar will address fundamental questions about scientific change, and how it should be characterized and assessed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2269 - OMICS AND DATA IN BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
The genome projects of the 1990s transformed biology by drawing together biological research with computer automation and a deluge of new data. This seminar will examine historical and philosophical issues surrounding "data-centric" biology, including changes in scientific practice that move it away from experimentation, the rise of model organisms, the explosion of a variety of -omics approaches, the reinscription of identity in genomic terms, and the ownership, regulation, and control of biological data.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2270 - PHILOSOPHY OF BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This seminar will consider foundational conceptual issues in biology including the nature and structure of biological explanation, the possibility of laws in biology and the relationship of biology to other sciences, natural kinds and the classification of species, teleology and biological function. In addition we will explore cutting edge topics of robustness in complex biological systems and the challenges raised for causal inference, emergence and multi-level organization as well as the relationship between unity of science and pluralism.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2275 - CAUSATION AND EXPLANATION IN BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
What is the character of explanation in biology? We will consider mechanistic vs. difference making approaches to causation as well as the way functional (teleological) and structural (network or systems models) explain evolved, adapted systems. What is the role of biological laws, complexity and robustness in shaping causal understanding and explanation in biology?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2276 - BIOLOGICAL COMPLEXITY

Minimum Credits: 3
Maximum Credits: 3
Biological systems are multi-level, historically contingent, robust and evolved structures. What are the special complexities of biological organization and dynamics? Some have identified biocomplexity as the reasons there are no laws of biology, others have defended reductionist strategies to explain the complexity, and others have founded new disciplines, like systems biology, as a response to bio complexity. This seminar explores topics related to ontological and methodological challenges for scientific approaches to knowledge of biological systems.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2278 - RACE: HISTORY, BIOLOGY, PSYCHOLOGY & PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
This seminar will critically examine the intersection of race and science from a number of different disciplinary perspectives. Topics may include philosophical reflection on the biological reality of race, historical accounts of the rise of modern race concepts and their use in scientific research, and the psychology and ethics of race and racial discourse.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2279 - SCIENCE, SEX, AND SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
This seminar will critically investigate scientific theories of biological sex, sex determination, sex difference, and their intersections with scientific approaches to gender and sexuality. We will explore the interplay between science and society with regard to the theories of sex and sexuality that we consider. Specific case studies may include how gender verification criteria were established for the Olympics, how research on sex-gender-sexuality systems has changed over time, and how sex determination research became framed as a balance of male and female factors, on the one hand, and under the control of "master molecules," on the other.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2290 - SPECIAL TOPICS IN HISTORY AND PHILOSOPHY OF BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course deals with selected special topics in the history and/or philosophy of biology. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2330 - HISTORY AND PHILOSOPHY OF NEURAL, BEHAVIORAL, AND COGNITIVE SCIENCES

Minimum Credits: 3
Maximum Credits: 3
This seminar will survey historically important episodes or influential scientists in the neural, behavioral, and cognitive sciences, potentially spanning, ancient and modern approaches to brains and behavior, or focusing more specifically on the context in which particular scientific approaches such as the neuron doctrine or behaviorism gained (or lost) influence within the sciences themselves, and how these scientific developments influenced and were influenced by contemporary philosophy of mind. According to the instructor's

preference, this focus could also be directed towards a particular subarea or approach, such psychophysics, psychometrics, or comparative cognition, towards a method such as electrophysiology, MRI, optogenetics, or lesion studies, or towards a topic such as memory, personality, or rationality.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2353 - PHILOSOPHICAL FOUNDATIONS OF NEURAL, BEHAVIORAL, AND COGNITIVE SCIENCES

Minimum Credits: 3
Maximum Credits: 3
This course will broadly survey several of the main philosophical assumptions underlying current approaches in the neural, behavioral, and cognitive sciences. Students will acquire a comprehensive grasp of issues such as the status of computational and representational theories of mind, the nature of explanation in these sciences, modularity of mind, the significance of embodied and situated theories of cognition, the scientific status of folk-psychological notions such as concepts, beliefs, and consciousness, the relevance of neuroscience to psychology, and vice versa, cognitive ontology, and the possibility of defining cognition.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2354 - ARTIFICIAL INTELLIGENCE AND PHILOSOPHY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This seminar will consider artificial intelligence and machine learning (AI/ML) from the perspective of philosophy of science. Issues addressed by the course may vary from year to year, but they will require critical engagement with several of the following themes: the role of AI/ML in the historical and philosophical foundations of cognitive science and robotics; AI/ML as models of nervous system function, cognitive capacities, and psychological phenomena such as consciousness; explain ability or transparency of AI/ML systems; ethical and other value issues relating arising in scientific and commercial applications of AI/ML; the prospects for automating scientific discovery and scientific reasoning through AI/ML.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2355 - COGNITIVE AND NEURAL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course will examine the theoretical foundations of neuroscience, with a special focus on systems neuroscience, asking what progress has been made towards a general account of neural processing and discussing obstacles to theoretical unification. Example seminar topics are; the neuron doctrine, information theory and the brain, network science, the Bayesian brain, dynamic representation, understanding intrinsic activity, and cognitive architecture.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2356 - MORALITY AND THE MIND- BRAIN SCIENCES

Minimum Credits: 3
Maximum Credits: 3
This course will examine the issues that the behavioral, cognitive, and brain sciences raise in relation to morality. The topics to be covered may be tilted towards ethical issues in these sciences (aka "neuroethics"), or the role of these sciences in understanding and explaining human morality ("moral psychology"). Topics in neuroethics may include neurological and brain enhancement, ethical and policy issues

related to neuroimaging, mind control and "mindreading", and the neuroscience of free will and responsibility as these relate to criminal culpability. Examples of topics in moral psychology and moral cognition include neurodevelopment and the emergence of personhood, agency and the self, and the neural basis of moral judgements
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2358 - ISSUES PERCEPTION AND CONSCIOUS AGENCY

Minimum Credits: 3
Maximum Credits: 3
This course will examine how developments in the behavioral, cognitive, and brain sciences bear on questions about perception, concepts, reasoning, memory, attention and consciousness, which touch on longstanding issues in philosophy such as epistemology, rationality, agency, selfhood, and subjectivity. This course examines recent work on one or more of these topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2359 - METHODS, MODELS, AND MEASUREMENTS IN THE NEURAL, BEHAVIORAL, AND COGNITIVE SCIENCES

Minimum Credits: 3
Maximum Credits: 3
Mathematical, and statistical treatments of behavior and cognition were central to the emergence of psychology as scientific discipline in the late 19th C., were a driving force for developments in statistical testing, in measurement theory, and in computational modeling during the 20th C., and continue to be important for ongoing debates about the so-called replication crisis in psychology, and different views about the value of formal, mathematical, and computational models in cognitive science. Other topics of interest to philosophy of science include the interplay between statistical models and experimental design, particularly where the latter rely on methods that generate large amounts of noisy data, such as EEG or fMRI. Bayesian, information theoretic, dynamical, and mechanistic approaches to explanation all have different implications for understanding the relationship between cognition and nervous systems
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2360 - SOCIAL, CULTURAL, AND EVOLUTIONARY APPROACHES TO THE COGNITIVE SCIENCES

Minimum Credits: 3
Maximum Credits: 3
Methodological individualism has been the predominant approach within the cognitive sciences. And while the importance of social, cultural, and evolutionary factors in the explanation of individual behavior has frequently been acknowledged, it is only recently that the degree to which these factors contribute to experimental results has begun to be systematically investigated. Topics to be covered in this course may include whether there are any cognitive universals, evidentiary gaps in evolutionary psychology, anti-individualism and approaches to group cognition, and other topics related to social, cultural, and evolutionary psychology and neuroscience.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2365 - ANIMAL COGNITION

Minimum Credits: 3
Maximum Credits: 3
This course examines current issues in the science of animal cognition. Specific topics may include whether animals have beliefs, semantically meaningful communication, episodic memory, the capacity to track the mental states of others, the capacity for reasoning,

causal cognition, emotions, and consciousness. The course may also consider the different roles played by laboratory and field studies of animal behavior in the discussion about the tractability of animal minds as a target of scientific investigation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2390 - SPECIAL TOPICS IN HISTORY AND PHILOSOPHY OF NEUROSCIENCE AND COGNITIVE SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course deals with selected special topics in the history and philosophy of neuroscience and / or cognitive science. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2410 - HISTORY AND PHILOSOPHY OF MODERN CALCULUS

Minimum Credits: 3
Maximum Credits: 3
This seminar explores historical, cultural and philosophical questions concerning the history of the calculus. These questions include: Indivisibles quantities vs. infinitesimal quantities, the problem of tangents, fluxions vs. differentials, analysis/synthesis, limits/ integration, discovery/ emergence/ justification in mathematics, the roots of modern mathematics in ancient classical Greek culture, the cultural significance of modern mathematics and the evolution of the disciplinary boundaries that define the structure of science and the way it is taught and practiced in the modern universities. No prerequisites.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2421 - PHILOSOPHY OF MATHEMATICS

Minimum Credits: 3
Maximum Credits: 3
Historical perspectives in philosophy of mathematics, by historical study of philosophical views about mathematics or by philosophical analysis of episodes in the history of mathematics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2422 - PROBABILITY AND STATISTICS

Minimum Credits: 3
Maximum Credits: 3
We shall review the development of the notion that uncertainty and the chaos of chance may be tamed by the application of numbers. We trace its birth in the 17th century as a device for bloodlessly resolving gambling disputes; its growth through statistical theory into one on science's most important analytic tools; and its ascendance in the work of philosophically minded Bayesians as the framework of all belief.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2460 - PHILOSOPHY OF SOCIAL SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This seminar explores issues in social ontology (social objects and social actors) , social causation (methodological individualism and meso- and macro-causes), social explanation (mechanisms, middle-range theories, and laws) and methodology (case-study methods, participant-observer methods, laboratory and statistical methods). We will consider unique issues and resources for sciences of society (rational choice theory, normativity and intentionality).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2490 - TOPICS IN HISTORY AND PHILOSOPHY OF MATHEMATICS

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine recent work at the cutting edge of the history and philosophy of mathematics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2505 - PHILOSOPHICAL FOUNDATIONS OF COGNITIVE SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course will survey the main philosophical questions raised by cognitive science. Students will acquire a comprehensive grasp of the main issues in this field. We will discuss questions such as: Is the mind a computer? Are we rational? What is consciousness?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2509 - SPECIAL TOPICS IN THE HISTORY OF THE PHILOSOPHY OF SCIENCE`

Minimum Credits: 3
Maximum Credits: 3
This course deals with selected special topics in the history of the philosophy of science. It is an intermediate to advanced graduate seminar, usually taken by students in the doctoral program. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2522 - SPECIAL TOPICS IN THE HISTORY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course deals with selected special topics in the history of science. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2559 - THERMDYNMC AND STATISCAL MECHANC

Minimum Credits: 3
Maximum Credits: 3
This course will treat topics in the history and foundations of thermodynamics and statistical mechanics, such as the nature of entropy and irreversibility.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2590 - EINSTEIN 1905

Minimum Credits: 3
Maximum Credits: 3
1905 was the year for Einstein the patent examiner. In papers in Annalen der Physik, he proposed the special theory of relativity, e=mc2, the molecular account of Brownian motion and that light energy came in quanta. In preparation for the centenary of 1905, we will study these papers which laid the foundations of modern physics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2622 - RECENT TOPICS IN PHIL OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
In this seminar we will read and discuss recent works in the philosophy of science. The choice of authors and topics will depend on who is doing the most interesting new work in the field.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2634 - SPECIAL TOPICS IN PHILOSOPHY OF NEUROSCIENCE AND COGNITIVE SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course deals with selected special topics in the philosophy of neuroscience and / or cognitive science. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2643 - PHILOSOPHY OF CLIMATE SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course will explore philosophical questions about climate science. It will begin with central epistemological questions that arise in distinctive ways for climate science: e.g. questions concerning evidence in the historical sciences; the use of simplifying models of complex systems; and the interpretation of computer simulations. It will then broaden the picture by considering the interplay between perspectives emerging from difference sciences (e.g. ecology vs physics) and different varieties of expertise and practical knowledge; the place(s) and problems of values in climate science; choices concerning geoengineering and adaptation research; and scientific thinking about existential risk.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HPS 2667 - PHILOSOPHY OF QUANTUM MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the philosophical problems of quantum mechanics. Topics covered may include: the quantum

measurement problem; non-locality, ¿EPR, and Bell's inequality; the no-go results of Bell/Kochen/Specker, Gleason, and PBR; alternatives to quantum mechanics (such as dynamical-collapse theories and the de Broglie-Bohm theory); the Everett (many-worlds) interpretation and the role of decoherence; operationalist and psi-epistemic approaches to quantum theory. (Not all topics will be covered in all years.)
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2687 - THE EPISTEMOLOGY OF EXPERIMENTAL PRACTICES

Minimum Credits: 3
Maximum Credits: 3
Observation and experimentation have long been taken as central to the legitimacy of scientific claims. This seminar examines the assumptions and inferences involved in reasoning about experimental results.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2705 - HISTORY OF MEDICINE

Minimum Credits: 3
Maximum Credits: 3
This course explores recurring themes in the history of medicine from ancient Greece to the present. These themes include the nature of health and disease, the relation between science and medicine, the evolution of clinical medicine, and the development of medical institutions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2710 - HISTORY OF PSYCHIATRY

Minimum Credits: 3
Maximum Credits: 3
This seminar course will study the history of psychiatry using an integrated history and philosophy of science approach. We will explore ideas and practices in psychiatric research and clinical psychiatry. Topics may include: psychiatry and the asylum, mental disorder and normality, Freudian psychoanalysis, biological psychiatry, the DSM, and the relationship between psychiatry and medicine.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2725 - HISTORY OF PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
This seminar course will study the history of public health science and practice. Topics may include: public health and epidemics, public health and noncommunicable diseases, the history of epidemiology in relation to public health, public health in particular regional contexts, global public health, and public health and colonialism.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2730 - PHILOSOPHY OF MEDICINE

Minimum Credits: 3
Maximum Credits: 3

This seminar course provides a graduate level introduction to the philosophy of medicine. We will explore both classic and recent work. In line with the orientation of the field, we will examine metaphysical/conceptual and epistemic questions in medicine and medical research rather than the kinds of questions traditionally asked in the field of bioethics. Also following the contemporary focus of philosophy of medicine, readings are situated in the philosophy of science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2740 - PHILOSOPHY OF PSYCHIATRY

Minimum Credits: 3
Maximum Credits: 3
This course examines conceptual, methodological, and some historical issues in psychiatry. General analyses of psychiatric disorders and classifications, and their reliability and validity, will lead to a consideration of the DSM and ICD. The function of etiological, reductive, and mechanical dimensions (including genetic and neuroimaging research) will be discussed. Historical topics include the contrast between and transition from psychoanalytical, narrative approaches to the rise of bio-chemical psychiatry. Extended consideration of schizophrenia and depressive disorder will be course themes. The seminar closes with a discussion of legal and ethical issues in psychiatry.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2750 - PHILOSOPHY OF EPIDEMIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This seminar course provides a graduate level introduction to the philosophy of epidemiology, the study of the distribution and determinants of health and disease in populations. Topics may include: epidemiological causal inference, statistics in epidemiology, epidemiological study design, theory in epidemiology, prediction and explanation in epidemiology, the social determinants of health, race in epidemiology, population health, and public health policy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2785 - PHILOSOPHY OF MIND AND MEDICINE

Minimum Credits: 3
Maximum Credits: 3
This seminar course will explore problems at the intersection of philosophy of mind and philosophy of medicine. Topics may include: abnormal states of consciousness, death, medical disorders and identity, empathy and the explanatory gap, pain, mental disorder versus neurological disorder, brain imaging, and free will and medical disorders.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2790 - TOPICS IN HISTORY AND PHILOSOPHY OF MEDICINE

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine recent work at the cutting edge of the history and philosophy of medicine.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2810 - GALILEO AND ALL THAT

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on Galileo's contributions to the cultural revolution of the seventeenth century, including the astronomical discoveries, the physics of falling bodies, the philosophy of nature, the harmony of religion and science. The seminar approaches Galileo in the broader humanistic, philosophical, mathematical and religious context of early modern Europe. His ingenious experiments are really or virtually re-enacted in order to illuminate his creative pathways towards. The seminar traces Galileo's lasting legacy in the controversies that shaped the history and philosophy of modern science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2812 - NEWTON

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the life, work, and legacy of Isaac Newton. It will balance readings from primary texts such as the Opticks and the Principia, and secondary sources covering debates over topics such as: Newton's experimental, mathematical, and philosophical methods; his philosophical conception of space; what exactly about the Principia made it revolutionary; and the further development and reception of Newtonianism as a mode of the scientific enterprise.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2813 - HELMHOLTZ

Minimum Credits: 3
Maximum Credits: 3
Hermann von Helmholtz (1821-1894) played a major role in the history of science and philosophy. This seminar will explore Helmholtz's fundamental contributions especially to the neurophysiology of hearing (including topics such as perception of sound, frequency analysis, harmony) and vision (including topics such as color and depth perception). We will examine Helmholtz's influential idea of perception as unconscious inference and we will also consider his work in physics and the popularization of science. We will place Helmholtz in the intellectual and cultural context of the nineteenth century, investigate the debates that informed his philosophy of science, and look at the lasting influence that he had on twentieth-century science and philosophy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2814 - EINSTEIN

Minimum Credits: 3
Maximum Credits: 3
This seminar covers Einstein's work in physics and his philosophical entanglements, with topics selected according to the interests of the seminar participants. Suitable topics include the papers of Einstein's annus mirabilis of 1905 (the special theory of relativity, e=mc2, the molecular account of Brownian motion and that light energy came in quanta), his discovery of general relativity and its development into modern cosmology and the theory of gravitational waves; his pursuit of a unified field theory; and his more general pronouncements in philosophy of science
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2815 - HISTORY OF OLD QUANTUM THEORY

Minimum Credits: 3
Maximum Credits: 3
This course surveys the development of the old quantum theory from its origins in Planck's work on black body radiation, through Bohr's

atomic model to the emergence of modern quantum theory in the mid 1920's.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2816 - THE MAKING OF MODERN QUANTUM THEORY

Minimum Credits: 3
Maximum Credits: 3
This course covers the major historical developments in modern quantum mechanics from the mid 1920's to the 1960's. Topics may include: Heisenberg's matrix mechanics, Schrodinger's wave mechanics, their theoretical equivalence, von Neumann's axiomatization, the discovery of spin, evidence for wave-particle duality, the rise of the Copenhagen interpretation, the incorporation of group theory representations, quantum logic, the EPR paper, Bell's theorem, and the Everett interpretation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2817 - HISTORY OF PARTICLE PHYSICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2820 - PHILOSOPHY OF SPACETIME AND SYMMETRY

Minimum Credits: 3
Maximum Credits: 3
This course explores the interpretation of spacetime theories (past, present, and perhaps future) and the role of symmetries (spacetime and otherwise) in the development and interpretation of physical theories. Topics covered may include: the debate over the reality of space and spacetime (that is, the debate between relationism and substantivalism); the relation between geometry, coordinate systems and reference frames; the modal, conceptual, and epistemic status of symmetry transformations; the relation between spacetime geometry and gravity. (Not all topics will be covered in all years.)
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2821 - GENERAL RELATIVITY AND GRAVITATION

Minimum Credits: 3
Maximum Credits: 3
Over a period of eight years, 1907 to 1915, working almost single handedly, Einstein made the greatest discovery of his scientific life, the general theory of relativity. We have a detailed record of his process of discovery in both published papers and private notebooks. After the initial excitement, work in general relativity stagnated until the 1960s when a new cohort of mathematical physicists revived work in general relativity with geometrical methods and celebrated singularity theorems. Modern topics include the physics of black holes and gravitational waves
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2826 - PHILOSOPHY OF QUANTUM FIELD THEORY

Minimum Credits: 3
Maximum Credits: 3
This course covers quantum field theory (QFT) and its applications in particle physics and beyond. Topics covered will vary but may include: algebraic and Lagrangian formulations of QFT; the Interpretation of effective field theories; the relation between particles and fields; spontaneous symmetry breaking; the gauge principle.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2828 - PHILOSOPHY OF QUANTUM GRAVITY

Minimum Credits: 3
Maximum Credits: 3
This course covers the conceptual and foundational issues that arise in attempting to create a quantum theory of gravity. Topics covered will vary but may include: canonical quantum gravity and the problem of time; string theory; the AdS/CFT correspondence; black hole thermodynamics; the emergence of spacetime.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2830 - PHILOSOPHY OF THERMODYNAMICS AND STATISTICAL MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This course covers foundational issues in thermodynamics and statistical mechanics. Topics covered may include: the interpretation of the Laws of Thermodynamics, and of central concepts in thermodynamics like equilibrium and reversibility; the Boltzmannian and Gibbsian approaches to statistical mechanics; the relation between thermodynamics and statistical mechanics; the origin of time-asymmetry and irreversibility; Maxwell's demon. (Not all topics will be covered in all years.)
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2840 - PHILOSOPHY OF COSMOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course covers the philosophical challenges posed by modern cosmology. Topics covered will vary but may include: the development of the modern (Big Bang) synthesis; dark matter; dark energy and the cosmological constant problem; the distinctive epistemic and methodological problems thrown up by cosmology; inflation, the horizon problem, and the flatness problem; cosmological fine-tuning.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2844 - MODERN COSMOLOGY

Minimum Credits: 3
Maximum Credits: 3
In 1917 Einstein asked his new general theory of relativity how the universe might look on the largest scale. So was born the modern tradition in cosmology--rich in wild speculation, technical physics and controversy. We shall review its history and philosophy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2850 - PHILOSOPHY OF GAUGE THEORY

Minimum Credits: 3
Maximum Credits: 3
This course studies conceptual and foundational issues in gauge theories. Topics may include: the geometrization of gauge theory, surplus structure and gauge freedom, the Aharonov-Bohm effect, the holonomy interpretation, locality, gauge symmetries and the interpretation of associated physical quantities.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2865 - MATHEMATICS FOR FOUNDATIONS OF PHYSICS

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students specializing in philosophy of physics who would like additional training in the mathematical aspects of foundations of physics. The course will survey mathematical objects most frequently used in foundations of physics (e.g. manifolds, vector spaces, operator algebras, fiber bundles, etc.), together with the philosophical debates that rely heavily upon the relevant areas of mathematics. The approach will be project based: students will choose a topic of philosophical interest and sequentially develop the appropriate mathematical skillset for their chosen project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2880 - HISTORY AND PHILOSOPHY OF MUSICAL SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This seminar explores historical and philosophical questions concerning music as a form of knowledge in the history of Western civilization (with some ethno-musicological excursuses relatively beyond). These questions include (but are not limited to): The emergence of music theory in antiquity; the role of music in the scientific revolution of the seventeenth century; the relation between music as a science and musical aesthetics; music and mathematics; music and cognition in humans and animals; the foundations of modern psychoacoustics; the nature of harmony. We will engage in both theoretical and empirical inquiry and design experiments in the domain of sound and music perception and esthetics
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2890 - TOPICS IN HISTORY AND PHILOSOPHY OF PHYSICS

Minimum Credits: 3
Maximum Credits: 3
This is a survey course for the study of any collection of topics in the history and philosophy of physics, to be determined on the basis of student and faculty interest.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2900 - PRE MA DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides credit for supervised research on an approved master's thesis topic.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

HPS 2910 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
This is an opportunity for a student and instructor to determine a topic in history and/or philosophy of science which is of special interest. Reading assignments are established by individual instructors.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

HPS 2980 - COMPREHENSIVE RESEARCH PAPER

Minimum Credits: 3
Maximum Credits: 3
Students may enroll for up to 3 credit hours in any term immediately preceding or overlapping with submission of the final paper(s) for the Comprehensive Requirement.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2999 - PROSPECTUS RESEARCH

Minimum Credits: 1
Maximum Credits: 6
This course is intended for students who are preparing for their prospectus meeting.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

HPS 3000 - DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 12
Students work on a dissertation topic guided by dissertation director.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

HPS 3900 - ADVANCED DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
Topics to be selected by students in consultation with faculty advisors.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

History of Art & Architecture

HAA 1025 - HISTORY AND ETHICS OF COLLECTING

Minimum Credits: 3
Maximum Credits: 3

This course will critically examine the history of public and private collecting practices, the cultural and scholarly rationales behind collecting, and the legal and ethical challenges that collections face. Case studies will include the british museum and the louvre, Pittsburgh's private collectors frick and mellon, the fate of art in Europe during World War II, the antiquities trade, and ethnographic collections. Using these and other examples, we will evaluate the arguments for and against universal art museums, the repatriation of works to source nations or original owners, and the protection of cultural heritage during times of conflict.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

HAA 2000 - RESEARCH AND THESIS MA DEGREE

Minimum Credits: 1
Maximum Credits: 6
Independent research for m. A. Paper.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2005 - METHODS RESEARCH AND SCHOLARSHIP

Minimum Credits: 3
Maximum Credits: 3
This is the introductory seminar for entering graduate students in the history of art and architecture. As such it has two goals; 1) to explore, through use, the bibliography of reference works central to the history of art; 2) to consider the intellectual history of the discipline, with the various approaches to the work of art revealed in art historical literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HAA 2006 - ART HISTORY WRITING PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
This graduate seminar will give students the opportunity to think critically about the process of art-historical writing and to get constructive, detailed feedback on their own written work.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2007 - HISTORIOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
This class examines the history of analytic approaches to art objects, doing so with an eye to the department's array of research constellations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HAA 2008 - CONSTELLATIONS OF ART HISTORY

Minimum Credits: 3
Maximum Credits: 3
This is a graduate reading course tied to HAA's constellations. Readings will address one of the constellations from multiple perspectives. In lieu of a research paper there will be a series of shorter response papers that vary in format and goals, from brief "blog" entries on a particular reading to longer essays that compare several readings to exploratory papers that apply readings to the interpretation of specific works of art.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HAA 2009 - PRESEMINAR FOR GRADUATE STUDIES IN ART HISTORY

Minimum Credits: 3
Maximum Credits: 3
This course will familiarize students with the professional landscape they will confront as art historians, and give them tools they will need to succeed as they do so. Together, we will co-create a gateway into PhD-level education by focusing on three areas of professional praxis: forms of academic writing, thinking through possible career outcomes and the teaching of art and architectural history.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HAA 2011 - PITTSBURGH NEIGHBORHOODS

Minimum Credits: 3
Maximum Credits: 3
Pittsburgh Neighborhoods is a course where students learn about people, culture, history, and current issues that confront under-represented communities and neighborhoods in Pittsburgh. Throughout the semester, with direction from the instructor, students learn about and employ ways to see, document, and interpret a neighborhood by engaging the built environment, historical documents, and community members in storytelling. They approach the built environment as a cultural product, explore place as a fusion of material culture and human perceptions and practices, and frame questions of power around the politics of the built environment. In this class, we will employ methods that help us transcend the realm of the visual and explore the experiential and ephemeral. We will learn to observe with all our senses, listen to community members, and document life when in the field, and excavate and explore visual and textual records when in the archive. In doing so, we will adopt theories and methodologies from multiple fields, including urban/architectural history, cultural geography, anthropology, public history, and material culture studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC B

HAA 2019 - CURATORIAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This museum studies course draws on the University Art Gallery collection to develop an exhibition that will be realized in the Fall by students in the Exhibition Presentation Seminar. Within a defined thematic or collection-area focus, students will survey the holdings of the gallery to develop an exhibition concept and conduct in-depth research into a single work of art to contribute to a catalogue for the exhibition. Students will explore the key texts related to the subject of the exhibition and identify potential loans to complement its storyline.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2021 - INSIDE THE MUSEUM

Minimum Credits: 3
Maximum Credits: 3

This course will enable students, particularly those who are pursuing the Museum Studies Minor, to gain behind-the-scenes knowledge of museum practices with sessions taught on location at the various Carnegie Museums of Pittsburgh. The course will provide students interested in museum careers with a rich variety of hands-on, practical, and experience-based learning in addition to theoretical exploration and connect students to professionals working in these institutions. Specific topics will vary depending on the opportunities provided by initiatives and projects that are underway at the time the class is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2022 - EXHIBITION PRESENTATION

Minimum Credits: 3
Maximum Credits: 3
This course teaches museum practice through practical experience with the permanent collection and with special exhibitions. Students will help in all aspects of exhibitions, from writing labels and/or catalogue copy, deciding how to best display the works, participating in the actual installation of exhibitions and planning related events such as tours.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HAA 2025 - HISTORY AND ETHICS OF COLLECTING

Minimum Credits: 3
Maximum Credits: 3
This course will critically examine the history of public and private collecting practices, the cultural and scholarly rationales behind collecting, and the legal and ethical challenges that collections face. Case studies will include the British museum and the Louvre, Pittsburgh's private collectors Frick and Mellon, the fate of art in Europe during World War II, the antiquities trade, and ethnographic collections. Using these and other examples, we will evaluate the arguments for and against universal art museums, the repatriation of works to source nations or original owners, and the protection of cultural heritage during times of conflict.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2026 - EXHIBITIONS: FROM WORLD'S FAIRS TO GLOBAL BIENNIALS

Minimum Credits: 3
Maximum Credits: 3
This course surveys the Western origins of museums, world's fairs, and biennials in the 19th century and traces the increasingly global development of exhibitions of visual and material culture up through the present day. Our focus in this long and varied history will be on those shows that have sought, not without controversy, to shape viewers' knowledge of the past, while also structuring their sense of self and relationship to others in national, international, universal, and/or global terms. We'll critically assess the motivations behind these exhibitions and the changing "world picture" each presented in relation to modernizing and globalizing tendencies of the past two centuries. We'll also take a close look not only at what these shows presented, but also how and for what purpose(s) our chosen exhibitions were organized. Whose worldview, ideology, and/or political interests did they serve? How in each case did the very arrangement of objects and the physical context of their presentation seek to articulate those interests? What sort of public did they envision and attempt to create? We'll also address how and to what extent the achievements and shortcomings of earlier exhibitions have informed the character of subsequent shows down to today. Throughout the course, we'll measure our understanding of this history against local examples of Pittsburgh's rich and extensive museum culture. Written assignments will involve students in exploring these and other local installations as we assess what role museums can and should continue to play in fostering understanding of ourselves and others now and into the future.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2027 - HERITAGE SITES

Minimum Credits: 3
Maximum Credits: 3
According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), heritage sites encompass sites of "outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view." This course will develop the fundamental themes, ideas, and case studies required to analyze, understand and critically engage with heritage sites in a comparative and global perspective. We will begin charting the European origins of the western understandings of heritage and exploring the development of national and international heritage legislation, charters and organizations. The course will then explore emerging trends that challenge Eurocentric notions of heritage: from critical heritage studies to approaches that specifically focus on minorities, women, and indigenous groups, and the broader issues of human rights and development. Starting from the second third of the semester, case studies from different geographic areas, time periods and themes will be discussed: heritage sites and national identity; heritage sites and tourism; heritage sites and sustainable development; threats to heritage; negative and difficult heritage; heritage and human rights; heritage futures. Finally, we will discuss the increasing interest in bottom-up initiatives that focus on grassroots, people-centered approaches to foster community engagement and participation in the management, programming and interpretation of heritage.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2028 - EXHIBITIONS AND MUSEUMS IN AFRICA

Minimum Credits: 3
Maximum Credits: 3
Popular culture and politics are addressing displays of African objects with greater regularity than ever before--from French President Emmanuel Macron's 2017 promise to restitute African art from French museums' collections, to the provocative museum scene in the film Black Panther (2018), to the ongoing viral growth of museum activism on social media accounts like DecolonizeThisPlace. Yet, despite this growing awareness of the dilemmas surrounding the collection and display of African art in the West, most U.S. audiences still know little about the presence of museums and exhibitions throughout Africa today. Exhibitions have played a critical role in the continent's histories, whether instrumentalized to uphold colonialism, deployed to strengthen independence struggles, or used as tools to manipulate local and global economies. In this class, a historically- and geographically-diverse array of African exhibitions, museums, and displays will offer the materials through which students become familiar with African histories while grappling with broad theoretical topics, including approaches to memory, coloniality, nationalism, resistance, and reparations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2030 - SPECIAL TOPICS: MUSEUM HISTORIES

Minimum Credits: 3
Maximum Credits: 3
This course will discuss specific subjects in museum studies.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

HAA 2031 - SPECIAL TOPICS: MUSEUM PRACTICES

Minimum Credits: 1
Maximum Credits: 3
This course will discuss specific subjects in museum studies.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

HAA 2040 - INFORMATION ECOSYSTEMS: INTERDISCIPLINARY USES OF DIGITAL METHODS

Minimum Credits: 3
Maximum Credits: 3
This collaboratively taught seminar exposes graduate students to interdisciplinary and evolving digital methods for discovery and knowledge construction in the humanities and allied social sciences. In particular, it focuses on how information flows in and out of sociotechnical systems, the ways that researchers access, arrange, organize and describe information for use in their disciplinary context and how that shapes thoughtful, expansive inquiry. Students will do hands-on work with data and methods and interrogate their affordances and limitations. Mini-units in this course will be led by faculty from a variety departments, including History, Political Science, Economics, English, Sociology, Information Science, and History of Art and Architecture.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HAA 2045 - DIGITAL STUDIES AND METHODS: SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar addresses the relationships between digital computing and the humanities and allied social sciences, both as a subject of both historical interest and contemporary practical concern. We engage in ongoing theoretical discussions but also fully engage with what it takes to implement interpretive research in the digital environment. Students leave this class having gained a personally significant understanding of current debates in the field of digitally-oriented interpretive research as well as having built a digital project of their own. This course serves as one of the core requirements for the graduate certificate in digital studies and methods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HAA 2051 - WORLD ART: CONTACT AND CONFLICT

Minimum Credits: 3
Maximum Credits: 3
This course, an advanced undergraduate seminar, is a counterpart to the introductory core course Introduction to World Art and invites students to think more critically about 'World Art' as a disciplinary enterprise as it emerged in the last several decades with the `global turn', post-colonialism, and a call for art history to be more inclusive. Students will be introduced to key terms that are employed by this discourse (contact zones, planetarity, world-picturing, cosmopolitanism). The course works through these ideas by focusing its attention on specific sites and art objects, case studies that explicitly circulate within or take as their subject the meeting point of different cultures and groups. First and foremost, this course regards `the contact zone' as a messy and complicated place. To inhabit the earth as a human being, people encounter, perceive, collaborate with and often resist others. Through the spaces and material objects humans create, boundaries are established and individuals and communities are defined and circumscribed. Art objects and constructed spaces not only arise from but define the contact point of individuals or groups occupying different worlds. By studying these works as a space of encounter, students will learn that boundaries between people are porous, with cultural contact a zone of potentially productive collaboration but also power inequity and strife. How do works of art and built spaces incite, mediate, or instantiate such strife? How have people traditionally perceived to reside at the periphery employed artistic expression or rhetorical strategies to subvert existing power structures (the center) and formulate identity? Students who have taken the HAA 0010 Introductory version of this course are encouraged to take this more advanced version, but it is not necessary to have had HAA 0010 to enroll in HAA 1050
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2060 - SPECIAL TOPICS PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
Practicum courses will focus on critical skills, cognitive competencies or disciplinary topics central to advancing the professional expertise of students
Academic Career: Graduate

Course Component: Practicum
Grade Component: Grad Letter Grade

HAA 2061 - SPECIAL TOPICS WORKSHOP

Minimum Credits: 1
Maximum Credits: 3
Workshops will focus on critical skills, cognitive competencies or disciplinary topics central to advancing the professional expertise of students.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

HAA 2101 - SPECIAL TOPICS: ARCHITECTURE

Minimum Credits: 3
Maximum Credits: 3
Course varies from term to term.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HAA 2103 - RELIGIONS OF ANCIENT EGYPT

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to ancient Egyptian religious thought and practices with its massive temples, multitude of gods and goddesses, and fascinating funeral rites. The course includes a group project to design a hypothetical Egyptian exhibit for a museum and sessions at the Carnegie museum of natural history.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2107 - JERUSALEM HISTORY AND IMAGINATION

Minimum Credits: 3
Maximum Credits: 3
Jerusalem was and remains both a magnet for cultic devotion and an epicenter of religious conflict. This course examines the political, religious, and cultural history of Jerusalem, focusing primarily on Jerusalem as a concrete and conceptual phenomenon in the premodern period. Beginning our story in the bronze age, we will explore a wide range of sources-literary, archaeological, and iconographical-that bear witness to the remarkable transformation of a small, backwater village in the hills of Canaan to a sacred center for millions of Jews, Christians, and Muslims today. We will study the political, physical, and conceptual development of this urban space through its multiple destructions and reconstructions, considering the emergence of Jerusalem as a sacred space, an apocalyptic space, and a contested space.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2111 - GREEK ART

Minimum Credits: 3
Maximum Credits: 3
The study of Greek art begins ca. 3000 B.C. In the so-called "age of bronze" and traditionally ends in 30 B.C. With the completion of the roman conquest of the eastern Mediterranean. The course will trace the development of architecture, sculpture and painting in mainland Greece and to a lesser extent in the Greek colonies of Asia minor and Italy, emphasizing the changes in style and taste which took place

over this period.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2200 - SPECIAL TOPICS-MEDIEVAL

Minimum Credits: 3
Maximum Credits: 3
Special topics in medieval art.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Medieval & Renaissance Studies

HAA 2300 - SPECIAL TOPICS-RENAISSANCE

Minimum Credits: 3
Maximum Credits: 3
Special topics in Renaissance art.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HAA 2400 - SPECIAL TOPICS-MODERN ART

Minimum Credits: 3
Maximum Credits: 3
Special topics in modern art.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

HAA 2401 - SPECIAL TOPICS-CONTEMPORARY

Minimum Credits: 3
Maximum Credits: 3
Special topics in contemporary art.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HAA 2404 - SPECIAL TOPICS: MODERN-LECTURE

Minimum Credits: 3
Maximum Credits: 3
Special topics in modern art.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2451 - ART IN THE WEIMAR REPUBLIC

Minimum Credits: 3
Maximum Credits: 3
The course will examine art and architecture in Germany from the end of World War I to the rise of the national socialist dictatorship in 1933. Emphasis will be on a chronological study of the ways in which art developed in Germany under democratic social concepts and a new internationalist outlook in the early years of the republic, and the ways art became embedded in the political structures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2455 - ART OF THE THIRD REICH

Minimum Credits: 3
Maximum Credits: 3
This course examines national socialist art and the fate of modernism under Hitler in the years between 1933 and 1945. As we will explore, Hitler's regime enlisted the arts and architecture, through party rallies, art exhibitions, building programs, and film, in enforcing its dictatorial policies on everything from the extermination of the Jews to sexuality and the war effort. We shall also consider the impact of the purge of modern art under Hitler on the work of such noted modernists as Otto Dix and Kite Kollwitz, who chose to remain in Germany, and on the art of those who fled into exile, among them John heart field, George Grosz, and Max Beckmann. The final weeks of the course will consider critical issues involved in recent--and invariably controversial--attempts in museum building, sculpture, and site-specific installations to memorialize the holocaust and examine Germany's Nazi past.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2491 - ART SINCE 1945

Minimum Credits: 3
Maximum Credits: 3
This course will present a review of art movements in America and Europe form 1905 - 1945 in the introduction, followed by a more intensive study of post-World War II art movements in Western Europe and America from 1945 to the 1980's. We will give special attention to: a) different styles of art which fit into the label "abstract expressionism" b) different styles under "pop(ular) art" c) conceptual art movements d) issues in critical evaluations of contemporary art.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2520 - BLACK BUILT AMERICA: ARCHITECTURES OF BLACK RESISTANCE IN THE UNITED STATES

Minimum Credits: 3
Maximum Credits: 3
This course offers a critical history of the Black labor, creativity, craftsmanship, engineering, and activism that built the United States of America. It is undeniable that Black Americans and African Americans have been brutally marginalized by the instruments of systemic racism including segregation, redlining, eviction, and more recently gentrification. In this class, however, that very real and continuing history of oppression is studied as the fuel for the creative agency of Black individuals and communities. Appropriating, intervening, and shaping the built environment became one of the many forms of Black resistance to racism and systemic injustices. In doing so, Black hands and Black minds shaped the very fabric of America's landscape. Our class begins and ends in Washington DC, posing important questions about the hidden and overt symbols of Black heritage in the nation's capital.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HAA 2612 - SPECIAL TOPICS-ASIAN

Minimum Credits: 3
Maximum Credits: 3
Special topics in Asian art.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2630 - CHINA: VILLAGE & URBAN ARCHITECTURAL SPACE

Minimum Credits: 3
Maximum Credits: 3
The design of Chinese cities is guided by philosophical principles established in the early dynastic period. Imperial cities follow a regular grid pattern that faces south, and includes an inner city, open only to the imperial leaders and aristocrats, and an outer city in which the business is carried out. The design and use of the city is guided by Confucian and Daoist ideals. Religious centers follow palace designs, but are tied to Buddhist, Confucian and Daoist practice. Village centers are arranged according to Daoist ideas about nature called Fengshui.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2641 - MODERN AND CONTEMPORARY CHINESE ART

Minimum Credits: 3
Maximum Credits: 3
This course examines art in China since ca. 1900, a period of major cultural transformation. Beginning with the collapse of the 2000-year-old imperial system and ending with the globalized nation-state, students will analyze works in a wide range of media, including ink and oil painting, printmaking and photography, architecture, and video and performance art. Modes and movements range from "national painting" (guohua) and modernist design to socialist realism and state propaganda, contemporary craft, and experimental calligraphy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2692 - BUDDHISM CIVILIZATION ALONG THE SILK ROAD

Minimum Credits: 3
Maximum Credits: 3
This class serves as an introduction to Buddhism from its origins through the seventh century CE as it moved along the Silk Road, the ancient EurAsian trading network that is considered one of the earliest and most important super highways of trade and culture. Concomitantly, it serves as an introduction to the silk road as the scenario for contact and exchange. The emphasis is on religious praxis, the actors and places that transformed Buddhism and were transformed by it. We will examine archaeological remains and art and discuss how they complement or sometimes contradict textually-based historical narratives. Through the examination of four case studies we will discuss questions related to religious interaction as embodied in material culture and analyze it in context.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2901 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Directed study for M.A. Students.
Academic Career: Graduate
Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Directed study for M.A. Students.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2903 - GRADUATE INTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
Academic credit is awarded for experience gained through a directed internship. The internship is arranged by the student in consultation with the director of graduate studies in the history of art and architecture department.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

HAA 2905 - COMPREHENSIVE EXAM PREPARATION

Minimum Credits: 1
Maximum Credits: 9
This course is an independent study for Ph.D. students who are actively preparing for their comprehensive exams. The student works under the supervision of a dissertation advisor, with the assistance of other members of the dissertation committee. Committee and student agree on bibliographies in advance, and the student is encouraged to discuss the readings on a regular basis with his or her advisor and other members of the committee if necessary.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2906 - DISSERTATION PROSPECTUS

Minimum Credits: 1
Maximum Credits: 9
This course is an independent study for Ph.D. students who are preparing their dissertation prospectus. Working under the supervision of a dissertation advisor, the student writes a prospectus that summarizes the dissertation topic, its original contribution to the field, and its methodology. The prospectus should also include a brief chapter outline, a research plan, and a bibliography-the whole document totaling approximately 10 to 20 pages.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2951 - MENTORING INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
This course provides an opportunity for graduate students to mentor undergraduates under the supervision of a faculty instructor. The

course is designed to enable graduate interns to mentor individual undergraduates, or small groups, who are engaged in advanced research or other projects in the University art gallery or digital media workshop or elsewhere under faculty supervision. Supervising faculty will meet regularly with the graduate intern to design and monitor the mentoring experience, and to discuss the practice of mentoring.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

HAA 2970 - TEACHING OF ART HISTORY

Minimum Credits: 1
Maximum Credits: 3
Taken simultaneously with independent teaching by graduate students.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9
Dissertation research for Ph.D.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 3901 - INDIVIDUAL RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Honors

HONORS 0011 - CHANCELLOR SCHOLARS SEMINAR 2

Minimum Credits: 1
Maximum Credits: 1
This is the second course in a two-semester informational seminar sequence for first-year Chancellor Scholars. Students will gain a better understanding of an issue from a multi-disciplinary perspective through discussions with faculty and experiential learning activities. Students will also learn about the services, functions, policies, and opportunities available through the David C. Frederick Honors College.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: Satisfactory/No Credit

HONORS 1905 - BPHIL THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 6
Undergraduates pursuing the bachelor of philosophy degree through the honors college may register for this course only after their thesis

proposal has been approved and they have been admitted to honors college candidacy.
Academic Career: Undergraduate
Course Component: Thesis Research
Grade Component: Satisfactory/No Credit

Human Behavior

SWBEH 2008 - HUMN BHVR: URBAN ENVIRONMENT

Minimum Credits: 3
Maximum Credits: 3
This course deals with collective behavior and societal values relative to key urban issues, particularly race, gender, and poverty. Guest experts will lecture, with the course drawn together, coordinated, and enriched by a single instructor of wide experience, both in teaching and in running a large innovative agency.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWBEH 2063

SWBEH 2060 - HUMAN BEHAVIOR: HEALTH & AGING

Minimum Credits: 3
Maximum Credits: 3
This Human Behavior in the Social Environment course examines how people age within real world health and social systems. It introduces core theories of human development and behavior across the lifespan and applies them to the experiences of children, adolescents, adults, and older adults who must navigate complex and often fragmented systems of care. Grounded in a biopsychosocial spiritual cultural framework, the course emphasizes that aging is a lifelong process shaped by biological, psychological, social, environmental, cultural, and spiritual factors. Students explore typical and atypical aging, including cognitive, emotional, physical, and social changes, and examine how system fragmentation contributes to unmet needs, preventable suffering, and significant health disparities. The course also introduces integrated behavioral health models in primary care that aim to improve access, coordination, and quality of care for older adults and their families. Students critically examine how older adults are conceptualized within society and how ageism, racism, sexism, heterosexism, poverty, and other forms of oppression influence the experience of aging and the design of care systems. Themes of heterogeneity, resilience, continuity, and competency inform discussions of diverse later life pathways, including healthy aging, multimorbidity, caregiving, and end of life. Within an integrated gerontological context, the course highlights the roles of social workers as behavioral health providers on primary care teams. Students build competencies in engagement, screening, assessment, brief intervention, treatment planning, interdisciplinary collaboration, and culturally responsive practice. Case based activities support the application of HBSE concepts to real world scenarios involving older adults, caregivers, and health and social service teams.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SWBEH 2062 - HUMN BHVR: CHLD FMLY AT RISK

Minimum Credits: 3
Maximum Credits: 3
Building upon generalist Human Behavior in the Social Environment (HBSE), this course examines the concepts of risk and resilience in relation to individual and family functioning within broader social, cultural, political, and economic contexts. It explores developmental issues and life challenges facing children and families through a multidimensional framework that incorporates biological, psychological, and social variables. Emphasis is placed on issues of race, ethnicity, class, culture, religion, sexual orientation, gender, and other intersecting factors in understanding child and family functioning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWBEH 2063

SWBEH 2063 - HUMAN BEHAVIOR & SOCIAL ENVRNMNT

Minimum Credits: 3
Maximum Credits: 3
This course analyzes theories of human behavior in the social environment from a lifespan developmental approach. It is designed to build students' understanding of the ramifications of the person-in-environment framework, which considers the social, biological, and psychological influences of the environment. Students will explore how social structures, social policies, and cultural patterns affect individuals at all stages of life.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWBEH 2065 - HUMAN BEHAVIOR: MENTAL HEALTH

Minimum Credits: 3
Maximum Credits: 3
This course addresses the etiology, nature, course and treatment of mental disorders across the life cycle. Some mental illnesses begin early in life, and may continue throughout life, being modified by growth and development; others begin later in life or are specific to a particular stage in the life cycle; while others occur in response to environmental circumstances and stressors. Furthermore, gender, race, culture, ethnicity, socioeconomic status and other aspects of diversity shape how symptoms of mental illness are experienced, interpreted and expressed. A selection of the major categories of mental disorder and abnormal behavior will be addressed although it will not be possible to examine all of them in class. Understanding and applying the DSM-IV-TR manual as a clinical assessment tool, an introduction to psychopharmacology, and the nature and role of risk and protective factors associated with suicidal and violent behavior will also be addressed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWBEH 2063

SWBEH 2066 - HUMAN BEHAVIOR: HEALTH/MENTAL HEALTH

Minimum Credits: 3
Maximum Credits: 3
Building upon generalist HBSE, this course explores physical and mental health issues throughout the life course, using multiple theortical frameworks. Students become famillliar with evidence based and culturally responsive inteventions and approaches with a focus on the physical and behavioral health aspects of well-being. The course reviews environmental contexts of health care including the role of community, organizational, regulatory, financial, and cultural factors. Students gain knowledge about social work practice in various physical and mental health care settings, including hospital and community.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWBEH 2063

SWBEH 2077 - HUMN BHVR: ADLT DVLP AGING

Minimum Credits: 3
Maximum Credits: 3
This course focuses on substantive content during adulthood (early and middle age) and old age. This course offers a framework for understanding mid-life and old age from a life-span developmental perspective and examines physical, social (environmental), and personal factors that influence the developing personality. The knowledge is integrated and appraised for its usefulness in working directly with and/or in behalf of middle-aged and older persons.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWBEH 2063

Human Genetics

HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS

Minimum Credits: 1
Maximum Credits: 1
The focus of this course is the online bioinformatic resources available to geneticists. Students will learn to locate and use such resources and interpret the data therein to inform the development of research questions, aid in clinical decision-making, and enhance the understanding and contextualization of research results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Human Genetics or Public Health Genetics or Genetic Counseling

HUGEN 2011 - SCIENTIFIC WRITING IN HUMAN GENETICS

Minimum Credits: 1
Maximum Credits: 1
Writing and communication skills are amongst the most important assets for any human genetics researcher and/or public health genetics professional. Scientific Writing in Human Genetics is designed to empower Human Genetics students to establish the communication mindset to write clear and compelling scientific narratives and to complete a solid draft of the Background/Introduction and Specific Aims sections of their Thesis or Dissertation research proposal document (or another academic work document with permission of the instructor).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2012 - WRITING IN CLINICAL AND PUBLIC HEALTH GENETICS

Minimum Credits: 1
Maximum Credits: 1
This course promotes development of written communications skills through facilitated discussions, readings, writing exercises, constructive peer-reviewing, input from the instructor, and scientific review from content experts. Further, this course provides a structured format for students to make progress on their MPH essay, MS thesis, or other academic work. By the end of this course students will be able to write clear scientific narratives in plain language and will have completed major sections of their essay, thesis, or other scholarly work.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: GNCSLG-MS or PHGEN-MPH

HUGEN 2020 - INTRODUCTION TO POPULATION GENETICS AND GENETIC EPIDEMIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This survey course covers the principles of population genetics as applicable to human populations, including (1) the laws of inheritance that govern the organization of the genomes in populations, (2) the evolutionary forces and phenomena that impact genetic diversity in human populations, and (3) the foundational concepts of genetic epidemiology and gene discovery.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HUGEN 2021 - SPECIAL STUDIES

Minimum Credits: 1
Maximum Credits: 15
Qualified students may undertake advanced work or research with the approval and under the guidance of a member of the staff.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

HUGEN 2022 - HUMAN POPULATION GENETICS

Minimum Credits: 2
Maximum Credits: 2
This survey course covers the principles of population genetics as applicable to human populations, including (1) the laws of inheritance that govern the organization of the genomes in populations, (2) the evolutionary forces and phenomena that impact genetic diversity in human populations, and (3) the foundational concepts of genetic epidemiology and gene discovery.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HUGEN 2025 - HUMAN GENETICS SEMINAR

Minimum Credits: 0
Maximum Credits: 0
Human genetics seminars present current genetics methodology, theory, and data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

HUGEN 2026 - SPECIAL STUDIES HUMAN GENETICS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide advanced undergraduates and graduate students with directed, intensive training in laboratory, statistical or clinical research methods relevant to human genetics. These specialized skills are not available in regularly taught courses in the university. Each special study is designed in consultation with an individual member of the human genetics faculty.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2028 - HUMAN GENETICS JOURNAL CLUB AND PEER REVIEW

Minimum Credits: 1
Maximum Credits: 1
Human genetics journal club provides students and faculty with an opportunity to present and discuss exciting research in an informal format. The purpose of the course is to hone students' oral and written critical evaluation skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2029 - INTRODUCTION TO GENE MAPPING

Minimum Credits: 3
Maximum Credits: 3

This course presents a literature-based approach to understanding and interpreting results from gene mapping papers in the field of human genetics. Traditional and state-of-the-art genetic mapping methodologies will be explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HUGEN 2020 and 2040 and BIOST 2041

HUGEN 2032 - GENETIC TECHNIQUES

Minimum Credits: 2
Maximum Credits: 2
Students participate in laboratory exercises to become acquainted with cytogenetics laboratory procedures including cell culture, chromosome preparation, chromosome banding, and karyotyping. Chromosome analysis and karyotype interpretation are practiced.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PLAN: HUGEN-MS or HUGEN-PHD or PHGEN-MPH or GNCSLG-MS or GENBINF-MS

HUGEN 2035 - PRINCIPLES OF GENETIC COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course addresses fundamental concepts important to genetic counseling principles and practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2035 - PRINCIPLES OF GENETIC COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course addresses fundamental concepts important to genetic counseling principles and practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: GNCSLG-MS or MPHMSG-TR or instructor permission

HUGEN 2035 - PRINCIPLES OF GENETIC COUNSELING

Minimum Credits: 3
Maximum Credits: 3
This course addresses fundamental concepts important to genetic counseling principles and practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: GNCSLG-MS or MPHMSG-TR or instructor permission

HUGEN 2036 - GENETIC COUNSELING INTERNSHIP

Minimum Credits: 4
Maximum Credits: 4
For this course, students will participate in supervised genetic counseling clinical rotations in a variety of specialty areas. The lectures that are part of the course will address topics relevant to clinical genetics and counseling.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Genetic Counseling (MS)

HUGEN 2037 - GENETIC COUNSELING PROFESSIONAL DEVELOPMENT AND RESEARCH SERIES

Minimum Credits: 2
Maximum Credits: 2
This course is participatory with opportunities to engage in activities that promote the acquisition of skills and knowledge in the areas of professional development and research. The completion of several thesis project milestones is an important outcome of the research module. The research module of the course examines various research methodologies, the ethical conduct of research, and the dissemination of research findings such as writing abstracts and constructing posters. The professional development module addresses items related to transitioning into and succeeding within the workforce.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PREQ: HUGEN 2035 and HUGEN 2038

HUGEN 2038 - INTERVENTION SKILLS FOR GENETIC COUNSELING

Minimum Credits: 3
Maximum Credits: 3
Focuses on the understanding of theories of intervention, skill development and application to genetic counseling. The course aims at sensitizing students to the ethical dilemmas faced by affected families and health-care providers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Genetic Counseling (MS)

HUGEN 2039 - GENETIC COUNSELING RISK ASSESSMENT AND APPLICATION

Minimum Credits: 1
Maximum Credits: 1
Genetic risk can influence patient decision making, management, and adaptation. Consequently, accurate risk assessment is a fundamental skill of genetic counseling. Genetic counseling sessions often involve calculating risk using a variety of probability and risk models and the process can incorporate clinical and laboratory information to accurately tailor risk assessment for a patient. This course provides hands-on training in assessing risk in a variety of genetic counseling situations, and understanding clinical elements that can influence risk interpretation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HUGEN 2035 and 2038; CREQ: HUGEN 2020; PLAN: GNCSLG-MS or MPHMSG-TR

HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE

Minimum Credits: 3
Maximum Credits: 3
This course will provide an overview of selected human inherited disorders and integrate clinical descriptions with recent genetic, molecular genetics and biochemical insights. Current state of the art molecular genetics methodologies will be integrated into the overviews.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2047 - CLINICAL GENETICS CASE CONFERENCE

Minimum Credits: 1
Maximum Credits: 1
With clinical cases and specimens from various clinical genetics service units, this seminar illustrates and provides insights into the biologic, medical, ethical, and emotional aspects of genetic disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS

Minimum Credits: 3
Maximum Credits: 3
This course provides a framework in which to assess how advances in genomics may be applied to public health practice and policies that affect both individuals and society. In addition, the ethical, legal, and social consequences of historical, current, and future interventions are considered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HUGEN 2050 - PUBLIC HEALTH GENETICS PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
The practicum is a short term field placement (minimum 200 hours of public health oriented work) with an organization or agency that is relevant to the student's area of interest. Each placement must be agreed upon by the student and the MPH program advisor.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Public Health Genetics (MPH or CERT)
Course Attributes: Community Element -General Community Impact

HUGEN 2051 - INBORN ERRORS OF DEVELOPMENT

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the connections between human development and inherited disease. The course will include core principles of development of the body plan and signaling pathways involved in development and differentiation. These biological processes will be used to categorize inherited human diseases, understand disease mechanisms, and the current efforts to develop targeted treatments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2052 - ETHICAL ISSUES IN GENETIC COUNSELING

Minimum Credits: 1
Maximum Credits: 1
Advances in genomic technology have the potential to benefit patients and their families and will likely provide novel approaches to the management and treatment of genetic conditions. Since the early days of clinical genetics, ethical challenges relating to the use of genetics emerged and will continue to persist as technological advances continue to impact clinical care. This course provides an opportunity to explore ethical challenges in clinical genetics and genetic counseling and to examine these issues within the context of genetic counseling practice. Throughout the course a broad range of historical, contemporary, and emerging ethical issues in genetics are addressed. The format of the course includes lectures, discussions, and group work to provide a framework for analyzing arguments in the literature and to

encourage students to assume responsibility for engaging in ethical analysis as they enter the genetic counseling profession.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis
Course Requirements: CREQ: HUGEN 2035 or 2049; PLAN: HUGEN-MS or GNCSLG-MS or MPHMSG-TR or PHGEN-CR4 or PHGEN-MPH

HUGEN 2053 - APPLICATIONS IN PUBLIC HEALTH GENETICS AND GENOMICS

Minimum Credits: 2
Maximum Credits: 2
This graduate level course builds on the basic components of public health genetics and genomics and provides students with the opportunity to discuss and apply these concepts to public health. The goal of this course is for students to apply knowledge and skills learned across public health disciplines, especially the use of genetic principles, in a public health practice setting. Using current issues in public health genetics, students will also demonstrate mastery of essential competencies through data analysis, and oral and written communication.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2041 or BIOST 2011; CREQ: HUGEN 2049; PLAN: Human Genetics or Genetic Counseling or Public Health Genetics

HUGEN 2054 - APPLICATIONS IN PUBLIC HEALTH GENETICS AND GENOMICS

Minimum Credits: 3
Maximum Credits: 3
This graduate level course builds on the basic components of public health genetics and genomics and provides students with the opportunity to discuss and apply these concepts to public health. The goal of this course is for students to apply knowledge and skills learned across public health disciplines, especially the use of genetic principles, in a public health practice setting. Using current issues in public health genetics, students will also demonstrate mastery of essential competencies through data analysis, and oral and written communication.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2056 - GENETIC CONDITIONS AND PUBLIC HEALTH PROGRAMS

Minimum Credits: 2
Maximum Credits: 2
This graduate level course focuses on teaching genetic conditions that are being addressed by public health genetics programs. The goal of this course is to educate students on the natural history, available screening and/or genetic testing, and prevention strategies of these genetic conditions as well as the influencers of access to genetic services by at-risk individuals in the population.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2057 - INTERNSHIP IN HUMAN GENETICS

Minimum Credits: 1
Maximum Credits: 1
This internship course offers experiential training in real-world research settings including industry and private research institutions. Students earn academic credit for research and related professional activities pertaining to the field of human genetics. Students, in conjunction with a University of Pittsburgh faculty member and optionally with an internship preceptor, will formulate individualized learning objectives and academic deliverables originating from the internship experience.
Academic Career: Graduate

Course Component: Internship
Grade Component: Grad HSU Basis

HUGEN 2058 - SPECIAL STUDIES IN HUMAN GENETICS

Minimum Credits: 1
Maximum Credits: 15
This course provides students with directed training in laboratory, computational, statistical or clinical methods and theory relevant to human genetics. These specialized skills and specific concepts are not available in regularly taught courses in the university. Each special study is designed in consultation with an individual member of the human genetics faculty.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis

HUGEN 2059 - CURRENT TOPICS IN PUBLIC HEALTH

Minimum Credits: 1
Maximum Credits: 1
This seminar-style course focuses on current topics in the field of Public Health Genetics. Students and instructors will discuss current issues as presented in journal articles, news media, and other resources within the field.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HUGEN 2049

HUGEN 2060 - CHROMOSOMES - STRUCTURE AND FUNCTION

Minimum Credits: 2
Maximum Credits: 2
Chromosomes are the primary means of biologically organizing and manipulating nuclear DNA within the cell, across cell generations, and across sexual generations. In this course we will investigate how differences in chromosome structure and function affect the roles chromosomes play as dynamic "megamolecules" in reproduction, development, health and disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2061 - CANCER GENETIC COUNSELING

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide students with the knowledge and skills fundamental to the practice of cancer genetic counseling. The overall goal of the course is to allow students to apply cancer genetics knowledge to clinical situations. The course will cover hereditary cancer syndromes, cancer risk assessment models, and germline and somatic genomic testing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HUGEN 2035 and COREQ: HUGEN 2060; PLAN: HUGEN-MS, HUGEN-PHD, PHGEN-MPH, GNCSLG-MS, or PHGEN-CR4

HUGEN 2062 - ETHICAL ISSUES IN PUBLIC HEALTH GENETICS AND RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course introduces and assesses a broad range of contemporary issues in public health ethics and policy, with particular emphasis on

genetics in research and population health. The course begins with an exploration of normative frameworks and concepts to which ethicists and policy-makers commonly appeal when addressing public health issues and justifying public health interventions. The course then surveys a number of public health ethics and policy issues, particularly those tied to population genetics and genetics/genomic research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: PHGEN-MPH

HUGEN 2063 - GENETIC COUNSELING IN PRACTICE: SIMULATION AND SKILL BUILDING

Minimum Credits: 1
Maximum Credits: 1
This course provides genetic counseling students with structured opportunities to apply and refine the foundational counseling skills. Through a series of progressive patient simulation experiences, students practice initiating and conducting genetic counseling sessions across different specialties. Emphasis is placed on client assessment, communication of genetic concepts, and the integration of counseling interventions in a supportive, skills-based learning environment.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad SN Basis

HUGEN 2071 - GENOMIC DATA PROCESSING AND STRUCTURE

Minimum Credits: 3
Maximum Credits: 3
Bioinformatics involves an in-depth understanding of data and a substantial amount of data processing. This course focuses on the manipulation and management of human genetic and genomic data via two platforms: the R statistical computing environment and the Unix operating system. The course will also cover the major data formats and structures used to store human genetic and genomic data. A key component of the course will be hands-on analyses of example data sets in a variety of formats.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HUGEN 2022; CREQ: HUGEN 2020 and BIOST 2041; PLAN: GENBINF-MS

HUGEN 2072 - GENOMIC DATA PIPELINES AND TOOLS

Minimum Credits: 3
Maximum Credits: 3
This course will teach the analytical methods and tools used for genotype data quality control, sequencing read alignment, base calling, genotype calling, quantitative sequencing methods, data harmonization, genotype imputation, and statistical analysis and meta-analysis through the development and implementation of next-generation whole genome sequencing and RNA-Seq pipelines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HUGEN 2071

HUGEN 2073 - GENOMIC DATA VISUALIZATION AND INTEGRATION

Minimum Credits: 3
Maximum Credits: 3
This course will teach principles of data visualization and data visualizations that are specific to genetic and genomic analyses. It will also delve into the integration of data from multiple resources to appropriately annotate genetic associations with relevant information from a variety of repositories of genetic, genomic and other "omic" data.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOST 2041 and HUGEN 2020

HUGEN 2074 - GENOME BIOINFORMATICS CAPSTONE

Minimum Credits: 6
Maximum Credits: 6
The capstone course provides students in the Master of Science in Genome Bioinformatics with the opportunity to expand their repertoire of analysis and professional skills and communicate results of their internship to faculty and fellow students. As part of this course, students will develop final analyses based on their internship data or use other (faculty-provided) data if the results of their summer internship project are not appropriate thesis material. The capstone course will ensure that the thesis project demonstrates the student's competency in genome bioinformatics as well as communication skills in general.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2075 - GENOME BIOINFORMATICS THESIS AND WRITING

Minimum Credits: 2
Maximum Credits: 2
The thesis writing course provides students in the Master of Science in Genome Bioinformatics with skills requisite for writing documentation covering project and analysis relevance, scientific gaps, describing research opportunities to address those gaps, and summarizing and contextualizing research project results. It will improve their general scientific writing skills. Coming into the course, the students will have completed their research project analysis. At the end of the course the students will have completed their thesis document describing that analysis for review by the MSGB thesis committee.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

HUGEN 2076 - GENOME BIOINFORMATICS CAPSTONE

Minimum Credits: 2
Maximum Credits: 2
The capstone course is a directed and mentored bioinformatics data analysis project course that results in completed thesis project for students in the Master of Science in Genome Bioinformatics. Students will develop a research question, create an analysis plan, and implement that plan while presenting milestone updates on the status of their research project. The project results will be the basis for the project's thesis report in HUGEN 2075.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Genome Bioinformatics(GENBINF-MS)

HUGEN 2077 - GENOME BIOINFORMATICS PROFESSIONAL SKILLS

Minimum Credits: 2
Maximum Credits: 2
This course prepares students with skills for future roles as bioinformatics professionals such as public speaking, project management, budgeting, negotiation, and working with principles of data ethics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Genome Bioinformatics(GENBINF-MS)

HUGEN 2078 - GENOMIC DATA ADVANCED TOPICS IN BIOINFORMATICS

Minimum Credits: 2
Maximum Credits: 2
This course introduces students to advanced topics in genome bioinformatics programming, DNA and RNA sequencing, data visualization, variant and gene annotation, and integration of molecular phenotypes (omics) into analyses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HUGEN 2071 and 2072 and 2073

HUGEN 2079 - GENOMIC DATA ANALYSIS WITH MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE

Minimum Credits: 2
Maximum Credits: 2
This course introduces students to methods and approaches employing machine learning and artificial intelligence (AI) in DNA and RNA sequencing, exploratory data analysis, variant and gene annotation, and the integration of molecular phenotypes (omics) with genomics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: GENBINF-MS

HUGEN 2080 - STATISTICAL GENETICS

Minimum Credits: 3
Maximum Credits: 3
This advanced course discusses the principles and practice of statistical genetics in the area of genetic epidemiology of human diseases and complex traits, with emphasis on the statistical modeling and methodology used in the analysis of genetic data in contemporary research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HUGEN 2020 and BIOST 2041

HUGEN 2081 - ANALYZING HEALTH DATA WITH THE ALL OF US RESEARCH PROGRAM

Minimum Credits: 2
Maximum Credits: 2
This course introduces students to the All of Us Research Program, a biobank established by the National Institutes of Health in 2018, which provides a rich resource for generating thesis topics and exploring diverse U.S. population data to address gaps in health equity and precision medicine research. Students will use All of Us data to explore a wide range of research questions in public health, with an emphasis on genome-wide association studies (GWAS) and phenome-wide association studies (PheWAS). Students will learn about the structure of the All of Us database, covering topics such as onboarding, cloud computing, example research applications, and the scope of the available data, which includes surveys, electronic health records, and short-read whole genome sequencing. Additionally, the course introduces Python and R, focusing on data manipulation and cleaning techniques specific to the All of Us Researcher Workbench.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis
Course Requirements: PREQ: BIOST 2041

HUGEN 2090 - MOLECULAR BASIS OF COMPLEX DISEASES

Minimum Credits: 2
Maximum Credits: 2
This course will provide an overview of genetic and molecular basis of complex human diseases with primary focus on immune-mediated conditions, autoimmune diseases, common eye disorders, and psychiatric/behavioral health disorders. Common human diseases largely

contribute to the public health burden of diseases and are influenced by a complex interplay of genetic, epigenetic, demographic, and environmental risk factors. Selected examples will be used in the classroom to illustrate the multifactorial nature of complex human diseases. Identifying multiple genetic loci/variants involved in common disease susceptibility and understanding the biological functions/pathways impacted by complex interactions of these genetic factors with other risk factors/exposures constitute an essential step towards improving the prevention, diagnosis, and management of these common conditions, hence improving the public health. This course will also provide an overview of the epigenetic regulation, immune system, and microbiota/microbiome as related to their increasingly recognized important roles in influencing the development and/or progression of a diverse array of complex human diseases.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2091 - GENETICS OF COMPLEX DISEASES

Minimum Credits: 1
Maximum Credits: 1
This course provides students with an understanding of the biochemical and molecular genetic approaches to understand genetically determined susceptibility to common diseases. This will be presented using selected examples of complex human diseases, including cardiovascular and neurodegenerative diseases. Risk of common, complex diseases is determined by genotypes at multiple genetic loci and a complex interaction of genetic variation and environmental exposures. Risk of almost every common disease is influenced by genes, but the relationship between genotype and disease phenotype is weak compared to that observed with rare Mendelian traits. However, understanding the contribution of genes to common disease susceptibility is important to public health.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: COREQ: HUGEN 2090; PLAN: HUGEN-MS; HUGEN-PHD; PHGEN-MPH; GNCSLG-MS; GENBINF-MS; or PHGEN-CR4

HUGEN 3010 - RESEARCH AND DISSERTATION PH.D.

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

HUGEN 3020 - DOCTORAL RESEARCH AND PROFESSIONAL SKILLS DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
This course provides an opportunity for Human Genetics doctoral students to learn about specific genetics research projects being carried out in the Human Genetics department and across the Schools of the Health Sciences and enhance their professional skills. The format of the course includes seminar presentations by continuing doctoral students of in-progress genetics research projects and short talks by established investigators within and outside academia offering diverse perspectives on professional development and career trajectories. Students will have the opportunity to showcase their own in-progress research, develop and hone their oral presentation skills, provide and receive constructive written feedback on genetics research, discuss applications of novel methodologies and research approaches, and learn about career opportunities in genetics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HUGEN 3030 - GRANT WRITING FOR DOCTORAL STUDENTS IN HUMAN GENETICS

Minimum Credits: 2
Maximum Credits: 2
This doctoral-level course will provide a structured program for students to hone their scientific writing skills through the process of

developing an original NIH grant application. The course will cover the format of NIH grants generally, the peer review system, good grantsmanship strategies, and best practices in scientific writing. Students will both produce their own NIH grant materials and critically review the materials developed by their classmates.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 3040 - DOCTORAL TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
This course provides experiential training opportunities for doctoral students to develop skills in practical aspects of teaching and peer mentorship within the Human Genetics and related curriculum. As part of the teaching practicum students will engage in a variety of educational activities under the close supervision of a faculty member, typically the director and primary instructor of the pertinent course. These activities may include developing class session-level learning objectives; designing and delivering lectures; leading in-class discussions and activities; leading review, laboratory, and recitation sessions; designing assessments and grading rubrics; grading assignments and exams; managing course websites; and holding office hours. The scope of these duties will be determined by the student and faculty sponsor commensurate with the number of credits (typically 1-3). All educational materials generated by the student will be critically evaluated and approved by the faculty supervisor prior to incorporation into the course. Alongside hands-on engagement with the course, students will explore resources related to effective teaching, reflect on their teaching experience, and debrief with their supervisor, in the furtherance of producing a written report of their practicum.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

Hungarian

HUN 0200 - HUNGARIAN 2

Minimum Credits: 3
Maximum Credits: 3
This course builds upon HUN 0100: Hungarian 1 to increase students' proficiency in spoken and written Hungarian at the beginner's level. It is geared toward students who have completed Hungarian 1 and/or have basic knowledge of Hungarian word formation, sentence structure and vocabulary. The course deepens and expands upon this knowledge by introducing students to further elements of grammar and vocabulary. You will expand your familiarity with the language and culture of Hungary. We will continue focusing on communicative competence and conversational proficiency while developing your Hungarian grammar and writing skills, as well as your listening and reading comprehension skills. You will be expected to memorize vocabulary and utilize it in both speech and writing. This course, taken in sequence with Hungarian 1, fulfills the two-course General Education language requirement. The course also counts towards the minor in Hungarian.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

HUN 2615 - OUTSIDERS ON THE MARGINS: THE AFTERMATH OF SOCIALISM ON FILM

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the aftermath of Socialism, focusing on East Germany and Hungary through movies. We will look at issues that have been specific to societies in the Eastern Bloc taking these two areas as examples, and thus offer insight into the development of these societies after the fall of Socialism all the way up to the present. A deeper understanding of this development will encourage students to think about current historical-political events from a broader comparative perspective, promote their knowledge about the region of East Central Europe, and help discuss these events in an informed manner. Film as an art reflects the struggles and preoccupations of the time and society it emerges from. The selection of films in this course provides students with a representative sample of issues that take center stage in movies about the shift from Socialism to Capitalism and the aftermath of this transition. Course readings

and class discussions illuminate the historical and cultural background to the cinematographic pieces watched and discussed in the course. The movies, readings and class discussions provide insight into how Socialism shaped society and what ramifications it has for the further course of history after its collapse in 1989. More than thirty years after the official end of Socialism, the repercussions of the "cursed forty years" are still palpable in people's lives, their collective memory, societal issues and the way they influence domestic and foreign politics. Under Socialism, inhabitants of the Eastern Bloc largely remained isolated from the Capitalist world and thus remained outsiders to it, quasi-exotic beings who were often regarded with curiosity, pity or suspicion by those in the West. These sentiments are still echoed despite the collapse of Socialism in 1989 and the EU's Eastern Enlargement in 2004, as inhabitants of both the former Eastern Bloc countries and the Western world are still coming to terms with East Central Europe's transformation into democratic societies with a free market economy and the free movement of labor. Historical and cultural differences that had existed before the creation of the Iron Curtain did not cease to be in the Post-Socialist era; on the contrary, they precipitate in discussions and policy-making in the EU and at a global level, where members of the Visegrad countries and their former Eastern Bloc neighbors are yet again often regarded as the nonconformist outsiders on the margins of Europe. In an era of globalization, would we not expect mutual understanding of each other to be less problematic than before the change in 1989? What is the connection between forty years of Socialism and our current day in a Post-Socialist era? We will investigate issues of economic disparity, gender, sexuality, race, ethnicity, ability difference and criminality through a selection of cinematographic works made after 1989 presenting the effect of the change on people's lives from various perspectives. Some of these include the perspective of women, homosexuals, Jews, migrants, people with disabilities, and criminals (if they indeed are criminals), all in addition to the "average" person under Communist rule living on what was perceived by many "the margins" of Europe. The course thus looks not only at the Socialist and post-Socialist citizen as an outsider, but also groups that find themselves in an even more marginalized position - we might as well call them double outsiders because of their position in a society already disadvantaged to more developed Capitalist ones.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HUN 2909 - SPECIAL TOPICS IN HUNGARIAN

Minimum Credits: 3
Maximum Credits: 3
This course will be a topics course, meaning that the specific content of the course will change each time the course is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Immunology

MSIMM 2000 - PRINCIPLES OF MICROBIOLOGY AND IMMUNOLOGY

Minimum Credits: 6
Maximum Credits: 6
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSIMM 2200 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSIMM 2210 - COMPREHENSIVE IMMUNOLOGY

Minimum Credits: 2
Maximum Credits: 2
This is a lecture course that will introduce the students to the fundamental concepts of modern immunology. The course will cover cells, tissues and organs of the immune system. Furthermore in-depth analysis of the development, activation, effector functions and regulation of immune response will be presented in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSIMM 2230 - EXPERIMENTAL BASIS OF IMMUNOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will expose the students to classical and con temporary literature in modern immunology. Emphasis will be on paper analysis and critical evaluation of primary data. This course will parallel the topics presented in comprehensive immunology lecture course which must be taken before or simultaneously with experimental basis of immunology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: MSIMM 2210

MSIMM 2240 - INTRODUCTION TO IMMUNOBIOTHERAPEUTICS

Minimum Credits: 2
Maximum Credits: 2
This course will provide a comprehensive overview of the principles and the technology upon which immunobiotherapeutics are based. The course will focus on the overall aims of using small molecules, antibodies, genes and cells as immunotherapeutic agents. It will cover the use of viral and non-viral agents as gene delivery vehicles, cells as therapeutic agents and small molecules as delivery and therapeutic vehicles. The course will also cover diseases and disorders in which immunobiotherapy has proven safety and demonstrated successful outcomes like cancer, Mendelian disorders and autoimmunity. Lectures and student presentations will cover: genes and cells as drugs, peptides, antibodies and small molecules as therapeutics and delivery vehicles, viral and non-viral vectors, stem cells, and specific diseases where immunotherapy has shown safety and efficacy. Students may also be educated on bioethical issues and existing laws governing biotechnology and molecular medicine approaches.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSIMM 2250 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Immunology (PHD)

MSIMM 2260 - IMMUNOLOGY SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Graduate students and faculty present their current research in a seminar format.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSIMM 2290 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in immunology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Immunology (PHD) or Interdis Biomedical (UNK)

MSIMM 3200 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Immunology (PHD)

MSIMM 3220 - CONTEMPORARY TOPICS - IMMUNOLOGY

Minimum Credits: 1
Maximum Credits: 1
This is an advanced level course in which students will read, present and evaluate the primary literature in immunology. Each semester will feature an integrated set of papers addressing a current issue of interest to modern immunologists. The course may be taken more than once by each student, since the topic addressed will change each semester.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSIMM 3230 - IMMUNOLOGY AND HUMAN DISEASE

Minimum Credits: 2
Maximum Credits: 2
This course surveys basic immunological principles as they impact our understanding of the causes or treatments of human disease. The course consists of a series of lecture blocks. Background reading is required and the course relies heavily on the reading of original articles. Classes are regularly devoted to paper discussions, and each student will be responsible for introducing one paper.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSIMM 3260 - IMMUNITY AND THE NEUROENDOCRINE AXIS

Minimum Credits: 2
Maximum Credits: 2
This course will consider the interaction among the immune, nervous and endocrine systems. It will prepare the students for a critical understanding of how endocrine organs and the hormones they produce affect immune cell function, how the nervous system and nEuropeptides/neurohormones and neurotransmitters modify immunity and how the immune system (cells and their secreted molecules) affect the endocrine and the nervous system. The course will also permit the students to critically appraise and understand how drug therapy aimed at immunostimulation or immunosuppression may be affected by, and affect the neuroendocrine axis and how pharmacologic manipulation of the neuroendocrine axis can affect the immune system and the outcome of immunotherapies.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: MSIMM 3230

MSIMM 3270 - INNATE IMMUNITY

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the several aspects of host innate immunity against infection. Topics will include the conceptual basis for innate versus adaptive immunity, induction of innate immunity by pathogens, signaling by innate immune receptors, effector cells of the innate immune system, secreted effectors of innate immune signaling, and subversion of innate immune signaling by pathogens. Courses like molecular virology and comprehensive immunology are highly recommended but not a prerequisite for the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSIMM 3280 - IMMUNOLOGY OF INFECTIOUS DISEASE

Minimum Credits: 2
Maximum Credits: 2
This course examines the immune responses to pathogens, as well as on immune evasion of microbes. The organisms studied include bacteria, parasites, and viruses. Topics focus on host-pathogen interaction and include innate immunity, modulation of antigen processing and presentation, pathogenic strategies for subversion of immune responses, effector functions of immune cells, and immunopathology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: MSIMM 2210

MSIMM 3290 - AUTOIMMUNITY & IMMUNPATHOLOGY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: MSIMM 2210 and 2230

MSIMM 3440 - VACCINES AND IMMUNITY

Minimum Credits: 2
Maximum Credits: 2
Vaccines are widely regarded as one of the major contributors to increased life expectancy. The purpose of this course is to (1) explore the history of vaccines; (2) underscore the successful role of current vaccines in the management of infectious diseases; (3) present strategies for a new generation of safe and effective molecular vaccines; and (4) discuss the ethical and economic realities of vaccine use and development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Industrial Engineering

IE 2001 - OPERATIONS RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The operations research method; linear programming; network flows; CPM/pert; integer programming formulations. A group project is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering (IE-MIE or IE-PHD)

IE 2002 - M.S. ENGAGING INDUSTRY COLLOQUIUM

Minimum Credits: 1
Maximum Credits: 1
This 1 credit course is designed to provide beginning graduate students with the skills needed to navigate the corporate workplace that they will soon enter. The colloquium will focus on topics such as work ethics, professionalism, communication, and presentation skills. The lectures will consist of a mix of pedagogy, guest speakers and in-class discussions and assignments.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad HSU Basis

IE 2003 - ENGINEERING MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Concepts and processes of qualitative engineering management applied to the management of technical and scientific organizations. Topics include: (1) general systems theory; (2) management and the systems concept; (3) strategic planning and management systems; (4) systems analysis; (5) project management systems; (6) organizational design; (7) evaluation and control of systems; and (8) managing technical professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering (MIE or PHD)

IE 2004 - DATA BASE DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course introduces the fundamental aspects of database design and management within the context of a relational data base management system (DBMS). Covered topics include: relational model, database design life-cycle, database design optimization, client/server architecture, data modeling, SQL, database security, database management, data warehousing, internet database environment. Students will gain hands-on experience in analysis, design, implementation, and management of relational data base systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2005 - PROBABILITY AND STATISTICS FOR ENGINEERS 1

Minimum Credits: 3
Maximum Credits: 3
Probability, random variables, common discrete and continuous probability distributions, expected values, central limit theorem, distributions derived from the normal distribution (x2, t and f), estimation of parameters and fitting of probability distributions, testing hypothesis and assessing goodness of fit, comparing two samples.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering (IE-MIE or IE-PHD)

IE 2006 - INTRO TO MANUFACTURING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide students that have a background in advanced manufacturing technologies with an opportunity to learn about fundamentals of micro and Nano machining processes. The course represents a good balance between theoretical problems and practical considerations related to the advanced manufacturing processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering (IE-MIE or IE-PHD)

IE 2007 - STATISTICS AND DATA ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Analysis of variance, experiments with one factor, experiments with two or more factors, regression analysis, multiple linear regression, response surface methods, analysis of categorical data, nonparametric statistics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2005

IE 2011 - FUNDAMENTAL OF MICRO AND NANOMANUFACTURING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2006

IE 2013 - MOLECULAR MANUFACTURING

Minimum Credits: 3
Maximum Credits: 3
You often hear in the news about the potential societal impact of nanotechnology, which is simply described as the science and technology of manipulating matter in the 10-100 nm length-scale. However, with the continued miniaturization of material building blocks approaching the atomic scale, a paradigm shift is needed in the way of thinking about how to synthesize and assemble atomically precise units that integrate various different components, which eventually build a functioning device or material. This bottom-up approach to fabrication with atomic level precision is the focus of this course. The course will include molecular fabrication methods such as DNA origami, protein assembly, chemical synthesis of carbon materials, block copolymer self-assembly, and scanning probe methods that are capable of atomic level manipulation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2014 - MANUFACTURING PROCESS ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to instill a fundamental understanding of manufacturing processes by focusing on the processes, metallurgy and mechanics of deformation in metal forming. To this end, analysis techniques will be developed from solid mechanical principles (stress-strain relationship, deformation and failure) which would then be applied bulk deformation and material removal processes. The course assumes no prerequisites except basic concepts of stress, strain and strength of materials.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2006

IE 2023 - INTRODUCTION TO MEDICAL PRODUCT DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This is an undergrad/grad level course in medical product development covering fundamentals, regulatory processes, intellectual property management, and commercialization strategies. This course will provide basic knowledge on the development of medical devices including designing, manufacturing and testing medical devices. This course will also provide an overview of the medical product commercialization (i.e., bench to bedside). This course will develop the students ability to select and properly use the biomaterials and manufacturing processes for developing medical devices, instruments, biomedical sensors and artificial organs. Students will also learn how to commercialize the medical products to the market through intellectual property management and regulatory processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: IE 1055, IE 1081, and IE 1082

IE 2025 - FACILITY LAYOUT AND MATERIAL HANDLING

Minimum Credits: 3
Maximum Credits: 3
Introduction to facility layout and location. Topics including activity relationships, space and personnel requirements, computer algorithms for constructing layouts, and both single and multiple facility location methodologies; material handling methods and equipment including conveyors, lift trucks, carousels, automated guided vehicles, and automated storage and retrieval systems are also discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering (MIE)

IE 2045 - TRANSPORTATION PLANNING METHODS: OR APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
This course will focus on modeling and optimization of a wide range of systems in the field of transportation. It will cover quantitative techniques of Operations Research with emphasis on applications in transportation systems analysis and planning: Operations, Management, Transportation technologies and evaluation of passenger and freight transportation systems, Implementation of the Decision Support Systems, Data Envelopment Analysis (DEA) and Heuristic Algorithms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 2050 - SOCIAL NETWORKS & HEALTH

Minimum Credits: 1
Maximum Credits: 1
This course is an introduction to the theory, methods, and procedures of network analysis with emphasis on applications to health and

social behavior. The goal of the course is to provide a working knowledge of concepts and methods used to describe and analyze social networks so that professionals and researchers can understand the results and implications of this body of research. The course also provides the training necessary for scholars to conduct network analysis in their own research and practice careers. The course consists of readings, class discussions, analysis assignments, and a final project. Assignments are designed to build components of a full network study, culminating in the final project. Individual projects will use data that the student collects him/herself. The data collection and entry process will be quite simple and consist of identifying a group (a class, a club, organization, etc.) that students can ask to complete a simple questionnaire. Other electronic or observational sources of data may also be used.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 2060 - COMPUTER METHODS FOR SOCIAL NETWORKS

Minimum Credits: 1
Maximum Credits: 1
This course provides hands-on training in social network analysis using 3 different software packages: UCINet, R, and Gephi. It is intended for those students who are interested in conducting their own social network studies using the latest available software. It is a time-intensive lab and project course. Topics to be covered include: - How to use UCINet to conduct intermediate and advanced SNA - How to use R to use custom SNA packages - How to use Gephi to conduct basic SNA and generate descriptive network graphs
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 2062 - DATA ANALYTICS FUNDAMENTALS

Minimum Credits: 3
Maximum Credits: 3
This is a course in the fundamentals of data analytics that requires probability as a prerequisite. The objective is to prepare students to effectively collect and analyze data and to teach data-driven thinking, problem-solving and decision-making. In this class, we will cover various statistics and data mining methodologies and use them to analyze real-world problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IE 2005; PROG: Swanson School of Engineering

IE 2064 - APPLIED DATA ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to applied data analytics. The first part of the courses focuses on practical skills: datawrangling, visualization, data processing, exploratory data analysis and scoping projects. The second and main part of this course focuses on building predictive models for regression and classification: linear models, support vector machines, kernel methods, nearest neighbor, and tree-based models. The primary assessment is a project where students will apply their acquired skills on a real dataset. All course work will be done using R. While not required, it is suggested that IE 2062 is taken concurrently with this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2005 or (IE 0015 and 1071)

IE 2065 - STATISTICAL ANALYSIS AND OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PREQ: IE 2007 or 2064 or 1072 or STAT 1152

IE 2072 - PROBABILITY

Minimum Credits: 3
Maximum Credits: 3
Interpretations of probability, counting methods, conditional probability, Bayes theorem, random variables and distributions, functions of random variables, expectations, special discrete and continuous univariate distributions, law of large numbers and central limit theorems, multivariate distributions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2079 - LOGISTICS & SUPPLY CHAIN ENGRNG

Minimum Credits: 3
Maximum Credits: 3
Modern supply chains are based on networks with a number of actors from manufacturer to distributor to retailer. This course covers the use of modeling for coordinating production, inventory, distribution, and transportation across a supply chain network.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2081 - NONLINEAR OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
Necessary and sufficient conditions for an optimal solution to the non-linear programming problem; convex sets and functions; numerical solution of non-linear equations; search methods; unconstrained optimization including gradient, metric and penalty methods; algorithms for constrained optimization; quadratic and geometric programming.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2082 - LINEAR OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
Review of linear algebra, matrices and the simplex methods; revised simplex method; generalized bounds; product form of inverse; pricing and pivot selection; duality and sensitivity analysis; separable programming; linear complementarity; Dantzig-Wolfe decomposition; column generation; generalized LP; semi-infinite LP, stochastic LP; interior point methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2084 - STOCHASTIC PROCESSES

Minimum Credits: 3
Maximum Credits: 3

Reviews probability theory; conditional probability and expectations; discrete-time and continuous time Markov chains; Poisson process and exponential distributions; renewal theory and its applications; queueing theory; stochastic systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering

IE 2086 - DECISION MODELS

Minimum Credits: 3
Maximum Credits: 3
Decision making under uncertainty is the key to understanding a variety of problems from industry, including inventory control, revenue management, energy, healthcare, and logistics. This course covers the fundamentals of stochastic (sequential) decision models, including data-driven and risk-averse methods, with applications to real-world problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: IE 2005; PROG: Swanson School of Engineering

IE 2088 - STOCHASTIC SIMULATION

Minimum Credits: 3
Maximum Credits: 3
This course covers theoretical foundations of modeling and analysis of stochastic, dynamical systems using computer simulation in a general-purpose language. Topics include rigorous design of simulation experiments with applications drawn from service, manufacturing, healthcare, and financial systems. The course focuses on preparing students to utilize simulation to advance their research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IE 2005 or IE 1071 or ENGR 0021; PROGRAM: SSOE

IE 2090 - M. S. PROJECT

Minimum Credits: 3
Maximum Credits: 3
This is the capstone project course for M.S. Students. Students working in teams of 3 or 4 will solve a real world problem in conjunction with a company liaison and a faculty advisor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2100 - SUPPLY CHAIN ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
An overview of supply chain management with an emphasis on operations and strong quantitative orientation. Supply chain strategies; sourcing decisions; demand forecasting; aggregate planning; managing supply and demand; production and inventory control systems including MRP and JIT; dealing with uncertainty; distribution networks; coordination and integration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2001 & 2005

IE 2102 - LEAN SIX SIGMA I (GREEN BELT)

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to lean and six sigma principles with an emphasis on the application of statistics to quality control. Topics include value stream mapping, various lean tools, DMAIC methodology, data collection and measurement, and applications of ANOVA and doe. A project is required and the student should be prepared for green belt certification at the end of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2103 - LEAN SIX SIGMA II (BLACK BELT)

Minimum Credits: 3
Maximum Credits: 3
This is a follow up course in lean and six sigma covering topics such as influence principles and techniques, systems analysis, design for six sigma, lean enterprise analysis and response surface methods. Several projects are required and the student should be prepared for black belt certification at the end of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IE 2102; PROG: Swanson School of Engineering

IE 2104 - FRUGAL ENGINEERING & VALUE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the principles of frugal design of products and processes. Foundational skills in Value Engineering/Analysis including tools such as Functional Analysis will be detailed. Additionally, topics such as Customer Needs Identification, Quality Engineering, Operational Excellence and Lean Process Engineering will be integrated into developing frugal product and process designs. Students in the course will have taken the first step towards certification as Value Methodology Associates (VMA) offered by the SAVE International.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 2105 - GEOGRAPHIC INFORMATION SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Explore the concepts and history of geographic information systems and learn to effectively use the most utilitarian GIS software, ArcGIS.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2106 - OPERATIONS IMPROVEMENT IN HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
This course leads students to apply basic industrial engineering tools to healthcare operations, with a focus on healthcare providers. This includes data gathering, process mapping, system analysis and modeling, work sampling, work study and workflow improvement. This course will provide an overview of the differences between healthcare and other more traditional industrial engineering settings (e.g.,

manufacturing, retail), and the opportunity to apply industrial engineering techniques, while developing and understanding basic healthcare operations and systems in the United States. (This class is designed to be a complement to IE 1108/2108.)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering

IE 2108 - HEALTH SYSTEMS ENGINEERING: QUANTITATIVE ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
This course leads students to apply basic industrial engineering tools to healthcare, with a focus on the financial aspect of healthcare (payers and reimbursement, revenue cycle, and other financial analytics). This course familiarizes students with healthcare financial data, demographic and population health information, quality ratings, and other key data and measures. Students will access data from commercial payers, government healthcare programs and/or hospitals, and utilize data analysis and industrial engineering tools to better understand the financial aspect of healthcare systems in the United States. (This class is designed to be a complement to IE 1106/2106.)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering

IE 2110 - HEALTH SYSTEMS ENGINEERING SEMINAR

Minimum Credits: 0
Maximum Credits: 0
The seminar supplements the education provided by health policy and management and industrial engineering departments by creating a forum for exposure and discussion of healthcare systems engineering issues. Students become aware and are exposed to the role of vendors/consultants that bring solutions for healthcare delivery processes. The standards for professional leadership required for health management are reinforced.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

IE 2117 - FOUNDATIONS OF STATISTICS

Minimum Credits: 3
Maximum Credits: 3
This course equips first year PhD students with essential tools for statistical modeling and analysis. The main focus of this course is on mathematical statistics and bringing out different features of Frequentist, Fisherian and Bayesian approaches to statistical inference, as well as foundations of modern statistics as it interfaces with machine learning and other data-driven paradigms. Students will also get exposure to decision theory and related paradigms for evaluating statistical procedures. Strong background in probability theory and undergraduate statistics is assumed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 2122 - FUNDAMENTALS OF SYSTEMS ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the fundamentals of systems engineering, including technical processes (e.g., requirements definition, architecture design, system verification), technical management processes (e.g., project planning, risk management), agreement processes (acquisition and supply) and project-enabling processes (e.g., life-cycle model management, quality management). Key systems engineering techniques and methods (e.g., system modeling and simulation, function-based systems engineering) will also be discussed.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Industrial Engineering (MIE or PHD)

IE 2123 - PROJECT MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course provides a comprehensive introduction to modern project management, integrating both traditional and agile approaches. Students develop the skills required to initiate, plan, execute, and monitor projects while addressing key considerations such as scope, schedule, cost, risk, and stakeholder management. Throughout the course, students will learn how to use practical tools and techniques, including scheduling methods, resource planning, and project management software. In addition, students will learn about the evolving role of project managers in dynamic environments and the impact of emerging trends such as digital tools and artificial intelligence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IE 2003; PROG: Swanson School of Engineering

IE 2144 - DISCRETE OPTIMIZATION: MODELING AND COMPUTATION

Minimum Credits: 3
Maximum Credits: 3
Discrete optimization is a powerful modeling and computational tool in decision making, especially for critical industrial systems (e.g., transportation, energy and healthcare systems). In this course, we focus on learning various modeling techniques, classical and popular models (including location, scheduling and material handling problems), and solution techniques (including exact and heuristic algorithms) for these models that lead to millions of dollars savings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 2164 - INTRODUCTION TO MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course is a graduate-level introduction to machine learning. The focus is on foundational principles, models, and algorithms. Specific topics include estimation, regression, classification, kernel methods, neural networks, and graphical models. Background knowledge in linear algebra and probability is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 2184 - STOCHASTIC MODELING AND DATA ANALYTICS IN HEALTHCARE OPERATIONS MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to introduce stochastic modeling methods and data analytics tools for analysis, design, and decision support for healthcare delivery systems. The aim is to expose students to various application areas related to hospital workflow and operations management in healthcare systems. Emphasis is placed on rigorous model formulation to solve system performance evaluation and decision-making questions in healthcare delivery systems. The application of Markov process, systems modeling, simulation, and data analytics methods are discussed through papers and case studies in different care settings and areas (e.g., hospital workflow, patient safety, clinical diagnosis and decision process, prediction and intervention).
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (IE 1070 and IE 1071 or IE 2005) and (IE 1081 or IE 2001)

IE 2187 - OPTIMIZATION FOR MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
Modern machine learning involves fitting predictive models on huge data sets using optimization methods. The choice of optimization method is critical in these problems. For example, using traditional (factorization based) methods to perform regression with ten thousand data points and features will fail - a tiny problem by modern standards. Moreover, modern machine learning methods such as stochastic gradient descent are not plug-and-play: they require user expertise to select tuning parameters and interpret results. The goal of this course is to teach students how to use modern first-order methods to solve large-scale machine learning problems. Coding will be done in python using pytorch. Topics covered: Convexity, nonconvexity, critical points and saddle points. Gradient descent descent. First-order methods vs second-order methods. Training vs test error. Stochastic gradient descent. Hyperparameter tuning. Explicit and implicit regularization. Batch sizes, parallelization, and GPUs. Transfer learning. It is complementary but not required that students have taken an applied data analytics course (e.g., IE 1062 or IE 2064) prior to taking this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 2188 - SIMULATION MODELING AND APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
Introductory graduate course to the concepts, technology and applications of discrete-event and hybrid simulation. Covers the foundational concepts of simulation and the application of those concepts using commercial software. Topics include simulation, modeling, validation, input/output analysis, animation, and project success skills. Students will learn to use the Simio commercial simulation product as well as how to conduct/manage simulation projects. Practical experience will be gained in a simulation project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IE 2001 and 2005; PROG: Swanson School of Engineering

IE 2203 - WAREHOUSE OPERATIONS

Minimum Credits: 3
Maximum Credits: 3
In both manufacturing and service, transportation and logistics have become increasingly important. A principal component of many logistics systems are warehouses and distribution centers. Companies in the retail sector, healthcare related fields, and manufacturing all have significant distribution networks that utilize warehouses and distribution centers to supply their products. The aim of this course is to study and analyze key factors affecting the productivity of logistics operations and material flows in facilities. In particular, the course focuses on warehouse and distribution center design and operations including material handling equipment and system design, order picking, sortation systems, and cross docking.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: IE 2025, IE 2001 or IE 2082, and IE 2084.

IE 2301 - INTRODUCTION TO SAFETY ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Introduction to safety engineering" provides a basis to assist students in understanding and applying the scientific and engineering principles associated with the field of safety engineering. Specifically, the course will provide a background in, information on and

application exercises in the natural, chemical and physical laws and forces associated with safe design and implementation of work-related tasks and industrial and construction projects. These involve soils and excavation, trenching and shoring, permanent and temporary work platforms and scaffolding, cranes, rigging, ropes, slings and chains, fall protection, pressure vessels, confined space entry, energy isolation and preparation of equipment, hot work, welding, personal protective equipment and non-destructive testing. The course will also address safety related issues associated with building and facility design and layout, job, task and work setting layout. The course will stress the importance of safety engineering as part of both the corrective process and the design process.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2302 - ENGINEERING FOR PROCESS SAFETY

Minimum Credits: 3
Maximum Credits: 3
Engineering for process safety provides for a basic understanding of the quantitative and qualitative analysis methods of process safety engineering and process safety management. The course also provides guidance in planning, implementing and managing an overall process safety management program. It includes coverage of such applicable science and engineering principles as risk, human reliability, fault logic, failure modes, incident cost and prediction. The course is presented in an applied format where several different types of industries are discussed such as oil and chemical, pharmaceuticals, defense, nuclear, aerospace, paper, information technology and manufacturing industries. Regulatory influence on process safety is discussed. Quantitative aspects of the course include application of risk analysis, fault tree analysis, hazard and operability analysis, vapor-cloud dispersion modeling, human reliability analysis, failure modes and effects analysis, etc. This course is also intended to provide a background in managing an overall system safety program and its application to several industries, therefore, cost and effectiveness measurement are covered in the material.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2303 - WORK DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide students the opportunity to learn and use standard industrial tools commonly used in analyzing, troubleshooting, and designing work spaces and work processes. It includes the concepts of cost effectiveness, functional effectiveness, human interface design and characterization, analysis and improvement of productivity. These tools and design methodologies include human information processing, basic auditory and visual displays, cost models, facility layout and network transportation and delivery systems, cognitive engineering, anthropometry and musculoskeletal principles, cumulative trauma disorders, work measurement and time and motion analysis. Students taking this course should be familiar with basic engineering economics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering; PLAN: Industrial Engineering (IE-MIE, IE-PHD)

IE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS

Minimum Credits: 3
Maximum Credits: 3
Life cycle assessment (LCA) is a tool for evaluating the environmental impacts of a product or process by documenting energy and material flows from inception to ultimate disposal. This course teaches framework, methods, and tools that can be applied to decision making in the design, construction, operation, and maintenance of the built environment. Topics include the principles of life cycle assessment, case studies of applications of life cycle assessment, methods for life cycle inventory, and methods for life cycle impact assessment. The course aims to encourage systems thinking and to facilitate life cycle applications to graduate students' individual research topics. Students can expect to develop a project and paper applying LCA to their research topic. In most cases, students will produce a publishable journal article at the end of the semester.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

IE 2997 - RESEARCH, M. S.

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

IE 2998 - GRADUATE PROJECTS/PRACTICUM

Minimum Credits: 1
Maximum Credits: 12
This course is granted as part of the curriculum for work that is done on well-defined projects on campus or in the form of an internship in a company, the end result will be a final technical report and a presentation.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

IE 2999 - M. S. THESIS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

IE 3051 - COMPUTATIONAL OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
This course addresses issues arising in the implementation of optimization algorithms. Computational strategies and techniques will be explored. A major emphasis will be placed on implementing various algorithms for large- scale linear, nonlinear, and integer programs. Such algorithms include benders' decomposition, Dantzig-Wolfe decomposition, Lagrangian relaxation and algorithms for specially-structured problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3055 - ROBUST OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
Today the modeling of uncertain phenomena in both theory and practice is done via probability theory, the foundation of which is based on the axioms set forth by Kolmogorov in 1933. While it offers insights into understanding uncertainty, probability theory (in contrast to optimization) has not been developed with computational tractability as an objective when the dimension increases. Correspondingly, some of its major areas of application remain unsolved when the underlying systems become multidimensional. The goals of this course will be to propose an alternative via robust optimization (RO) for modeling uncertain phenomena, to develop RO as a tractable methodology for solving optimization problems under uncertainty, and to expose students to a large number of applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 3056 - OPTIMIZATION UNDER UNCERTAINTY

Minimum Credits: 3
Maximum Credits: 3
In this course, students will learn popular formulations and algorithms for stochastic programming, robust optimization, chance constrained optimization, stochastic dual dynamic programming, and VaR and CVaR based models, as well as some interesting applications. Students should have knowledge of Matlab, Python, C, or C++ programming languages, a doctoral level linear programming background, good mathematical reasoning ability, and a good understanding of integer programming and computational optimization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 3057 - BILEVEL OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
This is a course on the theory, algorithms and applications of bilevel optimization. Bilevel optimization models are motivated by various real-life settings (e.g., in transportation, energy, defense, network design) that involve independent decision-makers, referred to as the leader and the follower, who interact in a hierarchical manner. Specifically, the leader (the upper-level decision maker), whose perspective is modeled, needs to take into account the decisions of the other (lower-level) decision-maker, i.e., the follower, who solves his/her own optimization problem that, in turn, also depends on the decisions of the leader. In this class we will overview basic modeling concepts of bilevel programming, computational complexity issues, solution algorithms and several notable applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 3078 - CONVEX OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
This course develops a modern framework for convex optimization. The topics covered in this course include concepts of convex analysis, smooth convex optimization, non-smooth convex optimization, structural optimization, duality theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3080 - ADV TOPICS IN OPERATIONS RES

Minimum Credits: 3
Maximum Credits: 3
May cover various topics at the leading edge of technology in the area of operations research. Course content is announced by the professor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3087 - NETWORK-BASED OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
This course covers graphs, digraphs and related concepts, node and edge covering problems, Euler tours, Hamiltonian cycles, tsp, set covering and matching problems, shortest path problems, maximum flow problems and minimum cost network flow problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3088 - INTEGER PROGRAMMING

Minimum Credits: 3
Maximum Credits: 3
Polyhedral theory, computational complexity, super additive duality, and integral polyhedral.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3089 - REPAIRABLE SYSTEMS MODELING AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
A repairable system is a system that can be restored to a satisfactory condition through some intervention by a decision maker. In a manufacturing setting, such actions might include inspections, part replacements or setting adjustments; in a medical context, such actions might include disease screening, surgery or drug therapy. In this course, we consider applications of probability, simulation and optimization in the: (a) mathematical modeling of the performance of repairable systems, and (b) designing of optimal inspection and maintenance policies for repairable systems. In each case, we compare and contrast
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3093 - STOCHASTIC PROGRAMMING

Minimum Credits: 3
Maximum Credits: 3
This course considers stochastic programming, a technique for making optimal decisions under uncertainty. Will consider theory, algorithms and applications. Extensions to multi-stage problems and stochastic integer programs will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3094 - MARKOV DECISION PROCESSES

Minimum Credits: 3
Maximum Credits: 3
Introduces the fundamentals of discrete sequential models when outcomes are uncertain. Covers formulation and analysis of stochastic dynamic programs under several objective criteria; developing and enhancing solution algorithms; applications in the areas of inventory control, vehicle routing, and resource allocation; development of approximate solution techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3095 - GRADUATE SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Speakers from universities and industry discuss research topics and state-of-the-art material in the areas of operations research, engineering management, and manufacturing systems. Enrollment in this course is mandatory for all full-time Ph.D. students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

IE 3097 - ALGORITHMS FOR ENGINEERS

Minimum Credits: 3
Maximum Credits: 3
This course will develop students' ability to understand algorithms and use them appropriately for real-world and theoretical problems. Our discussion will be geared towards topics and example arising in IE applications, in particular, in the context of optimization problems. Topics covered will include introduction to complexity theory, running times and performances measures, common ideas in algorithmic design including randomized algorithms, approximation algorithms, and heuristics..
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3186 - APPROXIMATE DYNAMIC PROGRAMMING

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the theory and application of large-scale dynamic programming with emphasis on a broad spectrum of applications in finance, revenue management, and health policy. The first part of the course emphasis more on approximate dynamic programming algorithms. The second part of the course is devoted to the recent advances in reinforcement learning. Topics include Markov decision processes, dynamic programming algorithms, simulation-based algorithms, q-learning, theory and algorithms for value function approximation and policy search methods, stochastic approximation, r-max algorithm, online learning and regret minimization, and posterior sampling method.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 3997 - RESEARCH, PH.D.

Minimum Credits: 1
Maximum Credits: 12

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

IE 3998 - PH.D. INDEPENDENT STUDY

Minimum Credits: 2
Maximum Credits: 12
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

IE 3999 - PH.D. DISSERTATION

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Infct Disease & Microbiology

IDM 2001 - MOLECULAR BIOLOGY OF MICROBIAL PATHOGENS

Minimum Credits: 3
Maximum Credits: 3
Students will develop a comprehension of (1) bacterial anatomy, metabolism, regulation of gene expression, genetics, and the action of anti-microbial agents at the molecular level; and (2) the relevance of this knowledge to understanding microbial pathogenesis and the host response. In addition, prokaryotic and eukaryotic model system of gene regulation will be compared to emphasize the conceptual aspects and application of molecular biology to infectious disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

IDM 2002 - MOLECULAR VIROLOGY

Minimum Credits: 3
Maximum Credits: 3
The intent of this course is to provide a comprehensive coverage of molecular virology including basic concepts on structure and replication as well as more detailed information on the families of viruses that infect humans. The instruction will provide an in-depth coverage of the molecular virus structure as it relates to the viral life cycle including mode of replication and transmission, host range, antigenicity, treatment, and vaccine control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: IDM 2001 or INTBP 2000

IDM 2004 - VIRAL PATHOGENESIS

Minimum Credits: 2
Maximum Credits: 2
The goal of this course is to integrate the lectures given on a particular virus in the comprehensive virology course with two additional lectures which expand the basic biology of the virus life cycle to the level of virus-host interactions. The first lecture will address the

pathogenic properties of the virus from the perspective of disease manifestations, immunology, and the natural history of infection. This will be followed by a second lecture which will address the molecular basis of viral pathogenesis and current advances in antiviral research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: LEVEL: Second Year Graudate Students and above

IDM 2007 - PUBLIC HEALTH COMMUNICABLE DISEASE PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
The practicum, through structured and educationally super vised assignments at an approved site with an experienced professional, is aimed at providing a means to identify and to apply a variety of theories and skills discussed and demonstrated in the classroom to the real life experiences to which the student is assigned in the field under professional supervision. The assignments and choice of site are determined by the director of the program and the program requirements and career goals of the student.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Attributes: Community Element -General Community Impact

IDM 2010 - PATHOGEN BIOLOGY

Minimum Credits: 2
Maximum Credits: 2
The goal of this course is to teach the basic biology and pathogenesis of many of the most important infectious diseases that are public health challenges in the 21st century. It is intended for students with a background in biological sciences, and will review those features that make these pathogens so successful as agents of disease. Topics covered will include: the interaction between the pathogen and the host genome, the strategies used by each pathogen to evade the host response, and the ways in which the pathogen defends itself against treatments and vaccines. The course will be taught using a combination of didactic lectures and paper discussions based on the current primary research literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PUBHLT 2015; PLAN: Infct Disease & Microbiology (MS or PHD); SUBPLAN: Infect Dis Path Erad Lab Pract or Inf Dis Mgmt Interv Comm Pract or Peace Corps (IDM)

IDM 2014 - FUNCTIONAL GENOMICS OF MICROBIAL PATHOGENS

Minimum Credits: 3
Maximum Credits: 3
Functional genomics involves the systematic study of genes and their function. This course will introduce many of these innovative technologies for the systematic analysis of gene function including gene discovery, transcriptome analysis, random and targeted gene disruption strategies, proteomics, metabolomics, and integrative systems approaches with a particular emphasis on their application to infectious disease pathogens and their interaction with their host cells. We will also examine the genomes of well-studied pathogens and explore how these technologies have been used to study their biology and pathogenesis and the application of these techniques for drug and vaccine targeting and development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IDM 2001

IDM 2019 - THE EMERGENCE AND GLOBAL SPREAD OF COVID-19

Minimum Credits: 2
Maximum Credits: 2

In this course of IDM 2019, students will learn about the emergence of the SARS-CoV-2 virus in November 2019, and its global spread to the present date. This course will be taught with an infectious disease prevention and control focus, but will cross-cut each major discipline within public health, including modules related to epidemiology; statistical modeling of the COVID-19 pandemic; health policy; behavioral and community health; genetics; and occupational health.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY

Minimum Credits: 1
Maximum Credits: 15
Properly qualified students may undertake special study, experience in a clinical laboratory, or research with the approval and under the guidance of a member of the faculty. Part or all of such study may be used as the basis for the essay or dissertation requirement for the master's and doctoral degrees.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

IDM 2022 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 3
Properly qualified students may undertake special study under guidance of a faculty member to acquire knowledge and skill to use independently a specific laboratory research tool, e.g., Gene cloning, DNA sequencing, cell sorting, oligonucleotide synthesizer, polymerase chain reaction, statistical analysis with pc.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

IDM 2023 - MICROBIOLOGY LABORATORY

Minimum Credits: 2
Maximum Credits: 2
A series of laboratory exercises introduces the student to microbiological procedures, especially as they apply to virology and bacteriology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IDM 2024 - PRINCIPLES OF MOLECULAR METHODS

Minimum Credits: 2
Maximum Credits: 2
Purpose of the course is to provide an introduction to the theory and use of common molecular and immunological laboratory methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IDM-PHD or IDM-MS

IDM 2025 - MICROBIOLOGY SEMINAR

Minimum Credits: 1
Maximum Credits: 1
In this course students are going to present scientific journal articles dealing with virology, immunology, molecular biology, and

epidemiology and drug therapy of viral diseases. In addition, students will present similar aspects of bacterial diseases. In some sessions students may be shown video presentation of diagnosis and clinical management of a particular viral or bacterial disease.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

IDM 2032 - HUMAN DIVERSITY AND PUBLIC HEALTH

Minimum Credits: 2
Maximum Credits: 2
This course will provide a theoretical framework for designing policy, research, and programs for diverse populations. Opportunities for expanding understanding and examining attitudes about human diversity will be presented. Community organizing and marketing methods related to program design and recruiting and sustaining volunteer or patient participation in programs will be a major focus of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IDM 2034 - CONTROL AND PREVENTION OF HIV/AIDS

Minimum Credits: 2
Maximum Credits: 2
This graduate level course on HIV disease prevention and control is aimed at providing an in-depth study of the HIV disease. The course goal is to provide advanced knowledge base of information on the complex clinical, preventive, treatment, and policy issues on HIV/aids.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate Sch of Public Health (PPBHL) or School of Medicine (MEDSC)
Course Attributes: Global Studies

IDM 2037 - ADVANCED VECTOR-BORNE INFECTIOUS DISEASES

Minimum Credits: 3
Maximum Credits: 3
This is a graduate level course that will familiarize students with endemic and emerging vector-borne diseases (VBD), disease surveillance, diagnostic, disease notification and VBD control measures. The students will receive information on a) vector and disease surveillance at local and global levels; b) overview of the disease notification system and databases; c) identification of new pathogens circulating in urban environment; d) case definition and diagnostic approaches of new or re-emerging VBD; e) community-based approaches for disease surveillance and prevention, f) immunization and vector control strategies, g) policies to mitigate exposure and susceptibility to VBD, and h) preparedness for future VBD outbreaks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IDM 2038 - PREVENTION, TREATMENT, AND CONTROL OF GLOBAL INFECTIOUS DISEASES

Minimum Credits: 3
Maximum Credits: 3
This course is aimed to prepare the student to demonstrate knowledge of the prevention, treatment, and control of infectious diseases throughout the world. Students will develop knowledge in the pathogenesis, treatment, individual, and environment intervention in prevention and spread of infectious diseases.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate Sch of Public Health (PPBHL) or School of Medicine (MEDSC)

IDM 2041 - RESEARCH ETHICS AND SCIENTIFIC COMMUNICATION

Minimum Credits: 1
Maximum Credits: 1
This course will introduce students to ethical considerations associated with public health research. Topics will include research on human and animal subjects, conflicts of interest, data management and transparency in reporting, authorship and peer review, and mentorship. Students will also learn how to improve their communication skills by identifying their target audience, refining their technical writing and graphics preparation skills, and developing their oral presentation skills. Classes will include lectures and small group discussions on assigned readings. Class attendance and participation are required. Satisfactory letter grades will be contingent upon the student's in-class contributions, completion of out-of-class homework assignments and projects, and performance on quizzes based on the course topics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IDM [IDM-PHD; IDM-MS--(IDMSEA-TR); IDM-MPH--(IDMBID-TR; IDMCHID-TR; IDMMICA-TR; IDMPELA-TR)]

IDM 2051 - INFECTION PREVENTION IN COMMUNITY SETTINGS

Minimum Credits: 2
Maximum Credits: 2
The goal of this course is to provide an in-depth examination of the problem, approaches, and interventions for controlling infectious diseases in community settings and post natural or man-made events with implication for the spread of infectious diseases. This course will prepare graduate students with knowledge and skills in responding, plan for potential infectious disease outbreaks to enhance preparedness for infectious diseases in a range of community settings. The course will also address the complex clinical, psychosocial, preventive, clinical treatment, community intervention, and policy issues confronting public health practitioners, health professionals, and policy makers. This is an interactive course that involves some didactic lectures with foundational content. The emphasis will focus on case based learning and interactive group activities utilizing current and previous domestic or world events involving infectious disease outbreaks. Lecturers with a variety of expertise and backgrounds will provide students with multifaceted perspectives on infectious disease prevention. The course will include lectures, writing assignment(s), and in-class discussions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IDM 2068 - INFECTION PREVENTION AND CONTROL PRACTICUM/INTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
This course in infection control practice is a clinical and institutional experience within a hospital or other clinical settings aimed at providing the student practice experience and skills to potentially function as an infection preventionist within a health care setting. Students in this course must take Infection Prevention Course (IDM 2069) as a prerequisite for this practicum/internship. Students may complete a minimum 200 hours within a clinical setting within an infection control department which also meets the requirements for the MPH program in the School of Public Health. This internship aims at assisting students to become proficient in addressing hospital-acquired infections, patient isolation practices, infection surveillance, documentation, reporting, medical record review and collaboration with the infection control practitioners through on-site, experiential learning. Acceptance into the practicum will be competitive and include an application process with the course directors and selected infection prevention specialists. Students who complete the 2 credit course, IDM 2069, Infection Prevention and Control in Healthcare Settings will be considered for this internship and accepted by permission only.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

IDM 2069 - INFECTION PREVENTION AND CONTROL IN HEALTH CARE SETTINGS

Minimum Credits: 2
Maximum Credits: 2

This course in infection control is aimed at building knowledge and skills as well as critical thinking through evidenced-based and case-based learning to provide students with a foundation in infection prevention and control in a healthcare settings. As the end of this course, successful students will have current knowledge of hospital acquired infections, patient isolation practices, infection surveillance, documentation, monitoring, reporting, and outbreak investigations. The course will be taught by expert practitioners, researchers, and clinicians in infection prevention. Students may enroll in this course only or they may combine it with an optional practicum/internship of a minimum of 200 hours within a clinical setting if accepted into IDM 2068 (Infection Prevention and Control Practicum/Internship)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IDM 2103 - HOST RESPONSE TO MICROBIAL INFECTION

Minimum Credits: 3
Maximum Credits: 3
Students will develop a comprehension of the concepts and knowledge of resistance and immune responses of humans to microbial infection. The role of phagocytic cells; complement; lymphocytes; the development of humoral and cell mediated immunity at the molecular, cellular, and organ level; and the consequences in controlling and enhancing disease and how these concepts are applied to public health are covered
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IDM 2134 - PREVENTION AND CONTROL OF SEXUALLY TRANSMITTED INFECTIONS

Minimum Credits: 2
Maximum Credits: 2
The goal of this graduate level course is to provide students with an in-depth overview of sexually transmitted infections (STIs) from a public health and infection prevention perspective. The course focuses on the prevention, diagnosis, and treatment of key bacterial and viral STIs that impact individual and population health. Emphasis is placed on understanding the pathogenic mechanisms, clinical management, treatment and preventive strategies, as well as the social, behavioral, biological, and structural factors that influence STI transmission and control. Implications for community-based programs, public health interventions, and policy development will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IDM 2161 - METHODS OF INFECTIOUS DISEASE EPIDEMIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Covers important topics in infectious diseases epidemiology, including public health surveillance, emerging infectious diseases, the role of infectious diseases in the etiology of chronic diseases, and epidemiologic study designs and laboratory methods used in infectious diseases research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

IDM 3010 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

IDM 3440 - VACCINES AND IMMUNITY

Minimum Credits: 2
Maximum Credits: 2
Vaccines are widely regarded as one of the major contributors to increased life expectancy. The purpose of this course is to (1) explore the history of vaccines; (2) underscore the successful role of current vaccines in the management of infectious diseases; (3) present strategies for a new generation of safe and effective molecular vaccines; and (4) discuss the ethical and economic realities of vaccine use and development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: IDM 2003; PROG: School of Public Health

IDM 3441 - EPIDEMIOLOGY AND CONTROL OF SEXUALLY TRANSMITTED INFECTIONS

Minimum Credits: 1
Maximum Credits: 1
The purpose of IDM 3441 is to provide students with an understanding of the major sexually transmitted infections (STIs) in the U.S. This course will focus on the underlying transmission dynamics, history, risk factors, public health impact and current strategies for control. The method of teaching will be to provide STI-specific lectures and promote critical discussion about the strategy and control limitations thereof. Approximately 50% of class time will be lecture and the remaining 50% will be devoted to a critical review of the assigned papers (2) for each class period.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Information Science

HIM 1405 - MEDICAL TERMINOLOGY LAB

Minimum Credits: 1
Maximum Credits: 1
This course is a basic study of the professional language of medicine. It is designed to include word construction, pronunciation, spelling, definition, and use of terms related to all areas of medical science, hospital service, and health related professions. This ONLINE course is designed to give the student a knowledge of words frequently used in the medical field and provides examples through the review of basic anatomy, physiology, surgical procedures, diagnostic procedures, and symptomatology. Coverage of the pathology of each body system is will take place along with an introduction to pharmacology, and the pharmacological treatment of frequently occurring conditions of each body system.
Academic Career: UGRD
Course Component: Mass Media
Grade Component: Letter Grade
Course Requirements: PLAN: Health Information Management (BPH or BS or BS-H)

INFSCI 0017 - FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING

Minimum Credits: 3
Maximum Credits: 3
First programming course for is majors, designed for students with little or no programming experience. Basic principles and concepts of object-oriented programming using java. Classes, interfaces, operators, program control, arrays, testing, debugging, inheritance, polymorphism, and event handling. Techniques for simplifying the programming process and improving code quality. Activity-based learning.
Academic Career: Undergraduate
Course Component: Lecture

Grade Component: LG/SNC Elective Basis
Course Requirements: CREQ: INFSCI 0010

INFSCI 0201 - INTERMEDIATE PROGRAMMING WITH PYTHON

Minimum Credits: 4
Maximum Credits: 4
This is an intermediate Python programming course that provides fundamental skills needed to understand, design, and maintain information systems. While this course does not have formal programming prerequisites, it is not designed to be the first course in a computing sequence and it is very helpful for students to understand the basic concepts of programming (variables, conditional statements, loops) prior to taking this course. The course introduces object-oriented programming and functional programming paradigms, as well as software engineering best practices using Python programming language. This is an active learning course where students complete a realistic sequence of programming assignments using command line Python, as well as integrated development environments (IDE) such as Visual Studio Code and Jupyter Notebooks.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

INFSCI 0505 - AI AND CRITICAL THINKING

Minimum Credits: 3
Maximum Credits: 3
This course introduces students from all backgrounds to essential AI concepts. No technical experience is required, and students from all backgrounds are encouraged to join this course. Students will explore how human cognition and AI differ, learning to distinguish tasks suited for each. Through discussions, case studies, and hands-on work with AI tools, students will examine AI's presence in different areas of society, such as education, government, media, and daily life. The course emphasizes aligning AI use with personal values and ethical considerations, preparing students to critically evaluate AI and communicate its possibilities and limitations to a general audience.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

INFSCI 1430 - USER EXPERIENCE ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course presents the fundamental principles of user experience (UX) engineering across three broad categories of designs and products - digital products, virtual worlds, and physical spaces. This course will cover a broad range of topics, including specifying, designing, and evaluating user experiences, understanding the role of user experience in the design of digital products, virtual environments, and physical spaces, and the roles of psychology, sociology, and psychometrics in user experience design. This is an active learning course where students will be expected to read research papers, participate in class discussions, and work with external stakeholders.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: (INFSCI 0410 or INFSCI 1044) and (INFSCI 0510 or INFSCI 0419 or INFSCI 0019); Minimum C grade or Transfer

INFSCI 1450 - GAME DESIGN

Minimum Credits: 3
Maximum Credits: 3
Games have become ubiquitous in our modern world. In addition to entertainment, elements of games are present in everything from promotional advertisements to university classrooms. This course focuses on the exploration of game design in its many permutations. Join us as we critique and design all manner of entertainment and serious game. The class itself is designed as a multiplayer game experience to immerse and engage the student in game design on a fundamental level. One of the final goals of this class is for each student to have designed two separate games in their entirety. These games may be useful in the follow-up course, Immersive Media Technologies.

Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: INFSCI 0410 or INFSCI 1044; Minimum C grade or Transfer; and Enrollment not permitted if currently or previously completed INFSCI 1060

INFSCI 1470 - IMMERSIVE MEDIA TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to the design and development of immersive media technologies, such as interactive narratives, digital games, augmented/mixed reality and virtual reality experiences. Students will develop skills in user experience design, user interface design, storytelling, and animation, as well as gain technical knowledge required to program, optimize, and deploy media experiences for multiple platforms/devices.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: (INFSCI 0410 or INFSCI 1044) and (INFSCI 0510 or INFSCI 0419 or INFSCI 0019) and (INFSCI 0610 or INFSCI 1070); Minimum C grade or Transfer; and Enrollment not permitted if currently or previously completed INFSCI 1061

INFSCI 1499 - SPECIAL TOPICS: HUMAN-CENTERED

Minimum Credits: 3
Maximum Credits: 3
Advanced class focusing on a current or specialized topic in the Human Centered Computing and Systems areas in Information Science.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: LVL: Jr or Sr; PROG: Sch Computing and Information

INFSCI 2020 - MATHEMATICAL FOUNDATIONS FOR INFORMATION SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course introduces the primary mathematical foundations underlying principles of information science, particularly the concepts, representations, and functions associated with the mathematically-intensive information science areas such as data mining, information retrieval, machine learning, cloud computing, and network science. Topics include, but are not limited to, probability, matrix operations, graph theory, logic, combinatorics, and information theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced) -AND- Enrollment not permitted if previously enrolled in INFSCI 2710 or INFSCI 2591

INFSCI 2040 - RESEARCH DESIGN

Minimum Credits: 3
Maximum Credits: 3
Beginning research design with emphasis on the basic process of inquiry. Identifying and articulating research problems, determining and describing procedures for conducting research, designing data collecting procedures, formulating testable hypotheses, interpreting and drawing conclusions from data analysis, and reporting research findings and implications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or School of Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2120 - INFORMATION AND CODING THEORY

Minimum Credits: 3
Maximum Credits: 3
Includes measures of information, information sources, joint and conditional uncertainty, noiseless and deterministic channels, reliable messages through unreliable channels, channel capacities, properties of codes, minimal codes, and error-detecting and error-correcting codes. Examines entropy as a measure of semantic content.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2125 - NETWORK SCIENCE & ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course explores networks as a primary metaphor and mechanism for a variety of information-related phenomena. The advancement of interconnected information and communication technologies has made networks one of the dominant ways of analyzing the use and flow of information among individuals, institutions, and societies. We will frequently turn to a diverse array of applications and problem areas to motivate and understand the use of networks for analyzing real-world networked systems. The course starts with the basics of graph theory and moves to studying network structures and how they emerge through various network models. We begin with the traditional random graph model and we move to more realistic, socially-inspired models such as preferential attachment. We will further explore processes in a network such as diffusion of epidemics and network search. Additional topics might include attacking the power grid, measuring systemic resilience to attack, and understanding the structure of collaboration in science.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ISCI-MSI, ISCI-AC, BDAL-ACG, SAISYS-ACG, SAIS-ACG, ISCI-PHD, INFSCI-MSI, INFSCI-AC, INFSCI-PHD

INFSCI 2130 - DECISION ANALYSIS AND DECISION SUPPORT SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Introduction to decision analysis with elements of human cognition under uncertainty, including structuring decision problems and developing creative decision options, quantifying uncertainty and preferences, and combining uncertainty and preferences to arrive at optimal decisions. Foundations needed for applying the methods of decision analysis in decision support systems. Note: can also be used to fulfill distribution requirement in cognitive science area.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2135 - PROBABILISTIC METHODS

Minimum Credits: 3
Maximum Credits: 3
This seminar provides an introduction to computational approaches for probabilistic modeling and inference. A particular focus is placed on Bayesian networks, although other probabilistic models also will be studied. Medical applications are emphasized, however, the principles are general and no medical knowledge is needed to take the course. The course does not require knowledge of a computer

programming language. An understanding of basic probability theory would be helpful, but is not required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

INFSCI 2140 - INFORMATION STORAGE AND RETRIEVAL

Minimum Credits: 3
Maximum Credits: 3
Problems and techniques related to storing and accessing unstructured information with an emphasis on textual information. Overview of several approaches to information access with a primary focus on search-based information access. Covers automated retrieval system design, content analysis, retrieval models, result presentation, and system evaluation. Examines applications of retrieval techniques on the web, in multimedia and multilingual environments, and in text classification and event tracking.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2149 - INTRODUCTION TO INFORMATION SECURITY

Minimum Credits: 3
Maximum Credits: 3
Introductory information security and privacy course for non-SCI students enrolled in the Graduate Certificate Program in Cybersecurity, Policy and Law. Covers fundamental issues and first principles of security and information assurance, including security policies, models and mechanisms related to confidentiality, integrity, authentication, identification, and availability issues related to information and information systems. The course will introduce students to risk management, security assurance, secure design principles, organizational security policy, legal and ethical issues in security, and standards and methodologies for security evaluation and certification.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Plan = CPL-ACG or CSPL-ACG or CSPL-MN or PLAW or PGSPA

INFSCI 2150 - INFORMATION SECURITY AND PRIVACY

Minimum Credits: 3
Maximum Credits: 3
Fundamental issues and first principles of security and information assurance. Security policies, models and mechanisms related to confidentiality, integrity, authentication, identification, and availability issues related to information and information systems. Basics of cryptography such as key management and digital signatures, etc. And network security such as PKI, IPsec, intrusion detection and prevention. Risk management, security assurance and secure design principles. Issues such as organizational security policy, legal and ethical issues in security, standards and methodologies for security evaluation and certification.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: TELCOM 2000 or INFSCI 1070; PROG: School of Information Science or Sch Computing and Information

INFSCI 2160 - DATA MINING

Minimum Credits: 3
Maximum Credits: 3
Introduction to data mining techniques, including data preprocessing, data mining primitives, association rules, decision trees, cluster analysis, classification and machine learning, data visualization, and data warehousing. Detailed applications from a wide variety of domains.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2020 (B or greater) or INFSCI 2725 (B or greater) or INFSCI Exemption-Analytics Component (Test Score 6 or higher);

INFSCI 2165 - ADVANCED TOPICS IN DATA MINING: SOCIAL & HETEROGENEOUS GRAPH MINING

Minimum Credits: 3
Maximum Credits: 3
This course will cover a number of advanced topics in data mining, with special attention to graph/network mining, recommender systems, and techniques for analyzing large-scale, heterogeneous, high-dimensional, and multi-relational data in various domains -- e.g., web science, social science, and health and natural sciences. A mix of lectures, readings, and homework assignments will be offered to familiarize the students with recent methods and algorithms in these topics, as well as the basic concepts and theoretical foundations of these advanced techniques. The course is for students with prior background in data mining or machine learning techniques. It is a good option for graduate students who are interested in gaining in-depth knowledge or research experience in the field, or students from other disciplines who need to develop data mining systems to analyze large amounts of heterogeneous data. Hands-on experience in data analytics and machine learning with large datasets is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2595 and PLAN = ISCl-MSl, ISCl-AC, BDAL-ACG, SAISYS-ACG, SAIS-ACG, ISCl-PHD,INFSCl-MSI, INFSCl-AC, INFSCl-PHD

INFSCI 2170 - CRYPTOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
Principles of number theory, cryptographic algorithms and cryptanalysis. Steganography, block and stream ciphers, secret key encryption (DES, res, re-n), primes, random numbers, factoring, and discrete logarithms. Public key encryption (RSA, Diffie-Helman, elliptical curve cryptography, n'tru); key management, hash functions (md5, sha-1, ripemd-160, HMAC), digital signatures, certificates and authentication protocols. Cryptanalytic methods (known, chosen plaintext etc.) For secret and public key schemes (linear and differential cryptanalysis, pollard's rho method, number field sieve, etc.).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: ISCI-MSI, ISCI-AC, BDA-ACG, BDAL-ACG, SAISSYS-ACG, SAIS-ACG, ISCI-PHD, INFSCI-MSI, INFSCI-AC, INFSCI-PHD

INFSCI 2185 - FATE: FAIRNESS, ACCOUNTABILITY, TRANSPARENCY, AND ETHICS IN AI

Minimum Credits: 3
Maximum Credits: 3
Data-driven models are increasingly used in many domains to assist in human decision-making with a significant impact on people's lives -- from hiring and promotion, college admissions, and judicial decisions to business or public services delivery. Industry, government, and nonprofit sections recognize data and AI ethics as essential capabilities for future Data Scientists. Will offer students the knowledge and tools to apply ethics to data and AI applications. Focuses on both concepts and practice to understand ethical challenges in data science and data-driven decision-making. Introduces the core concepts of fairness and interpretability mechanisms, and analytical and technical tools to mitigate emerging problems in the real world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

INFSCI 2205 - TECHNICAL COMMUNICATIONS FOR INFORMATION SCIENCE

Minimum Credits: 3
Maximum Credits: 3
An English language support course for international students in SIS who are non-native speakers of English. Helps develop students' strategies and skills for comprehension and production in academic English contexts. Also addresses issues of academic integrity and plagiarism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

INFSCI 2300 - HUMAN INFORMATION PROCESSING

Minimum Credits: 3
Maximum Credits: 3
Introduction to research and theory in human cognition, including perception, attention, pattern recognition, memory, representation of knowledge, language, problem solving, reasoning, and decision making, with emphasis on modeling human cognition and implications for user interface design and design of intelligent systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2350 - HUMAN FACTORS IN SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Introduces principles for analysis of human performance in human-machine systems. Emphasis on principles of human factors as applied to the design of systems other than the graphical user interface (GUI) that is covered in interactive systems INFSCI 2470.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2410 - INTRODUCTION TO NEURAL NETWORKS

Minimum Credits: 3
Maximum Credits: 3
Introduces mathematical and computer techniques used in constructing models of information processing by parallel distributed processing (PDP) networks; principles of input-output functions and adaptation (learning) functions in single units and in networks; examines the relation between PDP networks, neurobiology, artificial intelligence, and cognition.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2415 - INFORMATION VISUALIZATION

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the visual design, structure, and organization of information as applied to library and information environments and web site design. Topics include visualization literacy, usability research, theories of visual perception and cognition, visualization models, visual analytics, and data graphics. The emphasis is on user and task-centered design for developing and evaluating visualization-based tools for various types of data. Practical work with visualization technologies will be included.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

INFSCI 2420 - INTRODUCTION NATURAL LANGUAGE PROCESSING

Minimum Credits: 3
Maximum Credits: 3
Overview of computational approaches to natural language processing. Issues in syntax, semantics, and pragmatics, as well as overall system architectures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2300 and (INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1)); PROG: School of Information Science or Sch Computing and Information

INFSCI 2430 - SOCIAL COMPUTING

Minimum Credits: 3
Maximum Credits: 3
Introduction to key theories and technologies of social computing. Reviews major types of social computing systems. Several social computing systems are explored and used throughout the course. Final group project focuses on designing and implementing a social web system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

INFSCI 2440 - ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
With the focus on the machine intelligence technologies around processing, representing, modeling, and learning from large quantity of data in the current web context, this course serves as a broad introduction to students of the theories, algorithms and applications of modern Artificial Intelligence (AI). Taking a data science oriented perspective, this course aims to help students to develop a broad theoretical knowledge and practical experience in AI. With the understanding that modern AI is actually a discipline of theories and techniques around the idea of data driven model-based machine intelligence, this course consists of four broad modules: 1) representation of knowledge, 2) uncertainty-based modeling and reasoning, 3) improvements with machine learning, and 4) communication with natural language processing, all of which are necessary components for an intelligent agent to engage intelligently with other agents or people in the real world. The goal of this course is to prepare students to work creatively and productively in current data-driven and intelligence-rich environment, and it is ideal for students who would like to be introduced to the techniques of modern AI. Topics include: search, logic and deduction, knowledge representation and memory organization, production systems, expert systems, planning, language understanding, and machine learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2591 PROG: Sch Computing and Information

INFSCI 2470 - INTERACTIVE SYSTEM DESIGN

Minimum Credits: 3
Maximum Credits: 3
The environments that can or should be provided for interactive use of computers. Necessary hardware, software, and behavioral components of an interactive system; data structure considerations for various types of interactive applications; operating system fundamentals, functions, and characteristics. Emphasis on interactive operating systems, human machine dialogues, interactive graphics, programming languages, and application(s) design.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Information Science (MS or PHD); SUB: Digital Libraries & Info Mgmt

INFSCI 2480 - ADAPTIVE INFORMATION SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Introduces key principles of adaptive information systems and modern techniques for user modeling and personalization. Covers the construction of user models and user profiles. Examines the use of various personalization techniques such as adaptive search, recommendation, and navigation support. Reviews major types of adaptive information systems and explores important application areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2710 or 2470; PROG: School of Information Science or Sch Computing and Information

INFSCI 2500 - DATA STRUCTURES

Minimum Credits: 3
Maximum Credits: 3
Theory and application of data structures. Data and file structures and their appropriateness to various applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: (ISCI-MSI, ISCI-AC, SAISYS-ACG, BDAL-ACG, ISCI-PHD, NDSCIG-ND, TCOMM-AC, TCOMM-MST) -AND- ANTI-REQ: Enrollment not permitted if previously enrolled in INFSCI 2710 or INFSCI 2591

INFSCI 2510 - INFORMATION SYSTEMS ANALYSIS AND DESIGN

Minimum Credits: 3
Maximum Credits: 3
The focus of this course is on studies of specifications of the information systems development process. The course covers fundamental topics on two main stages of information systems development life cycle: analysis, and design. Students will become familiar in techniques to investigate, collect, organize, and structure requirements for an information system as well as understanding how to design different component of the information system to satisfy the requirements. The course hands-on experiences such as working directly with real-world clients to address an information need challenge. Students are evaluated through regular assignments, quizzes, and a course project
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information ; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2511 - INFORMATION SYSTEMS DESIGN

Minimum Credits: 3
Maximum Credits: 3
Object-oriented design best practices; principles of system architecture; design patterns; requirements traceability; construction of uml-compliant models (class, sequence, communication and package diagrams); refactoring; iterative development of system prototype. Requires knowledge of fundamental of programming concepts including abstract classes, interfaces, inheritance, polymorphism, and message passing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2510; PROG: School of information Science or Sch Computing and Information
Course Attributes: Global Studies

INFSCI 2560 - NETWORK AND WEB DATA TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
Covers core technologies and standards for distributed systems, especially web-based distributed systems. Includes an overview of the standardization process and the standards organizations. Looks at network and data standards with significant attention to HTML, XML, HTTP, URL and other web technologies including APIS to programming with them. Topics covered include: Web and Restful protocols (HTTP, COAP), Publish-Subscribe protocols (MQTT), Web services (SOAP, etc.), and Web programming with CSS, JS, and HTML5.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2591 - ALGORITHM DESIGN

Minimum Credits: 3
Maximum Credits: 3
Fundamentals of algorithm design including greedy algorithms, divide-and-conquer algorithms, dynamic programming, heuristics and approximate algorithms, parallel and distributed algorithms, multi-dimensional data structures, time complexity of algorithms, and development of programs from algorithms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1); PROG: School of Information Science or Sch Computing and Information

INFSCI 2595 - MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
Introduction to machine learning, includes algorithms of supervised and unsupervised machine learning techniques, designing a machine learning system, bias-variance tradeoffs, evaluation metrics; Parametric and non-parametric algorithms for regression and classification, k-nearest-neighbor estimation, decision trees, discriminant analysis, neural networks, deep learning, kernels, support vector machines, ensemble methods, regularization techniques; Dimensionality reduction, principle component analysis, LDA, t-SNE; Clustering methods such as k-means, hierarchical clustering, spectral clustering, DBSCAN; Mathematical foundations including linear algebra, probability theory, statistical tests, statistical learning theory; Best practices and application to real-world problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

INFSCI 2620 - DEVELOPING SECURE SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Design and implementation of secure systems. Principles and practice of trustworthy computing, secure and high assurance software development process and lifecycle models. Secure software design using UMLSEC, secure design of operating systems and network services, database and applications. Secure webs services, cots-based and service-oriented systems. Software assurance tools and techniques such as code analysis and testing, evaluation and certification of software. Secure programming techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2150 or TELCOM 2810; PROG: School of Information Science or Sch Computing and Information

INFSCI 2621 - SECURITY MANAGEMENT AND COMPUTER FORENSICS

Minimum Credits: 3
Maximum Credits: 3
This course covers issues related to the administration and management of the security of enterprise information systems and networks. Topics include intrusion detection systems, vulnerability analysis, anomaly detection, computer forensics, application logging, auditing and data management, risk management, contingency planning and incident handling, cyber defense/operations, and security program management and lifecycle. The course will detail the principles and tools related to these topics. The course will also cover security standards, evaluation, accreditation and certification process, security planning, compliance issues, ethical and legal issues in information, privacy, traceability, and cyber-evidence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (INFSCI 2150 or TELCOM 2810) and TELCOM 2821; PLAN: ISCI-MSI, ISCI-AC, BDA-ACG, BDAL-ACG, SAISSYS-ACG, SAIS-ACG, ISCI-PHD, INFSCI-MSI, INFSCI-AC, INFSCI-PHD

INFSCI 2622 - NETWORK SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the principles, technologies, and best practices for protecting data and communications across modern networked environments. The course explores the design and operation of secure network architectures, threat models, and defense mechanisms that safeguard confidentiality, integrity, availability, and authenticity. Topics include cryptographic foundations, secure network protocols, authentication and access control, firewalls, intrusion detection and prevention, and emerging issues in network security.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

INFSCI 2710 - DATABASE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Basic graduate course on database systems. Centralized relational database systems with emphasis on database design, implementation, and administration. Comprehensive coverage of SQL, data modeling, normalization, storage management, transaction management, and query evaluation. Students will develop practical skills in building and maintaining realistic medium-scale database systems. Also covers more advanced topics including data warehousing and OLAP.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: INFSCI 2500orINFSCI 2500 Exemption(Test Score=1);PLAN:IIS-MS orINFSCI-AC or INFSCI-MSI orINFSCI-PHD or IISCI-MS or ISCI-AC or ISCI-MSI or ISCI-PHD or SAISYS-AC or SAISYS-ACG or TCOMM-MST or TCOMM-AC)or(SUBPLAN:MLISDL-TR or MLISDLI-SP or MLIDLIM-SP)

INFSCI 2711 - ADVANCED TOPICS IN DATABASE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Advanced graduate course on database systems. Key issues that typically arise in the context of large-scale enterprise database management in heterogeneous wide-area environments including distributed and non-relational database systems, networK-centric data management, web-based information systems, heterogeneous databases, information integration, and wireless data management.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2710; PLAN ISCI-MSI, ISCI-AC, BDA-ACG, BDAL-ACG, SAISSYS-ACG, SAIS-ACG, ISCI-PHD, INFSCI-MSI, INFSCI-AC, INFSCI-PHD

INFSCI 2725 - DATA ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
Introduction to fundamental technologies underlying distributed storage and efficient analysis of very large amounts of data. An overview of approaches to extracting information and knowledge from data, verification, testing, and presentation of results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

INFSCI 2730 - E-BUSINESS

Minimum Credits: 3
Maximum Credits: 3
Conceptualization of e-business in the context of markets, business practices, and information theory. Implementation of e-business websites and services via various programming languages. Examines various models for online consumer systems, business-to-business systems, and enterprise computing--e.g., Supply chain models. Covers related technologies in document processing, telecommunications, and security.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2560 and 2710; PROG: School of Information Science or Sch Computing and Information

INFSCI 2731 - SECURITY IN E-COMMERCE

Minimum Credits: 3
Maximum Credits: 3
Covers the technology, concepts, issues and principles that are important in the design and implementation of secure e-commerce systems. Examines technology for protecting electronic commerce. It will include discussion of basic security principles, as well as the issues, policy and standards particular to e-commerce applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2560; CREQ: (INFSCI 2150 or TELCOM 2810); PROG: School of Information Science or Sch Computing and Information

INFSCI 2739 - WEB SERVICES AND DISTRIBUTED COMPUTING

Minimum Credits: 3
Maximum Credits: 3
Looks at advanced techniques to client server computing. Covers design techniques necessary for organizing very large web sites. Integrates the knowledge and skills from e-business and web technologies to develop a functioning distributed application using web services, RMI, RSS, AJAX, etc.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2550 and 2730; PROG: School of Information Science

INFSCI 2750 - CLOUD COMPUTING

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of the concepts and design principles behind existing cloud solutions. Topics include large scale data processing techniques such as mapreduce/hadoop and its related ecosystem, overview of virtualized commercial cloud models, system virtualization, hypervisors and virtualized platforms. Design of cloud storage systems such as key-value stores and geographically distributed storage systems. Introduction to security and privacy issues in cloud computing, issues of data and execution privacy in modern commercial cloud services.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1)); PLAN: School of Information Sciences

INFSCI 2801 - GEOSPATIAL INFORMATION SYSTEMS (GIS)

Minimum Credits: 3
Maximum Credits: 3
Introduction to geographic information system (GIS) concepts and technology including spatial data sources, spatial data models and structures, spatial database management, map projection systems, geocoding and Georeferencing, spatial analysis, spatial data visualization (maps), GIS applications (e.g., Address-location finding, navigation, routing), and commercial GIS software packages.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2809 - SPATIAL DATA ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
Geospatial data collection, geospatial data structures and indexing, geospatial analysis, data quality, geospatial data structures and algorithms for surfaces, spatiotemporal databases, and digital terrain modeling.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: School of Information Science or Sch Computing and Information

INFSCI 2872 - E-BUSINESS

Minimum Credits: 3
Maximum Credits: 3
Conceptualization of e-business in the context of markets, business practices, and information theoretic contexts. Implementation of e-business websites and services via various programming languages. End-user e-commerce, business-to-business e-commerce, and enterprise computing--e.g., supply chain models. Related technologies in document processing, telecommunications, and security.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science

INFSCI 2910 - INDEPENDENT STUDY: FOUNDATIONS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

INFSCI 2915 - SPECIAL TOPICS: FOUNDATIONS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2930 - INDEPENDENT STUDY: COGNITIVE

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

INFSCI 2935 - SPECIAL TOPICS: COGNITIVE

Minimum Credits: 3
Maximum Credits: 3
An independent study intended to cover advanced material outside of or beyond the scope of current course offerings, specifically within the Cognitive Science or Cognitive Systems academic area.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2950 - INDEPENDENT STUDY: SYSTEMS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

INFSCI 2955 - SPECIAL TOPICS: SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

INFSCI 2970 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Independent studies are intended to cover advanced material outside of or beyond the scope of current course offerings.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

INFSCI 2980 - PRACTICUM

Minimum Credits: 3
Maximum Credits: 6
For students who desire experience in applying the knowledge and skills acquired in their course work and laboratory sessions. Students are responsible for arranging a practicum with a business or organization.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

INFSCI 2982 - INFORMATION SCIENCE COOPERATIVE PROGRAM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

INFSCI 2995 - THESIS

Minimum Credits: 3
Maximum Credits: 3
The thesis is a report of original, theoretical, or laboratory work suitable for publication.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM

Minimum Credits: 3
Maximum Credits: 3
An introduction to the purpose and nature of doctoral studies in information science, theories and processes in scholarly research and the current state of research in the discipline. Graduate faculty in the program will present and discuss their current interests with students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Information Science (PHD) or Library and Information Sci (PHD) or Intelligent Systems (PHD)

INFSCI 3150 - SEMINARS: SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Analysis of journal articles, books, and conference proceedings involving issues in information science. Techniques for preparing for the preliminary and comprehensive examinations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Plan: Information Science (PhD)

INFSCI 3250 - RESEARCH SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

INFSCI 3350 - DOCTORAL SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Plan: PhD students in Information Sciences, Library & Information Science, or Intelligent Systems

INFSCI 3975 - DOCTORAL SEMINAR: SYSTEMS AND TECHNOLOGY - SYSTEMS DESIGN, DEVELOPMENT, AND IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course aims to provide doctoral students with a semester long academic discussion on a range of advanced topics in information science. It will explore the current and future challenges facing the specific topics in emerging information science paradigms. Through reviewing literature and developing their own hypothesis and solutions, students will gain familiarity with latest developments, and develop problem identification and solving capabilities.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PROG:School Computing and Information or School of Information Science

INFSCI 3990 - DISSERTATION

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Information Science (PHD); CUM GPA: 3.25

Integrative Molecular Biology

IMB 2000 - LABORATORY RESEARCH ROTATIONS

Minimum Credits: 1
Maximum Credits: 9
Students are required to perform three distinct four-week laboratory rotations in the summer term of the first year. These rotations provide students with an opportunity to perform experimental research in three different scientific areas, while experiencing diverse laboratory environments and practices. They also facilitate selection of the dissertation laboratory and advisor. Students select the laboratory rotations based on their research interests and in consultation with their academic advisor. To capitalize on the cross campus nature of the program, students are required to distribute the rotations between participating laboratories in the Department of Biological Sciences and the School of Medicine.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

IMB 2050 - PIMB RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students are required to attend a weekly research seminar. Students may attend seminars hosted by the School of Medicine and/or Department of Biological Sciences.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

IMB 2080 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific research project in the dissertation laboratory prior to admission to candidacy for the doctorate.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Integrative Molecular Biology (PHD)

IMB 2090 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

IMB 3090 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a dissertation for a doctoral degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Integrative Molecular Biology (PHD)

Integrative Systems Biology

ISB 2000 - LABORATORY RESEARCH ROTATION

Minimum Credits: 1
Maximum Credits: 9
Students are required to perform three distinct four-week laboratory rotations in the summer term of the first year. These rotations provide students with an opportunity to perform experimental research in three different scientific areas, while experiencing diverse laboratory environments and practices. They also facilitate selection of the dissertation laboratory and advisor. Students select the laboratory rotations based on their research interests and in consultation with their academic advisor. To capitalize on the cross campus nature of the program, students are required to distribute the rotations between participating laboratories in the Department of Biological Sciences and the School of Medicine.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

ISB 2020 - SYSTEMS BIOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ISB 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to a selection of popular python packages used in bioinformatics and computational and systems biology. Students will be graded on programming assignments. Each assignment will explore a different sub-discipline of computational biology and introduce students to a new python package. There will be two 1.5 hour lectures a week which will often include an in-class practical exercise. There are weekly programming assignments and a final project and presentation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ISB 2035 - SYSTEMS BIOLOGY II

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to the use of model organisms and cell systems as research models. General and specific imaging approaches and imaging tools used to study these models will be covered. Model systems to be discussed include mouse, zebrafish, cell culture, yeast and C. elegans. Emphasis will be placed on the strengths that specialized techniques of each organism provide to the biomedical research community
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ISB 2045 - CELLULAR BIOLOGY OF NORMAL AND DISEASE STATES

Minimum Credits: 4
Maximum Credits: 4
This one-term course will explore the cellular basis of multiple disease states. The course, which meets twice a week (two hours each session), will be taught through both lecture and in class discussion of primary literature. Each of seven modules will examine normal cell biology and function and then define how defects in these processes lead to the spectrum of pathologies associated with each disease. Discussion of how bench top findings can be translated to treatments in the clinic will be facilitated by a diverse faculty that includes both basic and physician scientists. The seven modules are as follows: the first examines insulin secretion and signaling and how these events are perturbed in diabetes mellitus. The second module focuses on cell-cell adhesion and its role in cancer progression and epithelial barrier function. The third module defines how defects in endocytosis of the low-density lipoprotein receptor leads to hypercholesterolemia. The fourth analyzes the cellular basis of hypertension and how altered internalization of the epithelial sodium channel leads to elevated blood pressure. The fifth module investigates the role of apical membrane recycling and how defects in aquaporin-2 traffic leads to nephrogenic diabetes insipidus. The sixth module appraises the current state of our understanding of cystic fibrosis and how degradation of defective cystic fibrosis transmembrane conductance regulator by the quality control machinery in the endoplasmic reticulum and cell periphery leads to disease. The last module examines cell migration in wound healing and angiogenesis. At the end of the course students will have an increased understanding of normal cellular function and how research in cell biology can lead to a deeper understanding of diseases that impact millions of people each year.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ISB 2050 - ISB RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students are required to attend a weekly research seminar. Students may attend seminars hosted by the School of Medicine and/or Department of Biological Sciences.
Academic Career: GRAD
Course Component: Seminar
Grade Component: Grad HSU Basis

ISB 2055 - SCIENCE WRITING

Minimum Credits: 1
Maximum Credits: 1
This course will help students prepare to write their comprehensive exam proposals and will address other essential science communication skills, including research papers, oral and poster presentations, pitching ideas to industry, and web-based communication platforms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ISB 2060 - ISB CONFERENCE

Minimum Credits: 1
Maximum Credits: 1
This course will present an opportunity for students to become familiar talking about critical aspects of being a researcher that they deem important including but not limited to, current scientific literature, biological, biostatical, or computational principles, laboratory techniques, and research-in-progress (RIP) reports. Each week, two students will lead 30 minute discussions either on their own primary research, or on topics of their choosing. For each presenter, time is allocated for questions and discussion of the relevant conclusions to allow development of presentation skills.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

ISB 2061 - PRACTICAL TRAINING COURSE

Minimum Credits: 1
Maximum Credits: 3
This course introduces graduate students to training in applied, real-world studies. Course topics can include any of the following: renal-electrolyte, cardiology, cancer, computational biology, bioinformatics, systems biology, pulmonology, infectious disease, endocrinology, neurology, rheumatology and immunology, hepatology and liver disease, gastroenterology, geriatrics and/or hematology/oncology. Course work includes practical studies and additional work that will be developed and approved by the course instructor.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

ISB 2070 - THE BEDSIDE TO BENCH

Minimum Credits: 2
Maximum Credits: 2
This course introduced graduate students to biomedical research in a comprehensive format integrating organ system biology and clinical medicine with critical developments in the basic science research literature. Course topics include renal-electrolyte, cardiology, cancer, pulmonology, infectious diseases, endocrinology, neurology, rheumatology, and immunology, hepatology and liver disease, gastroenterology, geriatrics, and hemetology/oncology. Course work includes an overview of each biomedical field, clinical tours, discussions with leading physicians on the current challenges in patient care, and analysis of the basic science literature in a journal club

forum.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

ISB 2075 - EVOLUTIONARY BIOLOGY OF HUMAN DISEASE

Minimum Credits: 3
Maximum Credits: 3
Evolution is a fundamental unifying principle of biology. This class takes a broad approach to illustrate how an evolutionary perspective augments medical research and practice. Topics covered range from the evolution of human populations, to antibiotic resistance, and include medical conditions as diverse as diabetes, cardiovascular disease, cancer or aging.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ISB 2080 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific research project in the dissertation laboratory prior to admission to candidacy for the doctorate.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Integrative Systems Biology (PHD)

ISB 2090 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

ISB 3090 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a dissertation for a doctoral degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Integrative Systems Biology (PHD)

Intelligent Systems

ISSP 2000 - MS RESEARCH

Minimum Credits: 1
Maximum Credits: 9
Research and thesis MA degree.

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2016 - FOUNDATIONS OF BIOMEDICAL INFORMATICS 1

Minimum Credits: 3
Maximum Credits: 3
This course serves as an introduction to core methods and topics in biomedical informatics using the context of the Learning Health System (LHS). A LHS combines data and information managements, discovery, and application of discoveries to clinical and population health. Discussion of the challenges associated with the construction of a LHS will be used to contextualize and motivate content to be covered in the course (people, data and knowledge, and evaluation).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: BIOMEDICAL INFORMATICS

ISSP 2017 - FOUNDATIONS OF BIOMEDICAL INFORMATICS 2

Minimum Credits: 3
Maximum Credits: 3
This course serves as an introduction to core methods and topics in biomedical informatics using the context of the Learning Health System (LHS). A LHS combines data and information managements, discovery, and application of discoveries to clinical and population health. Discussion of the challenges associated with the construction of a LHS will be used to contextualize and motivate content to be covered in the course (challenges and analysis and interpretation to create knowledge).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (CS 1501 Algorithm Implementation; MIN GRADE C or TRANSFER) and (CS 2710 Foundations of Artificial Intelligence; MIN GRADE B or TRANSFER)

ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS

Minimum Credits: 1
Maximum Credits: 1
This course is an immigration course for intelligent systems students, focusing on preparing them to conduct research in artificial intelligence . As part of the course, students will attend ISP Forum research talks and work with their advisors on developing detailed plans for their first ISP research projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS

Minimum Credits: 1
Maximum Credits: 1
This course is the second part of the immigration course sequence for the intelligent systems students. Students continue by attending ISP Forum research talks and carrying out their projects developed in ISSP 2020. At the end of the course, they are expected to present the first results of their projects at the ISP Forum.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2071 - HUMAN LANGUAGE TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the field of natural language processing (NLP) - the creation of programs that can understand, generate, and learn languages used by humans. It will expose students to applications by means of computational techniques including dynamic programming, hidden markov models, grammars, and machine learning algorithms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ISSP 2078 - INTRODUCTION TO DEEP LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course will cover the basics of modern deep neural networks. The first part of the course will introduce neural network architectures, activation functions, and operations. It will present different loss functions and describe how training is performed via backpropagation. In the second part, the course will describe specific types of neural networks, e.g. convolutional, recurrent, and graph networks, as well as their applications in computer vision and natural language processing. The course will also briefly discuss reinforcement learning and unsupervised learning, in the context of neural networks. In addition to attending lectures and completing bi-weekly homework assignments, students will also carry out and present a project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ISSP 2083 - BIOMEDICAL INFORMATICS JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
This course meets once each week for one hour. The research being presented will be taken from recent journal papers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: SUBPLAN: Bioinformatics

ISSP 2090 - PRACTICUM IN ADV BIOMEDICAL IT

Minimum Credits: 1
Maximum Credits: 6
This course is designed for people who want a practicum experience in working with advanced information technology in the center for biomedical informatics.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2120 - DATA MINING

Minimum Credits: 3
Maximum Credits: 3
Introduction to data mining techniques, including data preprocessing, data mining primitives, association rules, decision trees, cluster analysis, classification and machine learning, data visualization, and data warehousing. Detailed applications from a wide variety of domains.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ISSP 2130 - INFORMATION STORAGE & RETRIEVAL

Minimum Credits: 3
Maximum Credits: 3
Problems and techniques related to storing and accessing unstructured information with an emphasis on textual information. Overview of several approaches to information access with a primary focus on search-based information access. Covers automated retrieval system design, content analysis, retrieval models, result presentation, and system evaluation. Examines applications of retrieval techniques on the web, in multimedia and multilingual environments, and in text classification and event tracking.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ISSP 2160 - FOUNDTNS OF ARTIFICIAL INTELLGNC

Minimum Credits: 3
Maximum Credits: 3
The principal topics of AI are: representation knowledge, reasoning and problem solving, knowledge acquisition and machine learning, robotics, and natural language understanding. This course surveys these areas in order to provide an understanding of artificial intelligence methods and research problems. Specific topics include: action and object-centered representations, the search paradigm, planning and constraint satisfaction, qualitative reasoning, analogical reasoning, default reasoning, induction, other methods of learning, and knowledge engineering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2170 - MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course will give an overview of many techniques and algorithms in machine learning, beginning with topics such as linear and logistic regression, multi-layer neural networks and ending up with more recent topics such as boosting and support vector machines. The basic ideas and intuition behind modern machine learning methods, as well as, a more formal understanding of how and why they work will be covered. Students will have an opportunity to experiment with various machine learning techniques or apply them to a selected problem or domain in the context of a term project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2180 - COMPUTER VISION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS or PhD)

ISSP 2185 - FATE: FAIRNESS, ACCOUNTABILITY, TRANSPARENCY, AND ETHICS IN AI

Minimum Credits: 3
Maximum Credits: 3
Data-driven models are increasingly used in many domains to assist in human decision-making with a significant impact on people's lives -- from hiring and promotion, college admissions, and judicial decisions to business or public services delivery. Industry, government, and nonprofit sections recognize data and AI ethics as essential capabilities for future Data Scientists. Will offer students the knowledge and tools to apply ethics to data and AI applications. Focuses on both concepts and practice to understand ethical challenges in data science and data-driven decision-making. Introduces the core concepts of fairness and interpretability mechanisms, and analytical and technical tools to mitigate emerging problems in the real world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ISSP 2221 - HUMAN INFORMATION PROCESSING

Minimum Credits: 3
Maximum Credits: 3
Introduction to research and theory in human cognition, including perception, attention, pattern recognition, memory, representation of knowledge, language, problem solving, reasoning, and decision making, with implications for user interface design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2230 - INTRO NATURAL LANGUAGE PROCSSNG

Minimum Credits: 3
Maximum Credits: 3
Overview of computational approaches to natural language processing. Issues in syntax, semantics, and pragmatics, as well as overall systems architectures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2240 - DECISION ANAL & DECISN SUPRT SYS

Minimum Credits: 3
Maximum Credits: 3
Rationality and rational behavior; uncertainty, probability, decision making. Psychology of decision making. Decision theory and decision analysis, structuring decision problems, elicitation of probabilities and utilities. Conflicting objectives, multi-attribute decision theory. Probabilistic methods in artificial intelligence. Group and team decision making. Decision support systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2280 - ADAPTIVE INFORMATION SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Introduces key principles of adaptive information systems and modern techniques for user modeling and personalization. Covers the construction of user models and user profiles. Examines the use of various personalization techniques such as adaptive search, recommendation, and navigation support. Reviews major types of adaptive information systems and explores important application areas.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS or PHD)

ISSP 2430 - SOCIAL COMPUTING

Minimum Credits: 3
Maximum Credits: 3
Introduction to key theories and technologies of social computing. Reviews major types of social computing systems. Several social computing systems are explored and used throughout the course. Final group project focuses on designing and implementing a social web system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS or PHD)

ISSP 2440 - ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
With the focus on the machine intelligence technologies around processing, representing, modeling, and learning from large quantity of data in the current web context, this course serves as a broad introduction to students of the theories, algorithms and applications of modern Artificial Intelligence (AI). Taking a data science oriented perspective, this course aims to help students to develop a broad theoretical knowledge and practical experience in AI. With the understanding that modern AI is actually a discipline of theories and techniques around the idea of data driven model-based machine intelligence, this course consists of four broad modules: 1) representation of knowledge, 2) uncertainty-based modeling and reasoning, 3) improvements with machine learning, and 4) communication with natural language processing, all of which are necessary components for an intelligent agent to engage intelligently with other agents or people in the real world. The goal of this course is to prepare students to work creatively and productively in current data-driven and intelligence-rich environment, and it is ideal for students who would like to be introduced to the techniques of modern AI. Topics include: search, logic and deduction, knowledge representation and memory organization, production systems, expert systems, planning, language understanding, and machine learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ISSP 2630 - FOUNDATIONS OF COGNITIVE PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will introduce core issues, theories, and experimental findings in cognitive psychology. Topics to be covered include history of cognitive psychology, sensory perception, attention, memory, imagery, language, reasoning, learning and expertise, problem solving, decision making, and individual difference in cognition. The goal is to understand foundational theories and issues as well as research methods used in this area. (In other words, how human cognition can be be studied scientifically, and why the results of experimental investigations support particular theories.)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ISSP 2756 - PRINCIPLES OF DATA MINING

Minimum Credits: 3
Maximum Credits: 3
Data mining is the process of efficient supervised or unsupervised discovery of non-trivial and useful knowledge and patterns from collections of data. This proposed course aims to provide a discussion of multiple common tasks in data mining, including association rules/sequential patterns, classification, anomaly detection, avoiding false discoveries, and clustering. Besides, this course will also introduce the latest advances in data mining and provide extensive hands-on experience via programming projects. Non-CS students

interested in enrolling must suggest project ideas and obtain the instructors written permission to override the enrollment requirements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ISSP 2900 - GRADUATE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
A professional internship may be taken at any time during the course of graduate study. Ph.D. students may take this course up to two times for credit, MS students may take it at most once.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Directed study.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Independent study.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9
Research and dissertation Ph.D.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 3120 - ADV TOPCS NATURAL LANG PROCSSNG

Minimum Credits: 3
Maximum Credits: 3
Natural language processing (NLP) is primarily concerned with creating computer programs that interact with human languages. The objective of this course is to continue the studies of natural language processing (NLP), to explore selected topics among syntax, semantics, and pragmatics more deeply, and to discuss recent advances in (NLP).
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: ISSP 2230 or CS 2731 or INFSCI 2420; PLAN: Intelligent Systems (MS, PHD)

ISSP 3535 - ADV TOPICS IN MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course will survey advanced topics in machine learning, for example, inductive learning, reinforcement learning, and neural network learning.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: ISSP 2170 or CS 2750; PLAN: Intelligent Systems (MS, PHD)

ISSP 3565 - ADV TOPICS ARTIFICIAL INTELLGNC

Minimum Credits: 3
Maximum Credits: 3
This course will survey current topics in artificial intelligence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: ISSP 2160 or CS 2710; PLAN: Intelligent Systems (MS, PHD)

Interdis Biomed Grad Prog

INTBP 2001 - FOUNDATIONS OF BIOMEDICAL SCIENCE STRUCTURAL BIOLOGY

Minimum Credits: 7
Maximum Credits: 7
Primary objectives of the course are to convey knowledge of the molecular and cellular mechanisms controlling cell, tis sue and organ function, and to develop an understanding of the experimental evidence supporting these concepts through an integrated presentation of material from biochemistry, cell biology, molecular genetics, pathology, pharmacology, and physiology. The development of critical thinking skills will be emphasized through an evaluation of experimental evidence and reading of the primary literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

INTBP 2011 - LAB RESEARCH ROTATION SUPPLEMENT

Minimum Credits: 2
Maximum Credits: 4
Course supplement to INTBP 2010 for those students initiating their first rotation in summer.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3

Experimental biologists formulate hypotheses and models, design experiments, collect data and conduct analyses to draw conclusions. Deep understanding on biological principles requires D2K- the translation of data into knowledge that transcends first-order conclusions. This course for first year Ph.D. students in the biomedical sciences will examine basic principles of experimental design, together with measurement and sources of experimental error. The course will provide practical 'hands on' introduction to the quantitative tools required for experimental research using cellular, molecular, and systems based methods. Topics will include: goals of experimental design, making measurements, principles or parametric and non-parametric statistical inference, use of MS excel, graphpad prism and R, design of publication graphics and a brief introduction to big data approaches. Students will work in small groups to construct capstone projects by making 'you tube' style videos to illustrate key principles of experimental design and analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

INTBP 2090 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in degree-granting programs under the interdisciplinary biomedical graduate program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

INTBP 2100 - BIOLOGY OF VISION

Minimum Credits: 3
Maximum Credits: 3
This course is being designed to meet the requirements of the t-32 training grant (t32 ey017271-01 interdisciplinary visual science training program) from NIH. The target students are the graduate students, fellows and residents in the department of ophthalmology. In addition, the post-doctoral fellows working in the department of ophthalmology will be encouraged to take this course. We are planning to cover a wide array of subjects including the ocular anatomy, embryology, biochemistry, pharmacology, immunology, microbiology and genetics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

Minimum Credits: 1
Maximum Credits: 1
The course is an introduction to the basic ethical issues which arise in the course of conducting scientific research. It is intended for graduate students and fellows in the biomedical sciences who have completed at least one year of graduate work. The course will be composed of informal lecture presentations followed by discussion of issues in small groups.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Computational Biology (PHD) or Molecular Biophy & Struct Bio (PHD) or Computational Biology (PHD) or Integrative Molecular Biology (PHD) or Interdis Biomedical (UNK)

INTBP 3000 - FOUNDATIONS OF BIOMEDICAL SCIENCE

Minimum Credits: 6
Maximum Credits: 6
Primary objectives of the course are to convey knowledge of the molecular and cellular mechanisms controlling cell, tis sue and organ function, and to develop an understanding of the experimental evidence supporting these concepts through an integrated presentation of material from biochemistry, cell biology, molecular genetics, pathology, pharmacology, and physiology. The development of critical thinking skills will be emphasized through an evaluation of experimental evidence and reading of the primary literature. Fundamentals of

Systems Biology will also be discussed. The course will include both lectures and small group workshops.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

INTBP 3005 - FOUNDATIONS JOURNAL CLUB

Minimum Credits: 2
Maximum Credits: 2
Contemporary approaches to problem-solving in biology, as well as principles underlying modern methods of biomedical research will be integrated with the lecture component of the course through an analysis of mechanisms underlying bio logical phenomena. Students will present papers, critically analyze data and develop skills for identifying state-of-the-art experimental approaches to solve biomedical problems.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

INTBP 3010 - LABORATORY RESEARCH ROTATION

Minimum Credits: 3
Maximum Credits: 3
This lab is designed to introduce the student to relevant laboratory methods as well as the layout and conceptualization of experiments. The course will serve to acquaint the student with the laboratory process, and to facilitate his/ her selection of a lab for dissertation research. Students are required to register for and complete rotations through three different laboratories, thereby ensuring broad exposure to method and practice.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

INTBP 3240 - GRANT WRITING FOR GRADUATE STUDENTS

Minimum Credits: 2
Maximum Credits: 2
This course teaches fundamental grantmanship skills using actual NIH training grant submissions. Students construct a competitive research training grant and are instructed on methods to identify funding sources. This course consists of introductory lectures followed by a series of workshops staffed by the IBGP training faculty. Workshops cover peer scientific review and study section operation, avoidance of common pitfalls in grant writing, grant writing ethics and scientific community service.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Cell Biol & Molecular Physio or Mol Genetics & Dev Biology or Mol Genetics & Dev Biology or Molecular Pharmacology or Cellular & Molecular Pathology or Integrative Systems Biology or Interdis Biomedical

Interdisciplinary

BIND 2024 - CONSULTING FIELD PROJECT

Minimum Credits: 3
Maximum Credits: 3
This course teaches management consulting in a real-world environment. Students are provided a unique opportunity to apply the analytical tools and concepts taught by katz, and do so in a practical manner. Each project includes three to five students assembled as a team. Each project involves a single "client" organization, which may be a profit, non-profit, or governmental. Each client provides its assigned study team with a project of immediacy and an executive dedicated to working with the team. A faculty advisor is assigned to each team. Students schedule their own time, dovetailing with client schedules and that of their faculty advisor. Students are further supported three

Saturday consulting workshops led by consultants from the Pittsburgh office of McKinsey & company, management consultants. An end-of-term competitive competition is also held, the winner being awarded the McKinsey cup.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Joseph M. Katz Grad Sch Bus

BIND 2060 - INDEPENDENT STUDY BUSINESS ADMININISTRATION

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2061 - INDEPENDENT STUDY ENTREPRENEURSHIP/SMALL BUSINESS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2063 - INDEPENDENT STUDY INTERNATIONAL BUSINESS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2064 - INDEPENDENT STUDY ENTREPRENUERSHIP

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2065 - INDEPENDENT STUDY IN BUSINESS ADMINISTRATION 2

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2066 - KATZ EXCHANGE: WHU

Minimum Credits: 3
Maximum Credits: 3
The WHU MBA European Summer Program comprises a two-week course on "The Changing Environment for International Business in Europe" on the attractive campus in Vallendar, located just outside of Koblenz in the valley of the Rhine River. The program is designed for MBA students of WHU's partner schools in their second year who are interested in International Business, Finance, and Corporate Strategy. Students who successfully complete the course will be able to transfer back three (3) credits. In order to be eligible for consideration, students must apply through the Pitt Study Abroad website, www.abroad.pitt.edu.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BIND 2067 - KATZ EXCHANGE: KEDGE BUSINESS SCHOOL 1

Minimum Credits: 3
Maximum Credits: 3
Katz Exchange: Kedge Business School 1
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BIND 2068 - KATZ EXCHANGE: KEDGE BUSINESS SCHOOL 2

Minimum Credits: 1
Maximum Credits: 1
Katz Exchange: Kedge Business School 2
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BIND 2069 - KATZ EXCHANGE: KEDGE BUSINESS SCHOOL 3

Minimum Credits: 6
Maximum Credits: 6
Katz Exchange: Kedge Business School 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BIND 2070 - HEALTH CARE LAW FOR MANAGERS

Minimum Credits: 1
Maximum Credits: 1
This course will introduce students to legal, ethical, and policy issues relevant to those in management roles in the health care system. Topics explored will include an overview of the U.S. legal system and policymaking, health care ethics, public health law, liability of health care providers and their institutions, health care reform and access to care, health care fraud and abuse, antitrust, consent for treatment and withholding of consent, fraud and abuse, and health privacy in the digital age.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

BIND 2073 - BUSINESS DEVELOPMENT IN THE LIFE SCIENCES

Minimum Credits: 1
Maximum Credits: 1

This intensive course is designed for students seeking an in depth understanding of the management challenges inherent in life science firms. We will examine molecules and medical devices as well as cutting edge IT services in the health care sector. We will cover the major strategic issues facing investors, entrepreneurs, and managers of small companies as well as global medical entities. This is not a science course per se and it does not require a background in medicine or molecular biology. The only prerequisites are a strong interest in the field and a willingness to learn about this important and dynamic sector of the global economy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIND 2101 - PRACTICUM FOR EMBA HEALTHCARE STUDENTS

Minimum Credits: 1
Maximum Credits: 6
Students prepare a major research project on an actual healthcare business problem to demonstrate the knowledge, tools and skills learned through the program. This experience-based learning opportunity challenges students to solve a real business issue at a healthcare organization. At the end of the program, students present their findings and recommendations to a panel of faculty and healthcare leaders.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

BIND 2105 - PRACTICUM FOR EMBA STUDENTS

Minimum Credits: 1
Maximum Credits: 3
Students prepare a major research project on a business problem to demonstrate the knowledge, tools and skills learned through the program. This experience-based learning opportunity challenges students to solve a real business issue within their company or industry. At the end of the program, students present their findings and recommendations to a panel of faculty and business leaders.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

BIND 2111 - LANGUAGE ASSESSMENT WORKSHOP

Minimum Credits: 0
Maximum Credits: 0
This 12 week workshop is designed to enhance international students speaking and comprehension abilities. Students will engage in various exercises and real life scenarios.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad HSU Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2123 - CONSULTING FIELD PROJECT 2

Minimum Credits: 3
Maximum Credits: 3
This course is to provide MBA students with a meaningful and measurable business experience. Students should view projects as providing a unique opportunity to apply the various analytical tools and concepts taught at KATZ, in such a way as developing creating and useful business solutions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BIND 2024; PROG: Joseph M. Katz Grad Sch Bus

BIND 2163 - GLOBAL ISSUE WORKSHOP

Minimum Credits: 0
Maximum Credits: 0
This number will serve as a billing course for the Global Issue Workshop (BIND 2263). May also serve as billing course for (BIND 2164 and BIND 2165).
Academic Career: Graduate
Course Component: Workshop
Grade Component: Non-Graded Component

BIND 2200 - INTEGRATED PROJECT FOR MBA/MS IN ENGINEERING PROGRAM

Minimum Credits: 1
Maximum Credits: 1
All students in the MBA/MS in engineering joint degree program are required to complete an integrated project for a company or some other facility. Oversight of this project will be the joint responsibility of a faculty member from KGSB and one from the student's engineering department. It is the student's responsibility to identify these faculty members; program advisors will assist the student in this effort. Students must present a one or two page proposal prior to the start of the project outlining what they plan to do over the course of the project. Ideally, the project should blend skills learned from the business and engineering components of the program. The proposal must be approved by the business and engineering faculty members overseeing the project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2203 - ORGANIZATIONAL TRANSFORMATION

Minimum Credits: 1
Maximum Credits: 1
This course recognizes the interrelated web of economic, social, political, and technological forces in the global economy that require organizations to transform their systems and processes--continuously and radically--if they wish to survive and succeed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BOAH 2401 or 2409; PROG: Katz Grad School of Business(PKATZ)

BIND 2231 - GLOBAL CONSULTING PROJECT

Minimum Credits: 3
Maximum Credits: 3
Intent of the course is, through experiential learning, to guide students in addressing global business problems. This is accomplished by providing students with a real corporate problem or issue whose roots are cross-functional, and whose solution requires global research and a global perspective. Students should expect global travel. The course is conducted across the fall and spring terms, providing the student with travel time during the various breaks during Thanksgiving, the Christmas holidays, and at other times as agreed.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2263 - GLOBAL ISSUE WORKSHOP

Minimum Credits: 3
Maximum Credits: 3
Students conduct an extensive analysis of a structural or external issue affecting an organization or industry abroad. A student team carries out in-depth international business research in the U.S. and travels abroad to conduct field research and speak to industry and organization

experts.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis

BIND 2404 - QUANTITATIVE FUNDAMENTALS: STATISTICS

Minimum Credits: 0
Maximum Credits: 0
The 0.5 credit "Probability & Statistics: Fundamentals of MBA Quantitative Methods" course is designed to cover fundamental quantitative methods that are critical to an MBA students' academic success. The course provides a refresher to students who already have a relatively strong foundation in statistics, and provides support to those students who may not yet be familiar with the concepts. The material will be delivered both synchronously and asynchronously. (co-requisite BQOM 2401)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

BIND 2406 - QUANTITATIVE FUNDAMENTALS: BUSINESS MATH

Minimum Credits: 0
Maximum Credits: 0
The 0.5 credit "Business Math: Fundamentals of MBA Quantitative Methods" course is designed to cover fundamental quantitative methods that are critical to an MBA students' academic success. The course provides a refresher to students who already have a relatively strong math foundation, and provides support to those students who may not yet be familiar with the application of mathematical concepts in a business context. The material will be delivered both synchronously and asynchronously. (co-requisite BECN 2401)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

BIND 2421 - INTEGRATED LEARNING ACADEMY

Minimum Credits: 3
Maximum Credits: 3
The Integrated Learning Academy (ILA) is an executive-level, seminar-style course in which students engage in analysis, synthesis, and evaluation of contemporary business issues in a specific industry/sector. This engagement is both in-depth within the specific industry/sector as well as comprehensive across the breadth of business functional subject areas that form the Katz MBA core. ILA contemplates the overarching industry structure as well as the role of non-profits, privately-held firms, publicly-traded firms, and government/regulatory bodies within that same industry context. Throughout the course, students gain direct exposure to Katz faculty experts, executive-level industry experts, contemporary case studies, and self-directed research. In turn, students memorialize their learnings in an executive-level white paper on the implications of their learnings for their future career paths.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BIND 2454 - INTEGRATED MBA CAPSTONE

Minimum Credits: 1
Maximum Credits: 1
The Integrated MBA Capstone (IMC) is a capstone experiential learning course in which students engage in comprehension, analysis, and synthesis of contemporary business issues clustered around a specific theme and US location/region. As the MBA capstone, the course integrates the knowledge and skills developed throughout the MBA core, focusing on developing a horizontal (rather than vertical) mindset across business functional areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIND 2458 - INTEGRATED MBA CAPSTONE FEE - PITTSBURGH

Minimum Credits: 0
Maximum Credits: 0
Students enrolled in BIND 2454 Integrated MBA Capstone who will participate in an integrated learning experience in the Pittsburgh area will be assessed a fee to cover expenses specific to the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: No Grade Required

BIND 2459 - INTEGRATED MBA CAPSTONE FEE - TRAVEL

Minimum Credits: 0
Maximum Credits: 0
Students enrolled in BIND 2454 Integrated MBA Capstone who will participate in an integrated learning experience which includes travel outside the Pittsburgh area will be assessed a fee to cover expenses specific to the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: No Grade Required

BIND 2505 - TIME VALUE OF MONEY: FUNDAMENTALS OF MBA QUANTITATIVE METHODS

Minimum Credits: 0
Maximum Credits: 0
The 0.5 credit "Time Value of Money: Fundamentals of MBA Quantitative Methods" course is designed to cover fundamental quantitative methods that are critical to an MBA students' academic success. The course provides a refresher to students who already have a relatively strong foundation in time value of money concepts, and provides support to those students who may not yet be familiar. The material will be delivered both synchronously and asynchronously. (co-requisite BFIN 2409)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

BIND 2506 - QUANTITATIVE FUNDAMENTALS: FINANCE

Minimum Credits: 0
Maximum Credits: 0
The 0.5 credit "Time Value of Money: Fundamentals of MBA Quantitative Methods" course is designed to cover fundamental quantitative methods that are critical to an MBA students' academic success. The course provides a refresher to students who already have a relatively strong foundation in time value of money concepts, and provides support to those students who may not yet be familiar. The material will be delivered both synchronously and asynchronously. (co-requisite BFIN 2409)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

BIND 2533 - ACCELERATED INTERMEDIATE FINANCIAL REPORTING

Minimum Credits: 3
Maximum Credits: 3
Accelerated Intermediate Financial Reporting fulfills the prerequisites of Intermediate Financial Reporting 1 and Intermediate Financial Reporting 2 for students who are entering the MACC program. This course studies the preparation, communication, interpretation and analysis of financial data with emphasis on the information needs of users of financial information prepared under USGAAP. General topics covered in this course include revenue recognition, inventory accounting, long term assets and impairment, investments, current liabilities and contingencies, long term liabilities, capital and retained earnings, leases, pensions and postretirement benefits, income taxes, and preparation of the statement of cash flows. Students are expected to have an accounting background. This course is designed to sit on

top of an existing foundation in accounting and will assume students already have taken several financial accounting courses or knowledge obtained through work experience. It is expected that students are fluent with accrual accounting and the accounting cycle and that they have already studied some of the topics in the course in depth. The course will move quickly.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BIND 2554 - ENTERING FOREIGN MARKETS 1

Minimum Credits: 1
Maximum Credits: 1
This course is designed to enhance students' awareness of the operational and legal challenges associated with three types of market-entry strategies: exporting, licensing/ franchising, and foreign direct investment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2603 - INTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
This course prepares the student for their internship opportunity and helps them to leverage the internship experience by focusing on career management, organization, and people skills, while requiring them to draw connections to the academic content of their degree program. Students are provided with a unique opportunity to apply the skills taught at Katz in a practical manner, and then to think reflectively about how the practical experience of their internship relates to the knowledge and skills discussed in their other courses. This course is for Katz students only.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

BIND 2609 - BUSINESS DISRUPTION SERIES: INTEGRATED MANAGEMENT

Minimum Credits: 0
Maximum Credits: 1
A business disruption course allows students the opportunity to engage with emerging research, technology, and business innovations that may disrupt and revolutionize established business theories, markets, and products. The experience will take the form of a mini-course, experience, or activity and may be a 0.5-credit or 1-credit course, depending on the nature of the experience and stated outcomes of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

BIND 2702 - GLOBAL RESEARCH PRACTICUM: LATIN AMERICA

Minimum Credits: 3
Maximum Credits: 3
This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Chile. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2708 - GLOBAL RESEARCH PRACTICUM: SOUTH ASIA

Minimum Credits: 3
Maximum Credits: 3
This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Deliverables from the practicum include a team research project and a professional portfolio designed to capture the international experience. The course includes a trip at the end of the fall semester to various businesses in the host country. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. Students will be required to attend a module preparing them for the class. This will be scheduled during the fall semester. During the spring semester, the group meets for 3-hour class sessions on Friday evenings as determined by the professors. Portions of these classes will focus on developing the research project. Selected outside speakers may also join the class to share their experiences and perspectives on business and culture.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2711 - GLOBAL RESEARCH PRACTICUM: ASIA

Minimum Credits: 3
Maximum Credits: 3
This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Asia. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Asia's business and culture. At the final class session after the trip, projects are presented in both written and oral forms.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2712 - GLOBAL RESEARCH PRACTICUM- EUROPE

Minimum Credits: 3
Maximum Credits: 3
This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Europe. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Europe's business and culture. At the final class session after the trip, projects are presented in both written and oral forms.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2713 - GLOBAL RESEARCH PRACTICUM - ASIA FULL-TIME

Minimum Credits: 0
Maximum Credits: 0
This number will serve as a billing course for the international research practicum for full-time MBA students.
Academic Career: Graduate
Course Component: Practicum
Grade Component: No Grade Required

BIND 2714 - GLOBAL RESEARCH PRACTICUM - ASIA PART-TIME

Minimum Credits: 0
Maximum Credits: 0
This number will serve as a billing course for the international research practicum for part-time MBA students.
Academic Career: Graduate
Course Component: Practicum
Grade Component: No Grade Required

BIND 2720 - GLOBAL RESEARCH PRACTICUM FEE - ASIA

Minimum Credits: 0
Maximum Credits: 0
This course will serve as a billing course for the global research practicum to Asia.
Academic Career: Graduate
Course Component: Practicum
Grade Component: No Grade Required

BIND 2721 - GLOBAL RESEARCH PRACTICUM FEE - EUROPE

Minimum Credits: 0
Maximum Credits: 0
This course will serve as a billing course for the global research practicum to Europe.
Academic Career: Graduate
Course Component: Practicum
Grade Component: No Grade Required

BIND 2722 - GLOBAL RESEARCH PRACTICUM FEE - LATIN AMERICA

Minimum Credits: 0
Maximum Credits: 0
This course will serve as a billing course for the global research practicum to Latin America.
Academic Career: Graduate
Course Component: Practicum
Grade Component: No Grade Required

BIND 2725 - GLOBAL RESEARCH PRACTICUM: SOUTH ASIA FULL-TIME

Minimum Credits: 0
Maximum Credits: 0
This number will serve as a billing course for the Global Research Practicum for Full Time students.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Non-Graded Component

BIND 2726 - GLOBAL RESEARCH PRACTICUM: SOUTH ASIA PART-TIME

Minimum Credits: 0
Maximum Credits: 0
This number will serve as a billing course for the Global Research Practicum for part-time students.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Non-Graded Component

BIND 2732 - GLOBAL RESEARCH PRACTICUM - ASIAPART-TIME

Minimum Credits: 3
Maximum Credits: 3
This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Asia. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms. Logistics: travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2734 - GLOBAL RESEARCH PRACTICUM - PART-TIME - LATIN AMERICA

Minimum Credits: 3
Maximum Credits: 3
This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in south America. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms. Logistics: travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2739 - GLOBAL RESEARCH PRACTICUM - FULL-TIME

Minimum Credits: 0
Maximum Credits: 0
This number will serve as a billing course for the international research practicum for full-time MBA students.
Academic Career: Graduate
Course Component: Practicum
Grade Component: No Grade Required

BIND 2740 - GLOBAL RESEARCH PRACTICUM: EUROPE

Minimum Credits: 1
Maximum Credits: 3
The main objective of this course is to challenge students to consider business issues from a global perspective. Requirements include a team research project and an individual portfolio designed to capture the experience. Students develop a research question in their areas of managerial specialization and draw evidence from interactions with global business professionals. Class meetings will feature a combination of lecture, case studies and guest speakers who will share their experiences and perspectives on Europe. Portions of these classes will also focus on developing the research project. At the final class session, projects are presented in both written and oral forms. This class may include a study abroad component (8-10 days), designed to expose students to actual business environments abroad. While abroad, students will visit a number of selected organizations and/or companies, and explore current business practices/issues. The number of credits for any section of the course will be determined based on the combined contact hours of on-campus and any travel components, complying with all applicable academic requirements.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2741 - GLOBAL RESEARCH PRACTICUM: LATIN AMERICA

Minimum Credits: 1
Maximum Credits: 3
The main objective of this course is to challenge students to consider business issues from a global perspective. Requirements include a team research project and an individual portfolio designed to capture the experience. Students develop a research question in their areas of managerial specialization and draw evidence from interactions with global business professionals. Class meetings will feature a combination of lecture, case studies and guest speakers who will share their experiences and perspectives on Latin America. Portions of these classes will also focus on developing the research project. At the final class session, projects are presented in both written and oral forms. This class may include a study abroad component (8-10 days), designed to expose students to actual business environments abroad. While abroad, students will visit a number of selected organizations and/or companies, and explore current business practices/issues. The number of credits for any section of the course will be determined based on the combined contact hours of on-campus and any travel components, complying with all applicable academic requirements.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2742 - GLOBAL RESEARCH PRACTICUM: ASIA

Minimum Credits: 1
Maximum Credits: 3
The main objective of this course is to challenge students to consider business issues from a global perspective. Requirements include a team research project and an individual portfolio designed to capture the experience. Students develop a research question in their areas of managerial specialization and draw evidence from interactions with global business professionals. Class meetings will feature a combination of lecture, case studies and guest speakers who will share their experiences and perspectives on Asia. Portions of these classes will also focus on developing the research project. At the final class session, projects are presented in both written and oral forms. This class may include a study abroad component (8-10 days), designed to expose students to actual business environments abroad. While abroad, students will visit a number of selected organizations and/or companies, and explore current business practices/issues. The number of credits for any section of the course will be determined based on the combined contact hours of on-campus and any travel components, complying with all applicable academic requirements.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2749 - GLOBAL RESEARCH PRACTICUM - PART-TIME

Minimum Credits: 0
Maximum Credits: 0
This number will serve as a billing course for the international research practicum for part-time MBA students.
Academic Career: Graduate

Course Component: Practicum
Grade Component: No Grade Required

BIND 2751 - GLOBAL RESEARCH PRACTICUM - EUROPE PART-TIME

Minimum Credits: 3
Maximum Credits: 3
This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in the UK. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on UK business and culture. At the final class session after the trip, projects are presented in both written and oral forms. travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2752 - GLOBAL RESEARCH PRACTICUM - PROFESSIONAL

Minimum Credits: 3
Maximum Credits: 3
This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIND 2902 - COMPARATIVE HEALTHCARE POLICY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: EMBA Healthcare Program

BIND 3013 - AI & HEALTHCARE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This doctoral seminar provides a broad and interdisciplinary exploration of the strategic management and operational challenges inherent in the AI-enabled digital transformation of healthcare organizations and the broader health and life sciences industry sector. We consider the use of AI in its entirety, including classical machine learning, modern generative AI, and advanced data analytics approaches as a core driver of change. The course will examine the deployment of AI applications rooted in healthcare operations and strategic deployment of Health IT and analytics to achieve operational excellence in healthcare delivery. Throughout the course, we will analyze critical managerial issues and strategic trade-offs arising from the digital transformation of healthcare. The seminar emphasizes the managerial, organizational, and strategic dimensions of healthcare IT and digital transformation, including implementation challenges, workforce implications, regulatory considerations, and the evolving competitive landscape. We consider how AI reshapes healthcare operations, from resource allocation and workflow optimization to quality improvement and patient engagement strategies. We will dive into complex socio-technical dimensions, such as algorithmic bias, the need for interpretable and explainable AI, and the organizational and individual-level challenges in AI adoption and governance. Ethical, economic, and incentive misalignments that arise when advanced technologies are integrated into healthcare workflows will be a central focus of readings and discussions. Each session is dedicated to discussing key research papers that

shed light on those issues, with a strong focus on business and social science perspectives. Instructors will provide a brief overview to frame the conversation, but students are expected to lead the in-depth discussion of the assigned readings and develop high-impact research proposals.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BIND 9444 - MBA INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
The internship course is designed to allow students to develop knowledge and experience in a non-classroom setting. While registered for this course, students will be employed at a company that relates to their academic training and career objectives in business. After the successful completion of the internship, the student is expected to submit a letter from their internship supervisor to confirm the completion of the internship to their academic advisor.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis
Course Requirements: Katz Grad School of Business students only.

BIND 9999 - KATZ FULL-TIME DEVELOPMENT FEE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Workshop
Grade Component: No Grade Required
Course Requirements: Katz Grad School of Business students only.

Interpersonal Skills

SWINT 2004 - GRIEF AND LOSS: INTERVENTIONS, IMPLICATIONS & UNDERSTANDING

Minimum Credits: 3
Maximum Credits: 3
This course explores the various models used by social workers who are interested in meeting the complicated needs of grieving clients and their families. Knowledge based practice patterns rooted in the framework of the tasks of mourning, the mediators of mourning and a review of the dual processing model are provided across a wide range of populations and practice settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ:SWGEN 2098 and SWGEN 2034 and SWBEH 2063 (Min grade B-)

SWINT 2007 - INTRO PSYPHMCLGY SOCL WRK PRACT

Minimum Credits: 3
Maximum Credits: 3
This course explores psychopharmacology from historical and socio-cultural perspectives, including pharmacokinetics, neurochemistry, and biological and psychosocial functioning. Students will develop knowledge, practice techniques, and intervention strategies to collaborate with clients, families, and other providers to support education, decision-making, and behaviors related to medication as part of recovery.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2011 - SOCIAL WORK PRACT WITH FAMILIES

Minimum Credits: 3
Maximum Credits: 3
This course explores various basic models used by social workers for examining, understanding, and intervening in family processes. Video, role play, and case material are used in developing skills for advanced practice in working with families.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2018 - CLINICAL SKILLS IN SOCIAL WORK PRACTICE FOR MENTAL HEALTH RECOVERY

Minimum Credits: 3
Maximum Credits: 3
The course teaches concepts and techniques employed in social work practice with individuals with mental illness and their families to promote recovery. Conditions addressed in this course include schizophrenia, other psychoses, bipolar disorder, personality disorders and co-occurring substance use and mental illness. The overall purpose is to equip the beginning practitioner with the knowledge, values, and skills requisite for working with the types of clients commonly seen at public mental/behavioral health services.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2020 - DIRECT PRACTICE WITH INDIVIDUALS

Minimum Credits: 3
Maximum Credits: 3
This course explores treatment theories and builds skills for providing culturally sensitive clinical social work with individuals. Students learn to use evidence-informed processes and offer evidence-based interventions as they engage, assess, plan, intervene, evaluate, and conclude work with diverse clients. The course also provides an introduction to and critique of the DSM.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: SWGEN 2098 and SWGEN 2034 and SWBEH 2063

SWINT 2021 - DIRECT PRACTICE WITH FAMILIES AND GROUPS

Minimum Credits: 3
Maximum Credits: 3
This course explores treatment theories and builds skills to provide culturally sensitive clinical social work with families and groups. Students learn how to provide evidence-based practice as they engage, assesses, plan, intervene, evaluate, and finish work with diverse families and in various types of treatment groups. Attention on interpersonal dynamics in families and groups and how evidence-based practices intersect with evidence-based interventions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2025 - SOCIAL WORK PRACTICE IN INTEGRATED HEALTH

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the clinical and administrative skills, roles and functions of social work practice which take place in a wide range of community based agencies and institutions at the primary, secondary and tertiary levels of intervention with and on behalf of a diverse population. Knowledge skills and ethics are integrated toward promoting readiness for employment in the healthcare field.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2030 - DIRECT PRACTICE WITH OLDER ADULTS

Minimum Credits: 3
Maximum Credits: 3
The range of interpersonal practice with, and on behalf of, older adults is defined in terms of primary, secondary and tertiary levels of preventive intervention. The social work roles and interventive skills used in case management are taught. Psychosocial/systems, cognitive/behavioral and other treatment approaches central to social work are examined and evaluated for their application to an eclectic-based intervention with older clients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2031 - ADV DRCT PRAC: COGNITV/BEHVRL

Minimum Credits: 3
Maximum Credits: 3
The course focuses on the applicability of the cognitive-behavioral model to advanced direct practice with individuals, families, and small groups. Students learn skills in applying CBT assessment and treatment methods for a variety of mental and behavioral conditions. Particular attention is given to empirical methods for monitoring and evaluating client progress and outcomes. The course also emphasizes the relevance of cognitive-behavioral practice to advanced direct practice with populations experiencing marginalization and oppression.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2032 - ADV DRCT PRAC: SOCIAL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Building on the student's knowledge of social systems theory gained in the prerequisite course in generalist practice and models of intervention, this course will focus on these theoretical frames of reference in terms of application to interpersonal practice with individuals, families and groups.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2033 - ADV DRCT PRAC: PSYCHODYNAMIC

Minimum Credits: 3
Maximum Credits: 3
In this course, students learn to apply advanced concepts in drive theory, ego psychology, object relations, self-psychology, and attachment theory to case studies, developing skills to critique these theories in relation to historical contexts and paradigms. The course also emphasizes the relevance of psychodynamic approaches to advanced direct practice with populations experiencing marginalization and

oppression
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2035 - INTIMATE PARTNER VIOLENCE

Minimum Credits: 3
Maximum Credits: 3
This course examines the dynamics and treatment implications of working with family members who have experienced various forms of physical and/or sexual maltreatment from other family members. Physical and sexual child abuse, spouse abuse and marital rape are topics of concern.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWGEN 2034 and SWBEH 2063 (Min grade B-)

SWINT 2040 - SOCIAL WORK DIRECT PRACTICE: HEALTH AND AGING

Minimum Credits: 3
Maximum Credits: 3
This course provides an in depth exploration of theoretical frameworks and evidence informed interventions for use in health care settings and in gerontological social work. Using a lifespan perspective and the social determinants of health framework, students will learn to assess, plan, implement, and evaluate interventions and strategies that address the complex needs of individuals in various health care settings and across the lifespan. The course emphasizes person in context and biopsychosocial spiritual cultural factors, and examines how medical and social models of aging and disability frame experiences of illness, health care use, wellness, and thriving. Students explore variables related to access to services and resources, continuity of care, coordination of benefits, and the cultural and structural barriers that shape health and aging. Particular attention is given to how structural inequities, systemic barriers, identity, and social location shape experiences of health care and aging and contribute to inequities across the lifespan. A strong emphasis is placed on the complex and important role of social work in interprofessional collaboration within both integrated and non integrated systems of care. Students participate in learning activities that build skills in holistic assessment, identification of biopsychosocial spiritual cultural factors, and the use of tools that enhance assessment and intervention in health and aging settings. The course supports students in developing SMART goals, selecting evidence informed practices, describing their use in intervention with a case, and evaluating outcomes for adults and older adults with consideration for diverse identities and lived experiences. Students also examine the psychosocial impact of acute and chronic illness, aging, and cognitive changes on individuals and their families, including the navigation of resources, ethical considerations, and barriers to treatment. Throughout the course, activities such as interprofessional team work, case assignments, reflections, and exploration of ethics at end of life help students apply concepts through a culturally responsive, anti oppressive, and justice oriented social work lens.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SWINT 2042 - SOCIAL WORK WITH SUBSTANCE USE AND OTHER ADDICTIVE DISORDERS

Minimum Credits: 3
Maximum Credits: 3
This course offeres a comprehensive overview of substance use disorders, including etiology, diagnosis, evidence-informed treatment, and the impact on individuals, families, workplaces, and communities. Using recovery and biomedical models, students critically evaluate and apply skills to assess and treat substance use with an emphasis on psychosocial interventions and the impact of the sociopolitical context.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2046 - PLANNED SHORT-TERM TREATMENT

Minimum Credits: 3
Maximum Credits: 3
A pluralistic theoretical framework for planned short-term treatment, highlighting contributions from interpersonal and social learning orientations is examined, and major research studies supporting short-term intervention are reviewed. Attention is given to the goals and process of the initial interview and major change strategies (behavioral rehearsal, task assignment, skill training, and cognitive restructuring) are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2049 - DIRECT PRACTICE WITH CHILDREN

Minimum Credits: 3
Maximum Credits: 3
This course prepares students to work directly with children in social work settings. A variety of teaching techniques are used to help students: utilize different theories and models of working with children; differentiate fact from inference and normal from deviant development; be comfortable with a variety of play media; and examine in-depth the theme of separation and its effect on the child.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2049 - DIRECT PRACTICE WITH CHILDREN

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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 (MIN GRADE 'B-')

SWINT 2049 - DIRECT PRACTICE WITH CHILDREN

Minimum Credits: 3
Maximum Credits: 3
This course focuses on clinical assessment, evidence-informed models of intervention, and practice skills related to direct social work practice with children, adolescents, and their families. Utilizing neurobiological, developmental, ecological, and systems perspectives, it examines factors that pose risks to the health and development of youth and families. Specific manifestations of developmental stress in childhood are explored within a competency- and strengths-based framework, including behavioral health problems commonly observed in children and adolescents.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2049 - DIRECT PRACTICE WITH CHILDREN

Minimum Credits: 3
Maximum Credits: 3
This course focuses on clinical assessment, evidence-informed models of intervention, and practice skills related to direct social work practice with children, adolescents, and their families. Utilizing neurobiological, developmental, ecological, and systems perspectives, it

examines factors that pose risks to the health and development of youth and families. Specific manifestations of developmental stress in childhood are explored within a competency- and strengths-based framework, including behavioral health problems commonly observed in children and adolescents.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2049 - DIRECT PRACTICE WITH CHILDREN & ADOLESCENTS

Minimum Credits: 3
Maximum Credits: 3
This course prepares students to work directly with children and adolescents in social work settings. A variety of teaching techniques are used to help students: utilize different theories and models of working with children and adolescents; differentiate fact from inference and normal from deviant development; be comfortable with a variety of play media; and examine in-depth the theme of separation and its effect on the child.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2050 - COUPLES THRPY: THRY & TECHNIQUES

Minimum Credits: 3
Maximum Credits: 3
This course concentrates on theory and techniques of treatment with the marital dyad. Emphasis is on empirically validated methods, with particular focus on developing an eclectic approach for advanced social work practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2053 - GROUP INTERVENTIONS WITH HIGH-RISK POPULATIONS

Minimum Credits: 3
Maximum Credits: 3
Theory and concepts related to advanced social work practice with groups, including knowledge of group types, processes, selection, and composition, as well as group leader roles and functions are all considered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2058 - SOCIAL WORK EDUCATIONAL SETTINGS

Minimum Credits: 3
Maximum Credits: 3
This course provides a knowledge base for the practice of social work in school or school-related settings. Focus is on application of knowledge, and values and skills of social work practice toward resolution of diverse problems encountered by pupils, schools and communities in the effort to achieve educational goals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWGEN 2034 and SWBEH 2063 (min grade B-)

SWINT 2063 - ISSUES IN CHILD MALTREATMENT

Minimum Credits: 3
Maximum Credits: 3
This course will provide a comprehensive examination of child sexual maltreatment issues at the micro, meso, and macro levels: etiology; identification; child welfare system response; treatment; the impact the maltreatment has upon individuals, families, groups, and the community (including those coming into contact with maltreatment in the course of their work) and resilience in the face of maltreatment. Emphasis will be on the student's development of assessment skills, knowledge of the therapeutic process of recovery, and the role and function of organizations. Social work interventions and treatment modalities, including outcome data, will be presented. Students will be offered information about maltreatment among diverse populations. All topics will be related to and examined in the light of the core values, ethical principles, and standards of the national association of social workers code of ethics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: SWINT 2020 or SWINT 2082 (MIN GRADE 'B-")

SWINT 2072 - SOCIAL WORK PRACTICE AND TRAUMATIC STRESS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on social work practice in treating trauma, exploring theories of primary and secondary traumatic stress, feminist and anti-racist perspectives, and the neurobiology of stress. Students learn trauma-sensitive assessment and intervention skills with individuals, families, and organizations. Additionally, students begin to develop evidence-supported strategies for self-care to sustain and thrive as practitioners engaged in direct trauma work.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWGEN 2034 and SWBEH 2063 (Min grade B-)

SWINT 2073 - INTEGRATED HEALTHCARE AND PHARMACOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop general knowledge of medical terminology and the social worker's role in medication management. Students learn how to educate and support patients in adhering to recommended medication treatment and in being knowledgeable about possible side effects. Social workers have an extremely important role to play in the patient's ability to adhere to medication requirements. They can support patient compliance with medication by providing information and education that allows that patient to have realistic expectations for what may be achieved with medication. In addition, they can also work with patients to achieve their goals for improving medication adherence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SWINT 2074 - SPIRITUALITY AND SOCIAL WORK

Minimum Credits: 3
Maximum Credits: 3
This course explores the role, nature, and impact of spirituality in and upon social work practice and the populations that social workers serve. It builds upon an understanding of spirituality and religious practice as aspects of human diversity which occurs in the context of ecosystems theory, theories of human development, and models of helping. Students will gain spiritual assessment and intervention skills within the scope of social work practice including micro, mezzo and macro levels of practice. Course will highlight themes of cultural competence, variety of spiritual and/or religious practices and traditions, potential harms and benefits, professional development, and ethical considerations for practice.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWGEN 2034 and SWBEH 2063 (Min Grade B-)

SWINT 2076 - HUMAN SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
This course presents current research about human sexuality, discusses the range of sexual life-styles, and develops a treatment typology for therapists working with couples and individuals with sexual dysfunctions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: SWINT 2082 or SWINT 2020 (Min Grade 'B-')
Course Attributes: Gender, Sexuality & Women's St

SWINT 2082 - MODELS OF INTERVENTION

Minimum Credits: 3
Maximum Credits: 3
The course provides a framework for understanding and differentially using treatment models in interpersonal social work practice. It examines four basic treatment models: psychosocial, crisis intervention, behavior modification, and an interpersonal approach based upon either communication theory, the client-centered approach, or an experiential humanist approach. These basis models are compared and contrasted.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWINT 2096 - CLIN SOCL WRK AFRCN AMERCN FMLY

Minimum Credits: 3
Maximum Credits: 3
The overall objective of this course is to provide a knowledge base on African-American families within a community context that is the basis for developing methods and skills relevant for clinical intervention with African American families. It will provide the student with the opportunity to expand on concepts, skills and assumptions about clinical transactions learned in basic clinical method courses. Conceptual models for assessment/intervention will assist students to clarify and become comfortable with theoretical and practice approaches with black families.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: SWINT 2082 or SWINT 2020 (Min Grade 'B-')

SWINT 2097 - DRCTD STUDY INTERPERSONAL SKILLS

Minimum Credits: 1
Maximum Credits: 3
A student-initiated educational experience, guided by a faculty member that significantly supplements the social work interpersonal skills curriculum and conforms to academic course content expectations.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

SWINT 2099 - FIELD WORK

Minimum Credits: 1
Maximum Credits: 8
The field practicum emphasizes the integration and application of social work values, knowledge and skills in practice settings. Placements are in community service delivery systems and are individualized to combine the student's choice of concentration area, certification program and specialized skills interest.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PREQ: SWGEN 2099; SBPLAN: Direct Practice (Social Work-MSW)

Irish

IRISH 2909 - SPECIAL TOPICS IN IRISH

Minimum Credits: 3
Maximum Credits: 3
This course will be a topics course, meaning that the specific content of the course will change each time the course is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Italian

ITAL 0060 - LITERARY ITALIAN 1

Minimum Credits: 3
Maximum Credits: 3
An introduction to Italian literature and culture. The majority of readings are in the prose and poetry of modern Italian writers.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212 or 0213 or 0214) or FP (0003 or 0006) *Applies to all WRIT Courses*

ITAL 1078 - FULBRIGHT SEMINAR IN ITALIAN STUDIES

Minimum Credits: 3
Maximum Credits: 3
The Fulbright Seminar in Italian Studies is the spring-term undergraduate-level course offered by the Visiting Fulbright Distinguished Lecturer from Italy. This course is typically offered in the fields of art history, cultural studies, film, history, literature, museum studies, political science, or urban studies.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: LG/SNC Elective Basis

ITAL 1082 - ITALIAN RENAISSANCE LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the literature of Renaissance Italy. Readings include a mixture of poetry and prose.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

ITAL 1085 - DANTE'S DIVINE COMEDY

Minimum Credits: 3
Maximum Credits: 3
In this course, which covers the key episodes of Dante Alighieri's three-part epic poem, the Divine Comedy (with particular emphasis on Inferno), we will follow Dante's journey through the terrifying abysses of Hell to the luminous expanses of Heaven. We will consider works and phenomena inspired by Dante across a range of fields and genres. Students will gain an understanding of the remarkable cultural impact of Dante's work from his own time to today, in Italy, the U.S., and across the globe. No prerequisites. This class will be conducted in English and does not require knowledge of Italian. It satisfies the Literature General Education Requirement, and counts for the Italian minor and major tracks.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

ITAL 1089 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Period and literary topics are determined by the instructor.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

ITAL 2000 - INTRODUCTION TO GRADUATE STUDIES IN MODERN LANGUAGES AND CULTURES

Minimum Credits: 1
Maximum Credits: 1
This one-credit course offers an introduction to graduate study in modern languages and cultures. It will help you adjust to your graduate program and will cover the nuts and bolts of how to take seminars, do readings, teach, balance your various obligations and meet the emotional and life challenges of graduate school. What matters most in teaching is not skills but a sense of personal identity and a strong relationship to the disciplinary knowledge. We will engage with the latest research in positive psychology, resilience, pedagogy, deep learning, creativity, sociology of work and executive coaching. The class will prepare you better to move among different kinds of professional situations within and outside academia.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ITAL 2092 - ITALIAN TRANSLATION STUDIES

Minimum Credits: 3
Maximum Credits: 3
This course explores the field of Translation Studies from the Italian perspective. It may address any or all of the following issues: the history of translation as a literary practice, editorial projects that involve translation, the ethics of translation, translation between standard and dialect languages, translation and power relations, the relative primacy of source and target texts, the relationship between translation and global literatures. Students will develop and pursue final projects that involve commentary on published translation or new translation projects with annotation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ITAL 2100 - INTER/VISTA: LA STORIA ORALE IN ITALIA

Minimum Credits: 3
Maximum Credits: 3
This graduate-level seminar explores oral testimony as a form of cultural and historical documentation, political praxis, and knowledge production. This course is designed to be both an introduction to the theories and methods of oral history, as seen through its practice in Italy, and an alternative history of Italy in the 20th and 21st centuries. Throughout, we will extend our discussions to the performance of self and the problems of memory.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ITAL 2603 - REPRESENTATIONS OF THE HOLOCAUST

Minimum Credits: 3
Maximum Credits: 3
This course examines representations of the holocaust in literature and film, with particular attention to the stages of the testimonial process, the issues of guilt and the grey zone, and the interplay between the problem of ineffability and the use of "traditional" narrative models.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, West European Studies

ITAL 2605 - BOOKS OF ISLANDS: MEDITERRANEAN NETWORKS AND TEXTS, 1300-1700

Minimum Credits: 3
Maximum Credits: 3
In this graduate-level seminar we will study a range of medieval and early-modern texts about islands, archipelagos, and maritime travel, with particular attention to what these texts can reveal about the networks that linked Italy to the broader Mediterranean world and the globe - networks of knowledge exchange, commerce, travel and migration. We will examine the rise and development of the books known as the "isolari" ("Books of Islands") - a popular genre between the fifteenth and seventeenth centuries that introduced readers to the world's islands and archipelagos through a curious blend of text and image. We will also study accounts of islands and travels by major medieval and early modern Italian authors including Marco Polo, Francesco Petrarca, Giovanni Boccaccio, and Tommaso Campanella. Relevant critical work in the areas of transnational and environmental studies, media and materiality (with attention to the material realities that shaped the production and circulation of books and maps, in manuscript and in print), and spatial theory will enrich our approaches to these texts. The class will include an introduction to digital tools that can fruitfully be used by humanists for geographically, spatially, and network-oriented work, and students will collaborate on a digital humanities project using the ArcGIS Online mapping platform.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ITAL 2607 - CULTURES OF FASCISM

Minimum Credits: 3
Maximum Credits: 3
This graduate level seminar explores the cultural and political landscape that fostered Italian Fascism (1922-1945) and facilitated its progression from a revolutionary movement to a political party and finally a dictatorial regime. In particular, we examine the close connection between a Fascist national culture and political control, manifested in Fascism's ability to shape the ideal Fascist political subject and create broad and unlikely political consensus through a dizzying array of popular cultural forms and products. We will dedicate the last weeks of the semester to Italian Fascism's afterlives and the ways in which post-war culture has looked back on the period in complex and often contradictory ways.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

ITAL 2610 - SICILY WRITING AND WRITTEN

Minimum Credits: 3
Maximum Credits: 3
This graduate-level seminar provides a forum for the analysis of Sicilian cultural production and a laboratory for the production of new knowledge about this Mediterranean Island. The seminar's texts are chiefly drawn from narrative and poetic genres, but also considers cinema, theatre, journalism, essays, and the visual and plastic arts that seek to express and represent the Sicilian experience.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ITAL 2620 - BORDERLESS ITALY?: POWER, MIGRATION, TRAVEL, AND MOBILITY

Minimum Credits: 3
Maximum Credits: 3
This graduate-level seminar approaches the study of post-Unification Italy from the perspective of Italy's various internal and external borders within national, transnational, colonial, and diasporic contexts, and the identities that are generated in their definition, enforcement, and crossing. Drawing on the fields of space and place, border theory, and geocriticism, our study will consider a selection of literary, cinematic, and historical/documentary texts from the Risorgimento; Italy's Fascist Empire; and periods of diasporic and internal migrations, from and to Italy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ITAL 2630 - MEDIA OF ITALIAN COLONIALISMS

Minimum Credits: 3
Maximum Credits: 3
This graduate-level seminar examines the texts, sights, and sounds of colonial conquest, anti-colonial activism, and postcolonial hybridities in Italy. In histories of European imperialism, the Italian occupations of Libya and East Africa draw little attention. Outside scholars and Italians themselves have described Italy's belatedness (to unification, to industrialization, to the colonial contest) relative to northern European nations. These very anxieties drove the violence of Italy's eventual colonial conquest, as well as the subsequent amnesia surrounding it. We will explore how Italian media produce imperial ideologies, as well as possibilities of transnational solidarities, resistance, and belonging by examining the cinema of empire under the Italian Republic and Fascism, the midcentury activist media surrounding the Algerian struggle for independence, and the twenty-first century literature, documentaries, and music of contemporary postcolonial Italy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ITAL 2650 - ITALIAN HORROR CINEMA: INFLUENCE, TRANSNATIONALISM, ARCHIVES

Minimum Credits: 3
Maximum Credits: 3
The seminar focuses on three crucial figures of Italian horror cinema: Mario Bava (1914-1980), Lucio Fulci (1927-1996), and Dario Argento (1940). As a product of genre fiction, the cinema of Bava, Fulci and Argento is at once influenced by the transnational canon and yet influential on the themes, on the aesthetics, and on the language of horror cinema. The seminar is divided in two parts: the first section provides the students with a comprehensive knowledge of the three authors' works, filmic styles, influences, and impact. The second part of the seminar, instead, is conducted as an archival research laboratory: students are guided in a research project of their choosing as they collect and analyze archival materials in light of what they have learned during the first portion of the course. In particular, students will be encouraged to take advantage of the George A. Romero Archival Collection, the Archive of the National Cinema Museum in Turin, and the Archive of the Cineteca in Bologna.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ITAL 2660 - TOPICS IN ITALIAN CINEMA

Minimum Credits: 3
Maximum Credits: 3
Italian films about people crossing borders express anxieties about this movement and Italy's position in a globalized world, and recent scholarship points to these films as a transnational Italian cinema. This course explores this migration cinema, but it also argues that Italian filmmaking from its inception has been transnational, from the role of European and American criticism in creating neorealism, to the era of Hollywood on the Tiber, to the multinational productions of genre cinema. In examining the processes of circulation, exchange, and adaptation inherent in the Italian film industry, we interrogate how the cross-border processes of cinema-making has in turn made Italy. How has Italian cinema shaped ideas about Italy and Italians, both domestically and internationally? How do genres circulate across porous national traditions of filmmaking? What imaginaries and anxieties about Italy as a nation are present in these films, as well as in how they are discussed by critics and audiences? This course has four main objectives: (1) to engage with a spectrum of Italian cinema; (2) to equip you to analyze the technical and thematic aspects of this filmmaking; (3) to practice framing Italian cinema as a product of transnational movement, adaptation, and exchange; and (4) to help you produce a final project-a conference paper, a video essay, or a project of your own design-that analyzes a film within this transnational frame. This course will be taught in Italian with materials in Italian and English.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ITAL 2701 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Period and literary topics are determined by the instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

ITAL 2710 - INTRODUCTION TO LITERARY AND CULTURAL THEORY: LANGUAGE, GENDER, HISTORY

Minimum Credits: 3
Maximum Credits: 3
How do language arts and practices live within a social and cultural context? What is the place of the critic and scholar of literature in the Humanities both as researcher and pedagogue? What kind of theoretical, wider perspective, can help us frame the context and different meanings of a work of art? Focused on the relation between language arts and historicity, the class will address issues concerning representation, gender, politics, education, and the psychology of language rules and infractions. Among the thinkers helping us in our discussions, we will study pragmatic linguists such as Emile Benveniste, social critics of hegemony such as Antonio Gramsci, psychoanalytic approaches to language and power in Jacques Lacan and Franz Fanon, the social critique of literary elitism in Pierre Bourdieu, the redefinition of cultural agency in postcolonial critics such as Gayatri Spivak and Achille Mbembe, the contemporary critique of gendered discourse in the works of Judith Butler, Sara Ahmed and Paul Preciado, and the ecocriticism of Stephanie Posthumus. The class will be organized thematically rather than according to a strict chronology of different approaches. The professor will try to insert workshopping exercises in the classroom, in order to alleviate and share the burden of understanding the contemporary tenets of our field. Seminar taught in English.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies, West European Studies

ITAL 2752 - ITALIAN THEATER SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course discusses topics and themes in Italian theater.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ITAL 2801 - HISTORY OF ITALIAN LANGUAGE

Minimum Credits: 3
Maximum Credits: 3
This course will explore the historical roots of the modern Italian language, and the lively cultural debates around linguistic issues that have shaped Italian language and culture from the Middle Ages to the present day. Issues that we will examine include the relationship of the Italian language with Latin, and with the numerous regional languages (or dialects) spoken in Italy; the linguistic influence of Italy's "Three Crowns" and the dominance of Tuscan; the interplay between written and spoken varieties of Italian; and the political dimensions of language use in Italy. The course will be conducted in Italian. Advanced undergraduate Italian majors can enroll in this graduate-level course with the instructor's permission.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Medieval & Renaissance Studies, West European Studies

ITAL 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
This course enables M.A. Candidates to do research under the direction of a faculty member, on a topic of mutual interest.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

ITAL 2903 - MA FINAL PROJECT DIRECTED STUDY

Minimum Credits: 3
Maximum Credits: 3
This course involves developing and planning a faculty-guided MA Final Project selected by the student in consultation with the Italian faculty, and in alignment with the student's future plans beyond completion of the MA in Italian. Students may select from (but are not limited to) the following Final Project options: Presentation on previously executed teaching demo (cluster or module consisting of multiple lessons, planned in consultation with appropriate faculty); Syllabus development; Podcast; Digital Humanities project; Annotated translation; Conference paper (with reflections on expansion); Article of professional article quality and length (30 pp min.). In developing their projects, students must conduct research beyond the scope of any single graduate course, and are encouraged to develop and formulate their topic across the variety of courses and experiences that have made up their MA experience. Students will work closely with the faculty member whose field is most relevant to the chosen topic to identify appropriate areas for expansion, additional texts or case studies, and relevant methodologies and/or pedagogical approaches.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ITAL 2910 - COMPREHENSIVE EXAMINATION MA

Minimum Credits: 1
Maximum Credits: 3
This course is intended for M.A. Candidates in their last term of study when they present themselves for the ma comprehensive examination.
Academic Career: Graduate
Course Component: Independent Study

Grade Component: Grad SN Basis
Course Attributes: West European Studies

ITAL 2970 - TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Hands-on teaching practicum course for graduate students to learn about university-level foreign language teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

ITAL 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This independent course is for M.A. Students who have completed, or are completing in their last term of study, all course requirements for the M.A. Degree.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: West European Studies

Japanese

JPNSE 1055 - FOUNDATIONS OF JAPANESE LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the major works, authors, and genres of premodern Japanese prose, poetry, and theatre. Starting with Japan's first written mytho-histories written using the imported Chinese character set, we will trace the development of the vernacular writing system (kana) and the emergence of prose and poetic genres among aristocrats during Japan's classical era, then consider the emergence of performance genres and vernacular genres popular among the warrior class during the medieval period, before finally turning to works in all genres composed during Japan's urban early modern period. Over the course of the semester, we will explore individual works and their historical contexts as well as recurring themes, motifs, and aesthetic concerns that helped shape early Japanese literature and theatre, devoting attention as well to the problems and possibilities raised by reading works in English translation. Because this is an upper-level class, you will be expected to read and consider both primary texts and secondary literature every week. EALL suggests completion of EAS 0007 or JPNSE 0085 as solid preparation for this class.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

JPNSE 1070 - WORLD OF JAPAN

Minimum Credits: 3
Maximum Credits: 3
Please see course description listed under "Class Notes."
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

JPNSE 2023 - ASPECTS OF THE JAPANESE LANGUAGE

Minimum Credits: 3
Maximum Credits: 3
This course introduces the student to the Japanese language through a study of its structure, vocabulary and cultural heritage. Some topics discussed include word order, basic structural patterns, particles such as Wa and Ga, sexism, and word formation. This course is useful for the Japanese studies student wishing to have a deeper understanding of the language as well as the linguistics student interested in gaining knowledge of a non-Indo-European language.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2030 - JAPANESE LANGUAGE TEACHING AND LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course is intended to introduce students to the field of Japanese language teaching and learning. Students will become familiar with how the Japanese language can be effectively taught, and with aspects of the Japanese language and culture that impact Japanese language pedagogy. Students will also become familiar with the methods used in language pedagogy research, and with some of the most recent research in the field.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2035 - PRAGMATICS OF JAPANESE

Minimum Credits: 3
Maximum Credits: 3
This course will provide an introduction to the usage aspects of Japanese by reading articles on pragmatic aspects of the language. The instructor will lecture on salient points and lead discussion on specific issues and the appropriate use of the language.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2040 - INTRODUCTION TO CLASSICAL JAPANESE 1

Minimum Credits: 3
Maximum Credits: 3
This classical Japanese language course is studied through readings of prose and poetry texts written during and immediately after the Heian period. Literary and linguistic techniques are discussed and points of contrast with the modern language are analyzed. Also introduced are reference materials dealing with classical Japanese language and literature. Students are encouraged, but not required, to complete JPNSE 1023 Aspects of the Japanese Language before enrolling in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2055 - FOUNDATIONS OF JAPANESE LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the major works, authors, and genres of premodern Japanese prose, poetry, and theatre. Starting with Japan's first written mytho-histories written using the imported Chinese character set, we will trace the development of the vernacular writing system (kana) and the emergence of prose and poetic genres among aristocrats during Japan's classical era, then consider the emergence of performance genres and vernacular genres popular among the warrior class during the medieval period, before finally turning to works in all genres composed during Japan's urban early modern period. Over the course of the semester, we will explore individual works and their historical contexts as well as recurring themes, motifs, and aesthetic concerns that helped shape early Japanese literature and theatre, devoting attention as well to the problems and possibilities raised by reading works in English translation. Because this is a

graduate-level class, you will be expected to read and consider both primary texts and secondary literature every week, meet individually with the instructor every other week, and write a longer research paper than undergraduates taking JPNSE 1055. EALL suggests completion of EAS 0007 or JPNSE 0085 as solid preparation for this class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

JPNSE 2056 - JAPANESE LITERATURE AND THE WEST

Minimum Credits: 3
Maximum Credits: 3
A critical study of modern Japanese works and selected modern Western literary materials with special emphasis on intensive analysis by means of modern Western criticism. The course is designed to encourage the student to examine significant similarities and differences between Japanese and non-Japanese materials and to judge the content from an oriental as well as a Western perspective.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2057 - JAPANESE CULTURE AND SOCIETY THROUGH CINEMA

Minimum Credits: 3
Maximum Credits: 3
This course provides a critical study of selected international prize winning Japanese films and compares these films with Western films dealing with similar themes. The student learns to analyze and interpret films; becomes familiar with particular genres of Japanese films compared with Western; studies the history of Japanese cinema and its place in international cinematography and exposes the inter cultural benefits of judging the content of the films from oriental and Western aesthetic perspectives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

JPNSE 2058 - WESTERNS AND SAMURAI FILMS

Minimum Credits: 3
Maximum Credits: 3
A focus on the critical comparative study of two filmic genres--the samurai representing Japanese cinema and the Western representing American cinema. The course demonstrates the analytical processes of the film leading to its structural unity; shows the significance of both genres with respect to the history of Japanese, American and European cinema; compares approaches to films of different countries and provides the overall benefits of approaching films from an intercultural standpoint.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2059 - JAPANESE LITERATURE ON SCREEN

Minimum Credits: 3
Maximum Credits: 3
This course will investigate how literature and film treat some major ideological and socio-cultural issues in Japanese society. Readings of pre-modern tales, modern fiction and contemporary novels. Film adaptations will represent the best of Japan's postwar cinematic tradition. The course is designed for the student interested in Japanese society, culture and intellectual currents through film and literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies

JPNSE 2065 - DETECTIVE AND MYSTERY FICTION IN JAPAN

Minimum Credits: 3
Maximum Credits: 3
This course is a one-semester introduction to Japanese literature in English translation. The course is designed for students interested in broadening their knowledge of Japan, as well as for students who wish to compare other literature they have studied with that ofjapan. No prior knowledge of Japan or Japanese is necessary to enroll.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2070 - WORLD OF JAPAN

Minimum Credits: 3
Maximum Credits: 3
Students will receive a grounding in basic principles of Japanese classical literature, poetry and aesthetics. They will read the entire text in English of the Tale of the Genji and examine important works in Japanese literature composed in later periods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2071 - THE WORLD OF JAPAN

Minimum Credits: 3
Maximum Credits: 3
This course covers the period between 1570 and 1870. Beginning with the unification of Japan under sixteenth century military war lords and ending with the collapse of the Tokugana Shoganate. Students will read selections from the major scholarly literature on the period.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

JPNSE 2080 - GHOSTS, MASKS AND ACTORS

Minimum Credits: 3
Maximum Credits: 3
A critical study of three major dramatic genres of Japan--noh, bunraku and kabuki--in cultural origins. Areas to be explored are the use of masks in the world of the noh theatre, the kabuki with its female impersonators and the near-lifesize puppets of the bunraku. Also discussed is the impact that noh and kabuki have had on modern Japanese and non-Japanese theatrical and film genres.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2081 - FORMS OF JAPANESE THEATRE

Minimum Credits: 3
Maximum Credits: 3
This course will provide a survey of various major forms of Japanese theatre using English language materials. Students will have access to relatively ancient forms of Japanese theatre such as kagura and no, kabuki drama and the bunraku puppet theatre through film and videocassette. The modern and avant-garde theatre are also accessible through translation and videocassette material. This course is designed for upperclass majors in theatre arts and non-majors in related fields.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2085 - INTRODUCTION TO EAST ASIAN CINEMA

Minimum Credits: 3
Maximum Credits: 3
This course investigates the ways in which film addresses and treats the major socio-cultural issues in modern society through a critical study of the works of Chinese and Japanese master filmmakers. The course focuses on changes in marriage and family patterns, women's roles and the plight of youth.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2700 - INTRODUCTION TO THEORY AND PRACTICE OF TRANSLATION

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course that answers to a growing interest in the theory and practice of translation from Japanese to English. The genres of texts that will be dealt with include literary works of various kinds (novels, poems, children's books), magazine and newspaper articles, web posts, manga, subtitling of anime and other videos, and texts of technical nature. Students will first learn broadly about the discipline of translation studies, including a history of translation and issues in translation (invisibility of the translator, culturally specific translatability issues, etc.). Students will then learn specific types of translation issues that come up when translating Japanese into English, using excerpts from a variety of genres as case studies. Special attention is paid to the structural differences between Japanese and English, cross-cultural differences in stylistics, writing with clarity, reference work, etc.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

JPNSE 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
The student undertakes a course of study under the direct supervision of a department faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Jewish Studies

JS 0001 - ELEMENTARY HEBREW 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the fundamentals of the Hebrew language. We study basic vocabulary, grammar, and sentence structure, and learn to read and write Hebrew. Emphasis is on learning to speak the language.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

JS 0002 - ELEMENTARY HEBREW 2

Minimum Credits: 3
Maximum Credits: 3
Continuation of the introductory work begun in Hebrew 1. Students further develop their reading, writing, and speaking skills, with the greatest emphasis placed on oral communication.

Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

Korean

KOREAN 1086 - NEW MEDIA CULTURE IN KOREA

Minimum Credits: 3
Maximum Credits: 3
This course examines Korea's rapidly evolving mediascape as one of the most striking examples of society's deep immersion in new media technology. The integration of media and everyday life has particularly been swift and intense in Korea, reshaping politics, the economy, social relations, and cultural practices. Students will explore how the new mediascape reflects, or catalyzes larger social and cultural transformations. Emphasis will be put on the political and economic conditions behind such developments and critical engagement with theoretical issues such as platformativity, algorithmization, datafication, post-broadcast democracy, and media expandability. Through this exploration, students will foster an in-depth, critical awareness of how new media ecology shapes our contemporary life and the global flow of culture.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

KOREAN 1700 - THEORY AND PRACTICE OF TRANSLATION

Minimum Credits: 3
Maximum Credits: 3
Contemporary Korean literature has gained recognition worldwide, thanks in part to English translations. While most readers have welcomed these translations, some have criticized them for being "bad"-for being "unfaithful" to the Korean original or for being difficult to read in English, among a host of other reasons. In this course, we will examine works of contemporary Korean fiction that have been instrumental in creating the global boom in Korean literature and the translation debates around it. We will read the English translations of these works alongside selections from the Korean original to assess the translations ourselves. In doing so, we will also consider what the criticisms of these translations are really trying to say. By the end of this course, you will have further developed your ability to read in the Korean language, honed your skills in producing English translations of Korean fiction, and strengthened your ability to craft expository essays based on close readings of literary texts.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

KOREAN 2070 - WORLD OF KOREA

Minimum Credits: 3
Maximum Credits: 3
This Special Topics course explores various topics related to the political, economic, and cultural developments in modern Korea. Topics include, but are not limited to, colonial rule and its legacy (colonial modernity), the Korean War (and the division system), military rule, state-led economic development, the democratization movement, gendered modernity, Korean diaspora, segehwa (or globalization), multiculturalism, new media culture, and hallyu (or Korean Wave). Topics may be explored using a variety of sources, including texts selected from a variety of different fields such as history, culture, and arts (literature, theater, music and film). Students are expected to develop skills in situating the questions at hand within broader contexts such as East Asia and the Pacific Rim.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

KOREAN 2086 - NEW MEDIA CULTURE IN KOREA

Minimum Credits: 3
Maximum Credits: 3
This course examines Korea's rapidly evolving mediascape as one of the most striking examples of society's deep immersion in new media technology. The integration of media and everyday life has particularly been swift and intense in Korea, reshaping politics, the economy, social relations, and cultural practices. Students will explore how the new mediascape reflects, or catalyzes larger social and cultural transformations. Emphasis will be put on the political and economic conditions behind such developments and critical engagement with theoretical issues such as platformativity, algorithmization, datafication, post-broadcast democracy, and media expandability. Through this exploration, students will foster an in-depth, critical awareness of how new media ecology shapes our contemporary life and the global flow of culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

KOREAN 2088 - KOREAN CINEMA

Minimum Credits: 3
Maximum Credits: 3
This course understands Korean cinema as a valuable venue for critical engagement in discussion of various sociocultural questions. The topics and texts for this course also invite reflection on the complex ways in which local film and media intersect with transnational flows. Issues explored in this course include Korean film history (from the silent era to the present), genre auteurism (in association with reinvention of popular genres like melodrama, horror, comedy, romance, period drama, Manchurian Westerns, K-zombie, revenge story, jopok/gangster films, courtroom drama, action/adventure films, animation, and fantasy), major directors, independent films, documentary, women's films, queer cinema, spectatorship, stardom, new media, film sound, post-trauma films, unban-myth films, K-dystopia (death game drama, disaster films, postapocalyptic tales), Korean diaspora, and North Korean cinema.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Latin

LATIN 2200 - LATIN SEMINAR: EPIC

Minimum Credits: 3
Maximum Credits: 3
In this course students with advanced preparation in Latin undertake close study in the area of Roman epic poetry. The course may be repeated for credit provided the specific material covered is different.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

LATIN 2218 - APPROACHES TO ROMAN EPIGRAPHY

Minimum Credits: 3
Maximum Credits: 3
This seminar will study the theory and practice of Roman rhetoric in varying literary, philosophical and historical contexts. We will read key passages and orations from a selection of authors including Cicero, Seneca, and Tacitus, and analyze their rhetorical structure and argument. At the same time, we will approach the genre of rhetoric as a window into the social and cultural settings in which the authors wrote.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

LATIN 2902 - DIRECTED STUDY FOR M.A. STUDENTS

Minimum Credits: 1
Maximum Credits: 9
Directed study on classical topics for students in the M.A. Program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

LATIN 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
In this course a student undertakes study in Latin in consultation with a member of the faculty.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

LATIN 2992 - GRADUATE READING EXAMINATION

Minimum Credits: 0
Maximum Credits: 0
Permits graduate students from other departments to demonstrate competence in the reading of Latin through examination.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

LATIN 2995 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Directed study on Latin topics for students in the graduate program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Law Criminal Justice & Society

LCJS 1531 - INTERNATIONAL ORGANIZED CRIME

Minimum Credits: 3
Maximum Credits: 3
Organized crime is no longer confined to a few countries such as Italy, the United States, and Japan. With the end of the Cold War and the immense technological advances that spread with globalization, organized crime has become much more pervasive, with a major impact in countries such as Russia, Mexico, and South Africa, and with increased operations (and especially co-operation) across borders. This course looks at the dynamics of transnational organized crime, explains why it develops in particular countries, the various forms it takes, and the responses of law enforcement agencies and international institutions.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

LCJS 1900 - PRESERVICE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6

This course is a supervised placement with specific agencies in various areas of law and criminal justice. It is offered through the College of General Studies for student interns in the Law, Criminal Justice, and Society majors and minors. Students enrolled in this internship engage in formal and reflective writing, journaling, and analysis about their work experience and how it relates to their academic and career pursuits. Class workshops and group discussions provide further opportunities for debriefing and consolidation of ideas and skills. This is a hybrid course with three in-person workshops and faculty authorization is required. Students must be registered for the internship course at the time they are completing the internship in order to earn credit.
Academic Career: Undergraduate
Course Component: Internship
Grade Component: Satisfactory/No Credit

Law - JD course offerings

LAW 5020 - CONTRACTS

Minimum Credits: 4
Maximum Credits: 4
What promises are legally enforceable? Why does the law enforce those promises? What does it mean to enforce a promise? This course explores those questions, using the basic concepts, principles, and doctrines of contract law, sometimes called "the law of broken promises." Specific topics include the requirements for formation of a contract (such as offer and acceptance), justifications for enforcing promises (such as consideration or detrimental reliance), justifications for denying or limiting enforcement (such as unconscionability or mistake), interpretation of contract terms, and remedies for breach ofcontract.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5024 - PROPERTY

Minimum Credits: 4
Maximum Credits: 4
Property law, broadly defined, governs relationships among people with respect to "things." These "things" include land ("real property"), tangible objects such as a casebook ("personal property"), and intangibles such as a publisher's right to prevent others from reproducing the original content in a book ("intellectual property"). The property course examines how property rights may be limited, in situations where more than one person has rights to the same piece of property, and in situations where one owner's rights must be balanced against the rights of the owner of a separate piece ofproperty. Topics covered in the property course may include: modes of acquisition of property (e.g., Capture, find, creation), present possessory estates and future interests, co-ownership of property, marital property, landlord-tenant law, land sales, title recording systems, easements, restrictive covenants, nuisance, public land use regulation (including zoning, eminent domain, and the issue of regulatory takings), and global propertyissues.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5028 - TORTS

Minimum Credits: 4
Maximum Credits: 4
This course explores the methods and policies for allocating losses from harm to one's person, property, relations, and economic and other interests. The course covers the substantive principles of tort claims and their defenses. The course examines the three main theories of tort liability: intent, negligence, and strict liability and analyzes the theoretical and practical aspects of tortliability.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5032 - LEGISLATION AND REGULATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5033 - CIVIL PROCEDURE

Minimum Credits: 4
Maximum Credits: 4
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5038 - ENERGY LAW, POLICY & BUSINESS

Minimum Credits: 3
Maximum Credits: 3
This course covers a broad range of topics across law, policy, and business as they pertain to energy production, transmission, delivery, and consumption in the United States. Students will examine the legal/regulatory landscape and its impact on sustainable business against the policy backdrop of addressing climate change and maintaining the reliability of the U.S. energy system in the face of AI-driven demand for increased electricity supply. Given the prominence of energy production and the emerging technologies supporting that business in the local economy, lawyers practicing in and around Pittsburgh should have a solid foundation in the fundamentals of the industry - this course provides that foundation and gives students experience with critical practical skills, including policy presentation, legal advocacy, client communications, as well as contract negotiation and drafting.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5039 - MEDIA LAW

Minimum Credits: 2
Maximum Credits: 2
The course is designed to give students insight into representing media clients. The course covers representation of newspapers, television and radio stations in and out of court. The topics covered will include defense of libel and invasion of privacy suits, protection of confidential sources, access to courts and judicial records, access to legislative and executive branch proceedings and records, and government regulation, including net neutrality. Because "media" today includes the ever-expanding internet, the course will address how traditional legal concepts have been adapted to fit the reality of today's internet.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5043 - INTERNATIONAL COMMERCIAL ARBITRATION

Minimum Credits: 3
Maximum Credits: 3
This course will begin with coverage of basic aspects of the law of international commercial arbitration, including arbitral jurisdiction, arbitration procedure, choice of law, and enforcement of awards. This will include coverage of the new York arbitration convention and the

U.S. Federal arbitration act, along with a focus on the uncitral model law on international commercial arbitration and the uncitral arbitration rules. In order to provide a practical context for consideration of arbitration law and policy, we will work with the problem for the vis international arbitration moot that will become available the first week of October. After a review of the problem, we will catalogue the major issues and each student will be assigned a topic from that list for his or her course paper. We will work through all of the arbitration procedure issues as a class, using the contributions of each student to build the arguments and analysis for each side in the vis problem. We will also cover the basic substantive law issues raised under the united nations convention on contracts for the international sale of goods (CISG). Each student will also be assigned a position to be presented in a mock arbitration at the end of the semester, using the vis problem studied during the semester. The Pitt law vis moot team for the following year may be selected at the end of the semester from the J.D. students in the course, consistent with announcements made prior to the beginning of the semester.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5046 - CRIMINAL LAW

Minimum Credits: 3
Maximum Credits: 3
Traditional and contemporary doctrines of substantive criminal law are analyzed, with focus on such issues as: theories of punishment, the formal elements of criminal culpability, the theory and degrees of homicide, criminal causation, inchoate crimes, accessorial and vicarious liability, conspiracy, and defenses of excuse andjustification.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5047 - CRIMINAL PROCEDURE

Minimum Credits: 3
Maximum Credits: 3
The subject matter is supreme court decisional law and policy issues relating to the application and scope of the fourth, fifth, sixth, and fourteenth amendments to the United States constitution. Topics typically covered include: incorporation theory, right to counsel and related entitlements, the exclusionary rule, pretrial identification procedures, search and seizure law, and interrogation law. Students should gain both knowledge relating to constitutional law, which governs the permissible parameters of police conduct and defendants' rights, and an informal sense of how the criminal justice system actually operates.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5060 - INTRODUCTION TO THE STUDY OF LAW

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5061 - PITT LAW ACADEMY

Minimum Credits: 0
Maximum Credits: 0
This speaker series on lawyers' roles will provide students, at the beginning of their law school careers, with exposure to and understanding of the variety of roles that lawyers play in the profession and society. The series consists of six programs over the course of the academic

year, and first-year students (beginning with the class entering Fall 2019) are required to attend at least five of those programs. Each program, moderated by a full-time faculty member, features multiple presenters with law degrees who work in various professional settings, including practicing attorneys with widely varying specialties, judges, or other professionals working outside of law practice. The presentations should help first-year students gain a better appreciation of the practical and intellectual aspects of different professional roles and to preview some of the important personal and professional issues and concerns that may confront them in the course of their careers.
Academic Career: Law
Course Component: Lecture
Grade Component: No Grade Required
Course Requirements: PROG: School of Law (LAWSC)

LAW 5062 - PITT LAW ACADEMY

Minimum Credits: 0
Maximum Credits: 0
This speaker series on lawyers' roles will provide students, at the beginning of their law school careers, with exposure to and understanding of the variety of roles that lawyers play in the profession and society. The series consists of six programs over the course of the academic year, and first-year students (beginning with the class entering Fall 2019) are required to attend at least five of those programs. Each program, moderated by a full-time faculty member, features multiple presenters with law degrees who work in various professional settings, including practicing attorneys with widely varying specialties, judges, or other professionals working outside of law practice. The presentations should help first-year students gain a better appreciation of the practical and intellectual aspects of different professional roles and to preview some of the important personal and professional issues and concerns that may confront them in the course of their careers.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5075 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 4
Maximum Credits: 4
Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethical standards. Registration in this course is limited to spring term transfer students.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5076 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 4
Maximum Credits: 4
Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethicalstandards.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5079 - THE LAW OF AMATEUR SPORTS

Minimum Credits: 2
Maximum Credits: 2
This course covers various legal issues related to amateurism and the regulation of intercollegiate athletics. Each topic area will highlight the impact that regulating bodies have on the sport, the athletes, and the sports and entertainment industry. The course will examine the system of governance over amateur sports, including the enforcement of NCAA rules and bylaws, as well as the structure of conferences, leagues, and collegiate institutions. The course will also analyze the legal issues facing student-athletes, from recruitment and eligibility to student privacy and gender equity. Finally, the course will address the business context of amateurism, with legal issues covering intellectual property, branding, pay-for-play, and antitrust litigation.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5082 - CLIMATE CHANGE AND THE LAW

Minimum Credits: 2
Maximum Credits: 2
This course examines the problems of climate change and how law and policy and corporate America are responding tothem. The course begins by describing what is encompassed under the current "climate change" debate; considering what science can tell us about the climate change issue, including the uncertainties in that science and the significance and role of descent from the mainstream view of the science. It then considers, given the current state of the science, how we should assess the actions that should be taken to respond to this problem. That assessment should take account mitigation vs.Adaptation. The course also considers the legal responses to the issue of climate change. This course will discuss the united nations framework convention on climate change (UNFCCC), the Kyoto protocol, and the likely future of both. This course will discuss the domestic federal legislation with regard to GHGS as well as certain regional initiatives and voluntary commercial GHG reductionschemes. This part of the course will be examining the "Boomlet" in global warming litigation in federal and state courts looking at the administrative and tort actions pending in U.S.Courts. Finally, the course will address sustainability issues for business, including green building, carbon neutral strategies, certain esoteric accounting issues, some carbon trading issues. Lectures will include voluntary and NGO-driven business initiatives (proactive approaches) as well as certain secondary effects caused by climate change that affectbusinesses.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5087 - INTERNATIONAL TRADE LAW AND REGULATION

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5089 - PUBLIC HEALTH LAW

Minimum Credits: 3
Maximum Credits: 3
Public health law touches the lives and livelihoods of every person. Understanding the intent, basic structure, and methods for employing the local, state, and federal laws governing public health activities will facilitate legal practice in a variety of disciplines, including: municipal, healthcare, environmental, and judicial practice. This is a survey course, intended to introduce students to the most commonly encountered national and world public health law issues. Specific topics include: an overview of the epidemiologic principles underlying public health law; police powers; balancing public and private interests at stake; privacy and confidentiality of public health information, emergency preparedness; search, inspection, embargo and condemnation of private property; abatement of nuisances and dangerous conditions; and the major federal statutes affecting public health. In addition, material concerning world public health issues will be

presented to help students understand the community health benefit from comprehensive public health legislation. Finally, ongoing local public health law interventions will be analyzed using the basic principles introduced early in thecourse.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5090 - CONSTITUTIONAL LAW: FREEDOM OF RELIGION

Minimum Credits: 2
Maximum Credits: 2
This course will examine the Establishment and Free Exercise Clauses of the First Amendment to the United States Constitution. We will examine the history and purposes of the clauses. We will also examine the Supreme Court's doctrinal tests to analyze how the Court's theories regarding the clauses have changed over time and how to approach litigation strategy. Classroom discussion will focus on the application of these tests, the limitations of each test, and whether each test fulfills the purposes of the Religion Clauses. We will discuss majority, concurring, and dissenting opinions to flesh out the issues. Throughout the course, we will discuss how the requirements of the Establishment Clause and Free Exercise Clause can be reconciled and whether any of the current tests or theories can provide a workable solution and balance.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5093 - THE LAW OF PROFESSIONAL SPORTS

Minimum Credits: 2
Maximum Credits: 2
Focusing on the 4 major professional sports leagues, this course will examine how the common law, state and federal statutes, and even certain constitutional doctrines have been applied to professional sports franchises, its players and agents, and its fans. The topics for discussion will include: the role and power of the commissioner; the importance of collective bargaining agreements, including uniform player contracts, in the development of a body of law governing the relationship between a player and his club; the current state of antitrust law in pro sports; the agent-player relationship; contract negotiations, including the salary arbitration process; the variety of intellectual property issues applicable to leagues, it teams and its players; the rights (or lack thereof) of pro sports fans, including the application of tort law principles to fan injuries; the attempts by pro-sports leagues and teams to control the off-field behavior of its players, and the approaches by the various leagues to regulate performance enhancing drugs.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5099 - OIL AND GAS LAW

Minimum Credits: 2
Maximum Credits: 2
The development of oil and gas began in western Pennsylvania in the 1800s and Pennsylvania was at the forefront of oil and gas law from the beginning. After a long period of dormancy, Pennsylvania is again a leader in the production of oil and gas. With that resurgence, Pennsylvania is again a center of oil and gas law. This course will cover the basic legal principles, including the ownership of oil and gas interests, conveyancing, royalty disputes, operating agreements (and other operations-related contracts), pooling and hydraulic fracturing.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5100 - PRACTICAL LAWYERING

Minimum Credits: 1
Maximum Credits: 1
This course provides students with practical skills that enable them to "hit the ground running" as an intern and/or as an attorney when they begin their career. The course focuses upon foundational skills necessary for success in private or in-house practice, in government, or in public interest organizations. Emphasized skills may include professional writing, oral communication, client relations, legal marketing and networking, managing the culture and expectations of law practice, understanding the relationship between technology and law practice, wellness and resilience, managing others, and navigating conflicts of interest. The course will include lectures as well as active student participation in the form of in-class presentations, role-playing exercises, simulations, and outside-of-class work including reading assignments, problem sets, and the creation of work product using Excel, Word, and PowerPoint.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5101 - CONSTITUTIONAL LAW

Minimum Credits: 4
Maximum Credits: 4
An introduction to American constitutional law, with an emphasis on U.S. Supreme court decisions. The course will explore various methodologies of constitutional interpretation and modes of constitutional analysis. Topics covered include the role of the judiciary in reviewing acts of the political branches of government; the separation of powers and relations among the three branches of the federal government; the powers of the national government and federalism-based limits on congress and the states; and individual constitutionalrights.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5103 - EVIDENCE

Minimum Credits: 3
Maximum Credits: 3
This course is an introductory course on the rules of evidence and will focus on the federal rules of evidence. We will cover hearsay and its exceptions, relevance, the use of character evidence, cross-examination and impeachment, among other subjects.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5105 - FEDERAL INCOME TAXATION

Minimum Credits: 4
Maximum Credits: 4
This course will introduce the basic concepts found in the internal revenue code, as interpreted by the internal revenue service and the courts. We will explore the concept of "income," and specifically consider the difference between ordinary income and capital gain, the timing of income inclusion, and the determination of a taxpayer's basis in property (which relates to the calculation of income). We will also explore exclusions and deductions that may reduce a taxpayer's income. This course has two primary goals: first, to give the students a basic familiarity with the internal revenue code so that they will be aware of tax issues that may arise in their practice, and second, to prepare students who have (or acquire) a deeper interest in tax for more advanced courses in taxation.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5110 - ESTATES AND TRUSTS

Minimum Credits: 3
Maximum Credits: 3
This course provides a survey of the gratuitous, post-mortem transfer of wealth, including the substantive law of wills and trusts. Topics in estate law include probate and non-probate property; intestacy; bars to succession; constructive trusts; mental capacity; disclaimers; will formalities; holographic wills; revocation; integration; republication; revival; incorporation by reference; acts of independent significance; payable on death provisions; and predeceased beneficiaries. Topics in trust law include formation; parties; beneficiaries; resulting trusts; constructive trusts; discretionary trusts; trust protectors; self-settled asset protection trusts; and powers of appointment.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5112 - BUSINESS ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
This elective course surveys the law of modern business organizations, including corporations, limited liability companies, and partnerships. The course covers topics such as business planning, corporate governance, fiduciary duties, shareholder liability and rights, as well as transactions in shares. The course also provides exposure to a variety of subjects, including agency, corporate finance, corporate taxation, mergers and acquisitions, and federal securities laws. No exposure to accounting, economics, or finance is necessary or presumed.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5125 - APPLIED APPELLATE ADVOCACY

Minimum Credits: 1
Maximum Credits: 1
This course is for students who will represent Pitt Law in an appellate-style external competition. The course will support and enhance both the brief-writing and oral argument aspects of competition participation. You will deepen your skills in identifying a theme for your case, crafting a compelling story, effectively teaching through your writing, and editing your own work product. You will also learn and practice oral advocacy skills with a focus on careful listening, persuasive response, and smooth transitions. Through class exercises, reflection, and self-assessment, you will prepare both for your competition and for the most exciting aspect of your legal career: continuous learning and growth.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5126 - CORPORATE & VENTURE FINANCE

Minimum Credits: 3
Maximum Credits: 3
This is an elective course, and is an intense examination of the law and finance of corporate capital structure and markets. No advanced background in accounting, economics, finance, mathematics, or securities is presumed or required.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5112 or LAW 5141; PROG: School of Law (LAWSC)

LAW 5129 - FEDL COURTS & FEDL LITIGATION

Minimum Credits: 3
Maximum Credits: 3

One of the defining features of the American legal system is federalism, the division of powers between the national and the state governments. This course deals primarily with two recurring problems in civil practice that have their roots in this division of powers. First, do one or both litigants have a choice between federal and state court, and, if so, how can the litigants maximize the likelihood of securing the preferred forum? Second, when does federal law trump state law? A dominant theme of the course is the relationship between legal doctrines and the practical consequences of those doctrines in light of existing (and possible future) institutional arrangements. In particular, defendants in civil cases often prefer federal court; plaintiffs tend to prefer state court. But the rules and doctrines that determine which side gets its preferred forum will often be invisible to the average lawyer. One purpose of this course is to alert students to the pitfalls that can trap the unwary; here, more than in other areas of the law, a little learning can be a dangerous thing. Representative topics include: the prerequisites for Supreme Court review of state-court judgments; elements of federal question jurisdiction; removal of cases from state to federal court; and the power of the federal courts to apply rules of law different from those applied in state courts. Attention will be given to litigation strategy (especially the choice of forum) as well as to critical analysis of the doctrines and statutes.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5135 - COMMERCIALIZING NEW TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
The key challenge addressed in this joint project course between the Katz Business School and the Law School is how to commercialize new technologies. Commercialization is the process of transforming an invention (i.e. A new technique or artifact that performs a useful function) into an innovation (i.e. A product or service that creates value in a specific use). Whether a new technology originates in a university, in an established company, or with an individual inventor, several issues must be addressed in order to determine whether it is worth investing in further, and to decide how the technology can be commercialized for maximum long-term value. We will focus on four types of analyses as input to a commercialization strategy: (i) technology analysis, (ii) market analysis, (iii) competitive assessment, and (iii) business model evaluation. For each, you will be provided with one or two practical articles, which outline an analytical tool or approach, and we will discuss their application to one of the cases. Although we'll walk through these steps in the order listed, they will need to be conducted iteratively (e.g. As you learn more about market opportunities you may wish to revisit your initial assessment of the technology's core elements). Throughout the course, law students will have the opportunity to assist the team in assessing legal matters that impact commercialization (from intellectual property matters, to regulatory landscape impacts, to alliance considerations) while also gaining an understanding of key business goals, strategies and tactics.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5138 - FEDERAL APPELLATE ADVOCACY

Minimum Credits: 3
Maximum Credits: 3
This course in Federal Appellate Advocacy will select a recent case on appeal from a Circuit Court, where Certiorari has been granted by the U.S. Supreme Court. There will be an emphasis in the course on the Federal Rules of Appellate Procedure, an examination of jurisdiction and standards of review. Students will be paired up to write a brief, present oral argument, decide the case and write an opinion. Students who register for this course will automatically be registered for Pitt Law's Appellate Advocacy competition. By presenting the required oral argument for class, students will also participate in the first round of the competition. Participation after the first round of the competition is not required for the course, though it is encouraged. There may be an opportunity to view oral argument before the Third Circuit in Pittsburgh and arrangements will be made to allow students to visit the U.S. Supreme Court to hear oral argument on the selected case.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5139 - TRANSIT LAW

Minimum Credits: 2
Maximum Credits: 2
This is a course on the law and legal principles used to create, operate and maintain mass transportation infrastructure. The focus is on the legal functions and processes used in planning and operating mass transit and the rules and alternatives for spending government appropriated funds. This course gives an overview of regulatory, procurement and grant practice. Also covered are public/private collaboration as well as private sector participation in government assisted or sponsored projects, including the relationships between and among the federal government, state and local governments and the private sector. This course provides an introduction to basic government contracts and regulatory practice in the context of mass transportation.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5142 - LEGAL WRITING FOR THE TRANSACTIONAL LAWYER

Minimum Credits: 2
Maximum Credits: 2
This course will introduce students to the craft of drafting transactional agreements. This course is meant to fill a void that currently exists between formal law school education and actual work as a practicing attorney. Oftentimes, the first experience that young transactional lawyers have with drafting agreements follows a familiar pattern, the young lawyer is given a form as a starting point, then asked to make changes to the form to "draft" the needed document. The young lawyer may successfully edit the party names and dates, but usually has little understanding of the rest of the agreement or even the basic business terms that the agreement must memorialize. Unfortunately, the realities of modern law practice may preclude inexperienced drafters from taking the time to properly hone their craft. This course will prepare students for entering a transactional practice by allowing students to practice drafting and editing agreements, examine strategies for avoiding ambiguities by crafting precise language, and work in a fast paced, team-oriented environment.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5145 - SECTION 1983 LITIGATION & PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course involves --42 U.S.C. §1983-- the federal statute unique in providing for a damages cause of action against state actors for the violation of citizens' constitutional rights. The cases covered are often ones "literally ripped from today's headlines" -- fatal police shootings, beating deaths of persons in custody, retaliation against whistleblowers and citizens engaged in political protest, a woman's right to choose-to mention just a few. While this "Reconstruction Era " statute lay dormant for nearly 100 years, it is now the source of thousands of cases litigated yearly in federal courts throughout the United States. Many end up on the Supreme Court docket. Thus, what is a constitutional right and how enforced-- is constantly in flux-- challenging the legal acumen of not only constitutional scholars but law students as well. Given the flood of reported federal actors allegedly violating citizens' constitutional rights, the course will also provide an all-important in-depth analysis of how to litigate damages claims against those agents under Bivens v. Six Unknown Named Agents, the Federal Tort Claims Act and pursuant to applicable state statutes. This course is critical to law students seeking a working knowledge of how to successfully bring or defend against constitutional rights claims for damages and particularly useful to students interested in judicial clerkships, employment with a local, state, or federal government or who aspire to a career in the increasingly lucrative role as a plaintiff's constitutional rights lawyer.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5146 - LANDLORD TENANT LAW

Minimum Credits: 3
Maximum Credits: 3

This course will examine issues relating primarily to the relationship between residential landlords and tenants, including the creation of the tenancy, the rights and duties of the parties, interpretation and application of critical lease provisions, and the framework for prosecuting and defending various types of eviction proceedings based upon a violation of law or breach of lease. Other topics may include discrimination in rental housing, rent regulation, public housing and housing-related public policy initiatives. There will be discussion and analysis of federal, state and local statutory authority and recent case law developments. Students will also have an opportunity to hear from lawyers and judges to get their "real-world" perspective on landlord-tenant practice.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5148 - THE LAWS OF INTIMACY

Minimum Credits: 2
Maximum Credits: 2
So much throughout the history of our nation, federal, state and local governments have attempted in various ways to regulate our society's most intimate relationships and decisions. Challenges to laws regulating marriage, sexual conduct, reproduction, health and other very personal decisions permeate our country's jurisprudence. These "laws of intimacy," provide a historical window through which one can view the evolution of some of America's greatest and most enduring societal and civil rights conflicts. This course will provide students with an overview of the history underlying various "laws of intimacy" and the legal principles that have come to shape the debates concerning these issues. Students will apply these legal principles in their own analyses of continued efforts to regulate the most personal of human behaviors and decision-making.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5149 - LAW OF ARMED CONFLICT

Minimum Credits: 2
Maximum Credits: 2
The Law of Armed Conflict (LOAC), also known as International Humanitarian Law (IHL), is an area of public international law. It is responsible for regulating the conduct of armed hostilities, and balances the desire of states to prevent unnecessary suffering and destruction on one hand with the need to permit the effective waging of battle on the other. LOAC makes special provision for the protection of civilians, prisoners of war, the wounded, sick, and shipwrecked. LOAC applies to international armed conflicts (conflicts between states) and to non-international armed conflicts (conflicts between states and certain non-state groups). This course will explore: how conflicts are characterized (as IACs/NIACs or purely "domestic"actions); the main rules underlying the conduct of hostilities; and how those rules are enforced. Real-world examples and case studies will be used to elucidate theory.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5150 - LAW OF THE WTO

Minimum Credits: 2
Maximum Credits: 2
Trade has become one of the most important areas of international law and policy - particularly since the adoption of the WTO Agreement in 1994. This course will consider the WTO's structure and institutions, its core rules, the exceptions to those core rules and the powerful dispute settlement mechanisms in place to underpin the regime. The course is designed for those who wish to enter trade policy work or practice WTO law in any of its specialties. It will also be helpful for those who wish to enter domestic commercial practice but are nonetheless interested in understanding the international law and policy framework affecting trade between nations.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5151 - HUMAN DIGNITY RIGHTS UNDER LAW

Minimum Credits: 1
Maximum Credits: 1
This class is an introduction to the substantive law of dignity rights, a new and important emerging field of law in the U.S. and throughout the world. Dignity is the root idea that every person, everywhere has human dignity and the human right to have their dignity respected and protected under law. Dignity is a foundational value and a legal right in international law (e.g. as reflected by the 1948 Universal Declaration of Human Rights), regional law (e.g., the American Declaration of Human Rights), in nearly 160 domestic constitutions throughout the world, and in thousands of juridical opinions spanning the globe. Dignity is also an emerging constitutional value in the United States, reflected in jurisprudence regarding equality, same sex marriage, reproductive rights, capital punishment, substantive and procedural due process, and climate crisis. Moreover, in August 2019 the 400,000-member American Bar Association adopted the advancement of human dignity as a core function and ingredient of the rule of law in the U.S. and around the globe. This course would be a rare opportunity to learn more about this important new area of law.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5152 - NEGOTIATION SKILLS (BUSINESS)

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide students with an understanding of current negotiation theory and practice. Students will study negotiation theories, research and techniques. As a result of taking this course, students will have an understanding of how to negotiate effectively in transactions, as managers, and to build effective teams. The materials for this course will consist of readings, negotiation scenarios, and real-life examples. Students will engage in skill-building exercises, actual negotiations, classroom and online discussions, individual presentations, self-reflection, self-assessment, giving and receiving feedback, and close reading of assigned texts and other materials. Students will have an opportunity to explore negotiation theory, practice different styles and techniques, and develop their own strategic approaches to negotiations.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5153 - GENDER LAW

Minimum Credits: 3
Maximum Credits: 3
This course will study various perspectives on theory and doctrine relating to gender in a number of different substantive areas of law. The course objectives are to: (1) integrate theory and practice in the study of law; (2) better understand how law both reflects and shapes understandings of gender in society; and (3) develop students' writing and analytical skills in addressing practical legal problems in areas relevant to gender and the law. The course is organized around several theoretical models of gender and feminism rather than by traditional subject matter categories. Within this framework, we will examine a number of different subject matter areas of law, including employment, education, athletics, work/family conflicts, the legal profession, sexual harassment, domestic violence, and the regulation of gender identity.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5154 - FEDERAL HABEAS CORPUS, ITS HISTORY & PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This course will study the evolution and history of Habeas Corpus and how the writ is utilized in the federal court system today. A federal habeas case gives students an opportunity to apply constitutional law, criminal law and procedure and civil procedure. Students will draft a

federal habeas petition as part of the class.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5155 - EHEALTH LAW

Minimum Credits: 2
Maximum Credits: 2
Virtual Health, Telehealth, Artificial-Intelligence-Driven-Care, Healthcare Data Analytics Systems, are all descriptors of healthcare technology delivery systems and platforms: together, eHealth. This course will arm students with the knowledge, skills, and resources needed to approach legal solutions to eHealth challenges.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5156 - UNDERSTANDING COMMON BUSINESS CONTRACTS

Minimum Credits: 2
Maximum Credits: 2
Most 1L contracts courses give little attention to the structuring of actual contracts. While this is commonly remedied in upper level courses, even there the major focus tends to be on larger corporate deals (mergers and acquisitions, construction contracts, credit and financing arrangements, etc.). In fact, a large number of contracts in the world that lawyers negotiate and draft are smaller in dollar value, and yet extraordinarily important to understand and master. This class will introduce you to these contracts, and show you how they are structured and drafted. In so doing, we will discuss terms and conditions that are frequently subject to negotiation. We will also discuss different drafting alternatives to resolve such issues.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5157 - HUMAN SKILLS FOR LAWYERS

Minimum Credits: 2
Maximum Credits: 2
In this course students will learn techniques and participate in exercises drawn from improvisational theater to develop and refine several core "human" skills that are essential to effective lawyering. The course will focus on several core skill sets, including listening nonjudgmentally, empathy, communicating with confidence and authenticity, adapting to changing information and circumstances, resilience, and collaborating with others. After learning the fundamental principles underlying improvisational performance, students will participate in improv exercises that target core skill sets in the context of three fundamental lawyering tasks: interviewing and interacting with clients, negotiating with other counsel, and arguing in court. Students will write a series of reflection papers based on assigned readings, will deliver one solo presentation, and will work on a group project and presentation. Regular attendance and full participation are essential.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5158 - COMPARATIVE PRIVACY LAW

Minimum Credits: 3
Maximum Credits: 3
This course compares information privacy laws from a global perspective. The topics discussed in this class include the basic structure of the European General Data Protection Regulation (GDPR), the evolution of privacy protection in the U.S., select provisions in the California Consumer Privacy Act, FTC regulations, differences in the protection of online users' personal information and data in various

countries, cross-border data transfer, information fiduciary duty, and the future of privacy protection. This course will also study the privacy laws of other legal systems, such as those in civil law countries, from the perspective of comparative law. This course is an upper-level writing course about privacy law. The topics discussed in this class include the basic structure of the European General Data Protection Regulation (GDPR), the evolution of privacy protection in the U.S., select provisions in the California Consumer Privacy Act, FTC regulations, differences in the protection of online users' personal information and data in various countries, cross-border data transfer, information fiduciary duty, and the future of privacy protection. This course will also study the privacy laws of other legal systems, such as those in civil law countries. Final grades will be based on a 25-page paper on data privacy law.
Academic Career: Law
Course Component: Lecture
Grade Component: LG/SU3 Elective Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5159 - STATE CONSTITUTIONAL LAW

Minimum Credits: 2
Maximum Credits: 2
This course explores the nature and significance of state constitutional law. We begin with a brief examination of the nature of our States and the historical role of their constitutions. Then we will consider the rights protected by the state constitutions and compare them to those protected by the federal constitution. This gives us the occasion to take up the most active debate in state constitutional law over the last several decades: the responsibilities of state courts when interpreting state constitutional provisions that live in the shadow of their counterparts in the federal Constitution, especially the weight to be given to the U.S. Supreme Court's interpretations of the federal provisions. Next we compare the constitutional structures of the state governments, both to one another and to the federal government. We finish up by covering issues of popular control over state governments, including the means of amending state constitutions and the methods for selecting state judges. While the course will provide a sampling of state constitutions nationwide, special attention will be paid to the Constitution of Pennsylvania.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5160 - THE LAW OF NIL DEALS

Minimum Credits: 2
Maximum Credits: 2
This course exposes students to the legal issues faced by college athletes engaging in name, image, and likeness ("NIL") deals. Students will learn about corporate, contract, transactional, and intellectual property law. Students will engage in case studies and hear from industry experts, including agents, athletic department administrators, and potentially college athletes/retired college athletes. The course is experiential, interdisciplinary and immersive. Experiential assignments will be simulation(s) including "client" interviews, negotiation exercises on behalf of the "client," and drafting and redlining a contract for the "client." Interdisciplinary classroom discussions will focus on creative, business and creative issues encountered in the entertainment and sports industries. Immersive experiences include meetings with entertainment professionals and their lawyers and legal assignments for entertainment organizations.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5161 - STARTUP LAW & VENTURE CAPITAL

Minimum Credits: 2
Maximum Credits: 2
This course addresses financial and legal challenges facing early-stage companies. In this way, it complements, and is distinct from, the existing course Business Planning, Entrepreneurship & Technology, which covers the life of a company from inception to public offering. The Start Up Law course will begin by examining various considerations involved with the formation of a company that anticipates seeking venture capital, including but not limited to corporate governance, restricted stock and stock incentive plans. The course then will shift to various aspects of venture capital, starting with seed financings through to preferred stock priced rounds; included within this examination will be an emphasis on how to read and build out pro forma capitalization tables, translating term sheets into long-form agreements,

negotiation tactics, and how to handle activist and angel investors. The course's primary form of assessment will be a final examination at the end of the semester based on a hypothetical growth stage company that seeks to raise capital. By the end of the course students will have encountered material that will advance all six of the Law School's Learning Outcomes. Specifically, students will be exposed to substantive law concerning early-stage companies and venture capital; as a result, they will be able to identify and articulate various legal issues surrounding these companies, as well as formulate and apply various legal rules and strategies. Students also will engage in problem solving and learn how to communicate their ideas in negotiation settings, with an awareness of the relevant standards for professionalism and ethics. Finally, students will develop competencies in numerous other professional skills, including but not limited to collaboration, document drafting, interpersonal communication, and self-evaluation.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5162 - EXPLORING CULTURAL IDENTITY GROUP DIALOGUE

Minimum Credits: 2
Maximum Credits: 2
The "Exploring Cultural Identities through Intergroup Dialogue" (IGD) course, is a class which brings together students with diverse cultural identities, in an experiential environment, with the goal of engaging in open and constructive dialogue regarding issues of conflict and community. Students will learn from one another's lived experiences and examine how race, gender, gender identity and expression, socio-economic class, sexual orientation, ability, language, military experience, marital status, and first-generation status relate to power, privilege and oppression; using productive approaches to engage in on-going discourse.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5164 - MARITIME LAW

Minimum Credits: 2
Maximum Credits: 2
The Pittsburgh region - home to Allegheny, Monongahela, and Ohio Rivers - is one of the busiest inland ports and waterways in the U.S. Each day, commercial towboats with their barges full of commodities and recreational boaters make their way up and down the three rivers, which are made navigable through a series of locks and dams. This course will introduce students to the unique law that applies to the activities on our local rivers. The topics addressed will include (i) the substantive law involving injuries and death of maritime workers and recreational boaters, property damage, limitation of liability, maritime liens, and salvage (ii) the basic requirements for admiralty jurisdiction over maritime claims, as admiralty jurisdiction does not apply to every accident occurring on a body of water.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5165 - COMPARATIVE LAW: THE US AND EUROPEAN UNION

Minimum Credits: 3
Maximum Credits: 3
Europe and the United States have shared close bonds for centuries. Russia's invasion of Ukraine is remaking the alliance. Other trends, such as competing with China in technology and developing green energy sources, were already moving the two allies toward greater cooperation. A basic understanding of legal differences between the US and EU will reward the problem-solving powers of future leaders. Indeed, the EU always offers an irresistible subject for lawyers as the most advanced legal experiment ever achieved, whose members have created institutions which control sovereign governments. This is a comparative law course that introduces students to selected areas of legal differences between the EU and US. The course begins with the key to unlocking its value, namely instruction in how to benefit most from comparative study. A brief introduction to EU law is provided, followed by examination of selected issues currently occupying the attention of business, government, and academia: privacy and data protection; trade and dispute resolution; and employment. Completion of the course should leave the student better equipped to seek opportunities in fields touching these issues.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5166 - THE MINDFUL LAWYER

Minimum Credits: 2
Maximum Credits: 2
Law students and lawyers suffer disproportionately from anxiety, depression, and substance abuse relative to other graduate students and other professions. Why? There may be no one answer. Instead, there is a complex array of potential causes. More troubling is that law students and lawyers under utilize the resources available to them in achieving well-being that is coupled with a successful career. In this course, the Journey to Well-Being, we will raise your awareness about current mental trends among law students and legal professionals, examine and understand some of the root causes, discuss resources and methods in combating these trends, and engage in self-reflection on well-being and strategies for maintaining one's well-being as a priority as a law student and legal professional.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5167 - IMPROVING SKILLS TO TAKE THE BAR

Minimum Credits: 2
Maximum Credits: 2
The course will focus on the unique tools and skills needed to begin bar exam preparation through a substantive review of the seven major areas covered by the Multistate Bar Examination (MBE). It will initiate students into understanding their unique learning processes and how best to adapt them for a successful bar exam preparation. In so doing, the course will utilize differentiated learning that adapts to individual students and the small class setting, and it will serve to launch students into a spring semester of bar preparation courses that focus on testing and writing strategies.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5168 - CORPORATE & WHITE COLLAR CRIME

Minimum Credits: 3
Maximum Credits: 3
More today than ever before, the civil practitioner must be equipped with a working knowledge of issues in federal criminal law, specifically white collar crime. White collar crime has been called the growth industry of the next century. Its study reveals a unique interplay between ethics, policy, and enforcement. While it is based on traditional criminal law principles, it builds upon a complex interplay of institutional and individual responsibility. This course will examine the major federal statutes under which white collar crimes are prosecuted, including conspiracy, mail and wire fraud, Rico, criminal tax violations, bank fraud, currency transaction reporting requirements, money laundering, perjury, and false statements. Additional attention will be given to immunity, grand jury and penalties including restitution and forfeitures.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5169 - STATE & LOCAL GOVERNMENT

Minimum Credits: 2
Maximum Credits: 2
This survey course will explore the nature and significance of state and local government law, topics that often have lived in the shadow of federal government law, but have become increasingly relevant in recent years, especially given the increasing prominence of states like Pennsylvania on the national political stage. The course will examine the role of state legislatures and courts in protecting liberty and property rights under their own constitutions, and most notably whether they should construe these guarantees to offer protections that the federal courts have not provided in construing the federal constitution. Relevant examples include litigation involving voting rights and school funding as well as discussions involving such diverse topics as reproductive rights, property takings, and the free exercise of religion, among others. We also will consider the amendment procedures of state constitutions, the election of state court judges, and other structural issues. This course also will take a look at the law governing the powers and duties of local governments, mainly municipal entities such as cities, boroughs and townships (towns). The course will study the sources of municipal powers, the limits on those powers,

the relationship between municipalities and the state including the relationship between state and local law, and various examples of the relationship between the municipality and the state including home rule, as well as some issues in municipal finance and zoning power. Where possible, we also will consider the intersection of state and local government law and important current events both locally and nationally.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5170 - ELECTION LAW

Minimum Credits: 3
Maximum Credits: 3
Election law is a hot topic in the U.S. today. Opinions about what our federal, state and local election laws require -- and should require -- are sharply divided. This course introduces key issues in U.S. election law in historical, political and (to a limited extent) international contexts. Topics include voting qualifications and limits on voting (e.g., residency requirements, poll taxes and age qualifications), how race, gender and property have shaped voting rights and participation, the highly decentralized and diverse structures of U.S. election administration, how concerns and claims of fraud shape election law, districting and the concept of vote dilution, partisan gerrymandering, and limits on campaign spending and speech. We will look at some of the dramatic legal conflicts that emerged around the 2020 presidential election over election structures like voting by mail, extended voting time periods, and ballot counting procedures, and over the power of state legislatures, state courts and federal courts to shape voting structures and ratify or undermine election results. And we will consider how current concerns about election integrity and restricted voting access at once raise new legal issues and connect with longstanding legal and political schisms. This is an introductory course that surveys a wide range of election law issues and structures. We will do one in-depth case study, however, of laws that ban voting based on criminal conviction. Felony voting bans highlight the sharp differences in voting rights among different states, offer a telling example of the way U.S. voting qualifications interact with racial inequality, and reveal how election law on the books does not entirely define election administration or the bounds of political participation.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5171 - PRESIDENTIAL POWER

Minimum Credits: 2
Maximum Credits: 2
This course will use contemporary legal events to explore the question of what it is legal and not legal for a President to do. In this age of an explosion in Executive Orders, this course will delve deeper into Separation of Powers topics students may have begun to explore in Admin Law, Con Law, and/or Leg-Reg. We will cover executive orders, removal/appointment powers, independent agencies, and the President's powers vis-a-vis congressionally authorized (mandated?) spending. We will use contemporary cases generated from President Trump's first 100 days and prior Presidents to explore the developing legal understanding of what it is permissible for a President/Executive to do and how.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5172 - NON-PROFIT ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
This course provides a comprehensive introduction to the law governing nonprofit organizations, with emphasis on both state organizational law and federal tax-exempt status. Students will examine the formation, governance, and dissolution of nonprofit entities under state law, including nonprofit corporations, unincorporated associations, and charitable trusts. Topics include the roles and fiduciary duties of directors, officers, and members; constitutional documents; and the evolving standards of nonprofit accountability. A substantial portion of the course is devoted to federal income tax exemption under the Internal Revenue Code, with particular focus on section 501(c)(3) organizations. Students will analyze the requirements for obtaining and maintaining tax-exempt status, the distinctions among public charities, private foundations, and supporting organizations, and the rules governing private foundation excise taxes. The course also

surveys exemptions avail-able to other categories of nonprofit organizations, including social welfare organizations under section 501(c)(4), trade associations under section 501(c)(6), and other common exempt categories. By the end of the course, students will be equipped to advise clients on forming and structuring nonprofit entities, applying for tax-exempt status, and navigating ongoing compliance obligations. No prerequisite beyond the first-year curriculum is required.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5188 - GOVERNANCE OF HEALTHCARE ORGANIZATIONS

Minimum Credits: 2
Maximum Credits: 2
Leadership of healthcare organizations requires an understanding of organization governance processes. This experiential course will simulate meetings of healthcare organization boards of directors and medical executive committees. Each class meeting will include agendas, supporting materials, facilitated discussion, and simulated decision-making. Topics will include organizational structures, governance design principles, leadership responsibilities, governance documents/instruments, community collaboration, confidentiality, AI and other healthcare technologies, quality and performance metrics, compliance, fiscal oversight, human resources, enterprise risk management, quality control, discrimination and healthcare disparities, tax-exempt organizations, and professional scope of practice.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5189 - HOW LAWYERS MADE AMERICA

Minimum Credits: 3
Maximum Credits: 3
This course examines the role of American lawyers as nation-builders from colonization to the present day. It explores not only how lawyers crafted the domestic legal and constitutional structure, but also how they shaped American settlement, politics, business, letters, education, rhetoric, race relations, immigration, communication, diplomacy, war-waging and peace-making over more than four centuries, allowing lawyers (not businessmen, not doctors, not professors, not clergy, not engineers) to largely define what it means to be an American. It considers how ordinary citizens and members of other professional groups have reacted to lawyers in their many social capacities, and it assesses how embracing and occasionally rejecting their self-appointed status as "essential Americans" has affected lawyers themselves. It concludes with an investigation of where lawyers stand in today's America, assessing whether they have succeeded or failed in their larger ambitions to build and to lead, and how they might better serve their country and themselves in uncertain times.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5197 - ADVANCED PENNSYLVANIA TORT PRACTICE

Minimum Credits: 2
Maximum Credits: 2
AN IN-DEPTH STUDY OF THE PRACTICAL CONSIDERATIONS AND SPECIALIZED RULES WHICH LAWYERS NEED TO EMPLOY WHEN HANDLING CASES SUCH AS AUTO ACCIDENTS, PRODUCT LIABILITY, MEDICAL MALPRACTICE, LOCAL AND STATE GOVERNMENT TORTS CLAIMS, AND PREMISES LIABILITY. THE COURSE WILL NOT ONLY CONCENTRATE ON VARIOUS TYPES OF TORTS ACTIONS, BUT ALSO ON CONSIDERATIONS WHICH MAY BE INVOLVED IN ALL OF THOSE ACTIONS SUCH AS INSURANCE COVERAGE, EMOTIONAL DISTRESS, BY-STANDER CLAIMS, DAMAGES, APPORTIONMENT OF FAULT AND SPECIAL DUTIES. THE COURSE ALSO WILL COVER TORT REFORMISSUES.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5028; PROG: School of Law (LAWSC)

LAW 5198 - ANIMAL LAW

Minimum Credits: 2
Maximum Credits: 2
This course will examine the rapidly-growing and diverse field of animal law. Topics include the legal status of various non-human animal species, animals as property, animals in agriculture and food systems, animals in entertainment, animal protection laws, wildlife and endangered species, service animals, veterinary malpractice, and more. Applicable legal principles involve administrative law, contracts, torts, constitutional law, and civil and criminal procedure. Recent developments and current events in animal law will be discussed, including efforts to create and reform animal laws and the challenges faced when litigating and legislating on behalf of animals.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5200 - INTRODUCTION TO ACCOUNTING FOR LAWYERS

Minimum Credits: 1
Maximum Credits: 1
Introductory accounting for lawyers will provide students with a fundamental understanding of the principles underlying financial accounting. Additionally, students will gain an understanding of the development and analysis of financial statements including the balance sheet, income statement and statement of cash flow. Other topics will include a discussion of financial analysis and financial theory. The course is intended to equip students with the basic mechanics to review and analyze an entity's financial statements, identify significant issues and to form a general familiarity with financial statements to aid in preparing for litigation or assisting with business transactions.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROGRAM: School of Law

LAW 5201 - ADMINISTRATIVE LAW

Minimum Credits: 3
Maximum Credits: 3
It is next to impossible to practice law today without dealing with administrative agencies, federal or state, or the law they create. Indeed, more cases are adjudicated in administrative bodies than in the courts. The substantive law that is created and implemented by agencies is the subject matter of individual courses such as environmental law, securities regulation, taxation, and banking. It is the procedural/structural law that governs the creation and implementation of substantive law by agencies that is the focus of administrative law. We will discuss the different types of functions undertaken by agencies, for example, rulemaking and adjudication in all its forms and how those disparate functions determine the appropriate structure of decision-making. At the federal level, where we will focus our attention, the procedures that apply originate in a variety of sources, including the United States constitution, the administrative procedure act and other statutes, and agency rules. There is often a complex interplay among these sources of law, which will be one of the topics we will explore. Another is the relationship of agencies to the chief executive and the legislature, an area that implicates important constitutional doctrines, statutes, and executive orders. Finally, we will spend considerable time on the availability, timing, and scope of judicial review of agency action, including the doctrines of standing, ripeness, exhaustion of administrative remedies, and judicial deference to agency findings of fact, interpretations of law, and exercises of discretionary power.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5203 - STUDY ABROAD AT HOME:INTERNATIONAL TOPICS

Minimum Credits: 1
Maximum Credits: 1
This course offers an opportunity to "study abroad" while "at home," for students from Pitt Law as well as from the University of Belgrade, Serbia, and other law schools. The course will begin the first week of March, in order to match schedules at the two principal schools: the

University of Pittsburgh and the University of Belgrade. Session topics will be (subject to change): International Arbitration and Dispute Resolution Using Private International Law Rules in Transaction Planning International Human Rights Law Foreign Law in US Courts International Bankruptcy and related Corporate Issues Islamic Law in the International Legal Order To Be Determined
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5204 - COLONIALISM & INTERNATIONAL LAW

Minimum Credits: 3
Maximum Credits: 3
This seminar begins by exploring justifications for colonialism in international law. The course then turns to modern international law - students will be able to identify and analyze legacies of colonialism, the development of a racialized hierarchy of states, and the use of international law to produce, reproduce, and justify those hierarchies. Students will work on a major research paper throughout the course, and at the end of the semester will give a presentation on their research for the class.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5207 - ANTITRUST

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the law of antitrust. The course examines practices by which firms allegedly eliminate competition among themselves (e.g., Cartels, conspiracies, horizontal mergers), as well as exclude actual or potential competition from their markets (e.g., Boycotts, price discrimination, tying arrangements, vertical integration). The course will cover the Clayton, Sherman, and Robinson-Patman acts. No exposure to corporate/securities law, economics, or finance is necessary or presumed.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5210 - PATENT LAW

Minimum Credits: 2
Maximum Credits: 2
For over two hundred years the united states patent system has stimulated innovation by conveying time-limited exclusionary rights to inventors who adequately disclose their novel and nonobvious inventions to the public. Throughout this time, technological advancements in various industries have repeatedly confronted the patent system with fascinating policy and doctrinal challenges. In a constant effort to keep up with the pace of innovation and ensure that the patent system fulfills its constitutional purpose to 'promote the progress of . . . Useful arts,' patent case law has become one of the most rapidly evolving and adapting areas of American law. Through study of judicial decisions and statutory provisions, this course will examine the substantive legal doctrine and policy underlying two primary aspects of united states patent law: (1) the requirements for obtaining a patent; and (2) the means by which an issued patent is enforced (and its validity challenged). Specific topics include patentable subject matter (including computer-implemented inventions and biotechnology), novelty, no obviousness, utility, loss of right, disclosure requirements, patent claim interpretation, literal infringement, the doctrine of equivalents, prosecution history estoppel, defenses to patent infringement resulting in invalidity and/or unenforceability, injunctive relief, damages, and the unique role of the united states court of appeals for the federal circuit in shaping patent law.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5212 - BUSINESS PLANNING, ENTREPRENEURSHIP AND TECHNOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will address key legal and business issues faced by entrepreneurs when establishing a commercial enterprise. Specifically it will address the protection and development of ideas, the commercialization of technology, and the legal and business aspects involved in forming, funding, operating, and managing the emerging business enterprise. The course will be taught from a business planning perspective. Through participation in the course students will be exposed to advanced business law concepts applicable to emerging companies in the business, technology, and medical fields.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5112 or LAW 5141; PROG: School of Law (LAWSC)

LAW 5213 - CONFLICT OF LAWS

Minimum Credits: 3
Maximum Credits: 3
Disputes between parties from different states or countries and disputes having contacts with multiple jurisdictions raise a host of challenging legal questions, including: (1) which jurisdiction's law will govern the dispute; (2) whether and in what circumstances a judgment rendered in one state or country will be recognized and enforced in other jurisdictions; and (3) how courts should make these determinations. State laws, the federal constitution, and international and foreign law all play a role in deciding these issues, which can have a profound impact on the ultimate resolution of the controversy.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5216 - EMPLOYMENT DISCRIMINATION

Minimum Credits: 3
Maximum Credits: 3
This course will examine federal statutory law as it applies to employment discrimination, with an emphasis on discrimination based on race, sex, color, ethnicity, national origin, religion and age. The most prominent statutes in this area are title vii of the civil rights act of 1964, the age discrimination in employment act, and an older civil rights statute from the reconstruction era, 42 U.S.C. 1981. The course will explore the substantive meanings of "discrimination" under these acts, the models of proof for establishing a claim, the theoretical underpinnings of the statutes, and some of the procedural and remedial issues relevant to employment discriminationlaw.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5218 - WHITE COLLAR CRIMES

Minimum Credits: 2
Maximum Credits: 2
This course will examine the prosecution and defense of federal white collar crimes, including mail and wire fraud, Rico, criminal tax violations, bank fraud, health care fraud, perjury, obstruction and false statements. Close examination will also be given to the law enforcement techniques used by federal prosecutors in white collar cases, including the grand jury, immunity, search warrants and subpoenas. The fifth amendment self-incrimination privilege and the attorney-client privilege will also be studied. Emphasis will be given to providing students with the background and tools to reason through practical problems faced by white collar practitioners.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5219 - FAMILY LAW

Minimum Credits: 3
Maximum Credits: 3
An introduction to the conceptual and practical issues involved in the modern practice of family law. Topics include: the legal definition of marriage, of family; the rights, powers, duties and obligations among family members; the extent and means of state involvement in the family's conduct of its own affairs; dissolution of the family, and the continuing obligations among family members thereafter; problems of jurisdiction and choice of law.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5221 - JURISPRUDENCE

Minimum Credits: 3
Maximum Credits: 3
"Jurisprudence -- philosophy of law -- explores the nature of law and its role in society. This course tackles classic jurisprudential questions, focusing around what is known as "theory of adjudication" - the theory of how judges actually do decide cases and how they should decide them. Do legal rules and doctrines really constrain legal decision making (and if so, how)? What makes something a legal rule? Is there some necessary connection between law and morality (perhaps inherent in the concept of rights)? Is judicial decision-making really different from political decision-making (and if so, how)? Most of our readings will be from twentieth- and twenty-first century writers: legal positivists (e.g., H.L.A. Hart), natural law theorists (e.g., Ronald Dworkin), legal realists (e.g., Felix Cohen and Karl Llewellyn), and critical theorists (e.g., Duncan Kennedy and Patricia Williams). But we will also dip into some older classics, e.g., William Blackstone and Jeremy Bentham. Some of the reading will be challenging, but no prior experience with either jurisprudence or philosophy will be assumed. What will be useful is the knowledge of legal doctrine and decision making that you've acquired in law school so far. We will look back at some of the classic cases that you read in con law, civil procedure, and property and see how they reflect different jurisprudential approaches. In fact, at some point in the semester you will probably find yourself thinking something like, "So that's what Professor X was trying to get at when we read that case"! We will also look at how jurisprudence informs current political and social issues in legal decision making. For instance, consider those driverless cars you see all around Oakland. Besides being programmed to avoid collisions, they must be instructed to follow traffic laws. Exactly what should those instructions entail? When you have finished this course you won't be writing briefs that say, "you should rule for me because the legal positivists say so." But in another sense jurisprudence is of immense practical use: Jurisprudence brings to the surface conflicting assumptions lurking within different legal arguments and conclusions. When you learn to recognize those ideas, you understand something about how legal decision making operates on a deep level, and that makes you a better lawyer."
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5223 - ADVANCED TRIAL EVIDENCE

Minimum Credits: 2
Maximum Credits: 2
This course will focus on evidentiary issues that arise frequently in trials. Each week a vignette or series of vignettes, which address common trial evidence situations, will be assigned. The vignettes will be based on case files, in order to provide continuity throughout the course and for students to see the impact of evidentiary rulings on continuing cases. Each student will be responsible for weekly written assignments, which may include motions inlimine or outlines of direct and/or cross-examination of the witness(es) for vignettes(s). Each student will also be responsible for preparing to offer timely and well-stated objections to the evidence sought to be introduced. Students will be required to understand the rationale for both the introduction of evidence and the objections thereto.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5103; PROG: School of Law (LAWSC)

LAW 5225 - INTERNATIONAL BUSINESS TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
This course analyzes basic international business transactions and the effects of U.S. Law, specific foreign law, and treaties on the conduct of the parties involved. The course covers issues of commercial law, regulation of cross-border transactions, dispute resolution, tax considerations, and antitrust law. Although a basic understanding of each of the areas of the law in the domestic context is helpful, there are no course prerequisites. Students are expected to develop an understanding of the U.S. Laws applicable to private international transactions and an awareness of the risks inherent in doing business in or with other countries and theirnationals.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Russian & East European Studies

LAW 5226 - INTERNATIONAL LAW

Minimum Credits: 3
Maximum Credits: 3
This course explores how international law regulates, orattempts to regulate, relations between states, and between states and individuals. It therefore examines both classical and contemporary topics such as the sources of international law, rights and responsibilities of states, jurisdiction, the incorporation of international law into domestic law, individuals as bearers of rights and obligations at the international level (in particular human rights law and humanitarian law), the law of treaties, the law on the use of force and the role of the united nations and the international court of justice in the peaceful settlement of international disputes. Several specific topics will be examined to illustrate the increasing impact of international law on domestic legal practice, and the influence of the United States on the development of modern international law.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Global Studies, West European Studies

LAW 5232 - LAW & LEGAL PROCESS IN LATIN AMERICA

Minimum Credits: 2
Maximum Credits: 2
This is a two-credit introduction to the legal tradition, juridical institutions, and legal processes of the countries of Latin America. The first several weeks of the course will be devoted to the Roman origin of the Civil Law tradition (of which, of course, the countries of Latin America are part), the development of that tradition in Medieval Europe (with special attention to Spain), the growth of legal and governmental institutions in Spain's American colonies, and the influence of the U.S. and the French Revolutions and of German Legal Science on the newly-independent countries of Latin America and on the present-day legal systems of those countries. As the course proceeds, the students will be introduced to procedural devices created in Brazil, Mexico, and Argentina to adjust portions of those countries' Civil Law systems to the selective introduction of Anglo-American constitutional concepts. Finally, some time will be allocated for study and discussion of relevant special interests of students enrolled in the course.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5236 - PRE-TRIAL PRACTICE-PLEADINGS AND DISCOVERY

Minimum Credits: 2
Maximum Credits: 2
This course will focus on pre-trial practice issues that arise during the pleading and discovery phase of a civil case. Students will learn about a variety of substantive issues under federal and state law including pleading requirements the scope of discovery, various forms of discovery, privilege issues, and many other related issues. In addition to those and other substantive issues, great emphasis will be placed on giving students the opportunity to draft pleadings, argue discovery motions and take oral depositions.

Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5240 - PENNSYLVANIA PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course covers the Pennsylvania rules of civil procedure and the rules of civil procedure for district justices. The course is intended to develop the student's understanding of the rules of procedure which govern civil litigation in the state courts of Pennsylvania, the manner in which claims and defenses are raised, the forms utilized to raise these claims and defenses, and petition, motion and discovery practice, and will focus on the procedural tactics and strategies that are used to advance a client's position.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5242 - PATENT LAW PRACTICE

Minimum Credits: 2
Maximum Credits: 2
A course designed for students with a special interest in patent law, and for those students preparing to take the patent bar examination. Students are taught claim drafting, rules of practice and procedure followed by the United States patent and trademark office, how to draft patent documents and how towrite a patentability search report.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5246 - SECURITIES REGULATION

Minimum Credits: 3
Maximum Credits: 3
This elective course surveys the legal and regulatory framework for publicly traded securities. The course covers the securities act of 1933, the securities exchange act of 1934, and state "blue sky" laws. This course focuses on procedural and substantive aspects of registration, distribution, and trading of securities. No exposure to accounting, economics, or finance is necessary or presumed. Students are not permitted to take this course unless they already have taken business organizations.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5247 - ENVIRONMENTAL POLICY, POLITICS, AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
In many areas of law, the daily practice is not black-letter analysis and trial practice, but interdisciplinary collaboration and policy development. This is particularly true of environmental law, which combines legal issues in the common law, statutory frameworks, administrative law, private governance, constitutional law, and other legal areas along with scientific understanding, public communications, political persuasion, and ethics. Focusing on environmental issues, this course will provide students with a chance to explore interdisciplinary policy practice through an open-ended semester-long simulation. The simulation is paired with a regular discussion to consider a variety of issues in environmental law and policy.
Academic Career: Law
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Global Studies

LAW 5251 - BIOTECHNOLOGY LAW

Minimum Credits: 2
Maximum Credits: 2
Virtually every aspect of our lives is touched by biotechnology, so this class is designed as an introduction to many of the critical issues related to biotech and society. Specific topics include genetically modified organisms (Franken foods), patenting life, vaccination laws, human and animal testing, bioterrorism, biological weapons laws, bio-prospecting, pharmaceutical pricing, FDA laws, as well as scientific (and investor) fraud in biotech. The class also focuses on the policy relationships between law and public health, as well as related underlying economic incentives that can create tension in the life sciences. The class includes a number of guest speakers from industry including biotech licensing professionals and an FDA practice attorney. This class will be useful for anyone planning to practice law related to the life sciences including patent law. The issues are presented in a non-technical manner so the class is accessible to anyone interested in the field. It may be helpful to have exposure to patent law in general but it is notrequired.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5258 - CAPITAL PUNISHMENT, THEORY AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
There are few areas of law whose jurisprudence has been fully developed within a period of the last forty years. Eighth amendment jurisprudence relative to the death penalty in the United States is such an area of law. We will explore how the United States supreme court has approached the development of this jurisprudence, and include within our examination some elements of due process as well, to see how the court, out of whole cloth, has created a practical jurisprudence for analyzing the constitutionality of capital punishment, and why the court was motivated to do so. This jurisprudence provides students with a window to the tug between justices who view the constitution as a 'living' document that adapts to the times and the society, and those who view the constitution as a static outline of the powers of respective governments within a federal system to be understood as the framers of the document would have understood it. Additionally, this jurisprudence provides students with a window to the strengths and weaknesses of a federal system in which the interplay between the power of the federal government and the power of the state governments must be understood and respected, even within the context of a constitutional jurisprudence that recognizes the imperative of the supremacy clause.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5259 - ESTATE AND GIFT TAX

Minimum Credits: 3
Maximum Credits: 3
This course involves a study of the federal transfer taxes imposed on gifts and estates. With respect to the gift tax, we will explore the transfers that are subject to tax as well as the annual exclusion and gifts to minors. With respect to the estate tax, we will explore the transfers (both during life and at death) that are included in a decedent's "gross estate," as well as certain of the deductions that are available to reduce the size of the gross estate (and, ultimately, the estate taxowed).
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5260 - INTELLECTUAL PROPERTY

Minimum Credits: 3
Maximum Credits: 3
In the information age, intellectual property (IP) law has taken on even greater significance. IP law is designed to encourage the production of certain forms of information by granting property rights to the producers, enabling them to appropriate the value of the information they produce. In this course, we survey state intellectual property law (e.g., Unfair competition and trade secrets) as well as federal intellectual property law including trademark, patent and copyright. We examine some of the ramifications of recent technological developments on intellectual property law and some of the problems of international protection of intellectualproperty.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Global Studies

LAW 5265 - LABOR LAW: PRIVATE SECTOR

Minimum Credits: 2
Maximum Credits: 2
This course, after a short review of American labor history, will focus almost exclusively on the national labor relations act, the nation's premier statute dealing with labor management relations in the private sector, and the model for many public sector state laws covering the field. The course deals with the rights of individual employees, employers, and unions with respect to concerted activity, unionization, the establishment of collective bargaining units, elections conducted by the national labor relations board, and the collective bargaining process. The course will also cover strikes, picketing and hand-billing by unions, the current restrictions or limitations on such conduct, and the administration of collective bargaining agreements, grievance processing, and the arbitration of disputes. We will study and critically examine procedural and substantive case law developed by the national labor relations board, and its impact upon labor-management relations in both unionized and non-union environments. The course concludes with a discussion of the future of labor relations. We will discuss more recent tactics employed by unions and management and engage in a debate as to whether and how the current labor laws should be amended. Classes will be a combination of both lecture and dialogue. We also will discuss critical issues with representatives from Pittsburgh's union and business communities.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5268 - CONSTITUTIONAL LAW 2: GOVERNMENT POWERS, FEDERALISM AND THE PRESIDENCY IN THE TRUMP ERA

Minimum Credits: 3
Maximum Credits: 3
This upper?level constitutional law course advances issues raised by the structural parts of the United States Constitution, as opposed to individual rights. Attention will be given to the relationships of the three federal branches of government, with emphasis on some of the powers and limitations of the executive, legislative and judicial bodies that arise from principles of separation of powers and national checks and balances. The course will also consider federalism and the respective roles of the national and state governments in some detail. These structural aspects of the Constitution will be discussed against the backdrop of the Trump Presidency, including, but not limited to, questions concerning judicial processes of indictment, Presidential pardons, the Emoluments Clause, the 25th Amendment, plenary powers over foreign affairs, the constitutionality of an international wall, congressional impeachment processes, and the legitimacy of sanctuary cities. Students will be expected to discuss the issues in a dispassionate, civil and academic fashion.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5272 - BANKRUPTCY

Minimum Credits: 3
Maximum Credits: 3

The study of bankruptcy law is the study of how the prospect and availability of bankruptcy affects legal relationships; therefore, bankruptcy attorneys must understand the full range of law, to determine the impact an insolvency proceeding has on the parties in interest and community atlarge. This course provides an introduction to federal bankruptcy law under the bankruptcy code of 1978 as amended, title 11 U.S.C.A. the code was substantially changed in 2005 and the course will deal with the revisions. The course focuses on substantive provisions of the bankruptcy code that apply in all varieties of bankruptcy proceedings and some of the associated rules of procedure. Covered topics include eligibility for federal bankruptcy relief; commencement of bankruptcy proceedings; jurisdiction and procedure; defining property of the bankruptcy estate; the automatic stay; adequate protection; discharge and discharge ability of debts; priorities; allowing, valuing and estimating claims; selected issues usually encountered in business, such as executory contracts and leases; the trustee's avoiding powers; set-off and recoupment; professionals. The course proceeds by analysis of problems and cases. Familiarity with the law of secured transactions (especially article 9 of the uniform commercial code) isnecessary.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: LAW COMM-Advocacy, LAW COMM-Client, LAW COMM-Listening, LAW COMM-Negotiation, LAW COMM-O Comm, LAW COMM-W Comm, LAW DEI-Empathy, LAW LAPS-Legal Reasoning/Analysis, LAW LAPS-Legal Research, LAW LAPS-Problem Solving, LAW PE-Ethics, LAW PE-Professionalism

LAW 5273 - STATE AND LOCAL TAX

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5274 - COMPLEX LITIGATION

Minimum Credits: 3
Maximum Credits: 3
Complex litigation picks up where first-year civil procedure leaves off, going beyond basic concepts and rules to explore the unique procedural challenges posed by complicated civil actions in diverse areas of law, including civil rights, employment, mass tort, securities fraud, and environmental and institutional reform. Our focus will be on complex cases brought by lawyers seeking to promote social change. This is a course in advanced civil procedure examining the procedural aspects of civil litigation that involve multiple claims and parties, as well as multi-jurisdictional disputes. Procedural emphasis will be on class actions and multi-district litigation. Additionally, we will examine joinder, aggregated claims, preclusion, discovery, administration, settlement, and alternatives to litigation in the context of multi-party and multi-forum lawsuits.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROGRAM: School of Law (LAWSC)

LAW 5275 - INTERNATIONAL AND FOREIGN LEGAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
Finding the law of foreign places, knowing the resources produced by international entities, and searching within the variety of documents that govern our world can qualify you for some of the best jobs in the legal market. In this one credit course you will acquire those skills while completing five short research projects and compiling your own vade mecum for future reference.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: African Studies

LAW 5276 - PATENT LITIGATION

Minimum Credits: 2
Maximum Credits: 2
This is an advanced, participation-oriented course that addresses issues that arise in patent litigation. The participation activities will include preparation and argument of preliminary and procedural motions, discovery practice, for example, preparation of protective orders, written discovery, participation in mock depositions, and preparation and argument of pretrial and dispositive motions, and a brief introduction to trial and appellate work in patent cases. Class time will involve both lecture and discussion, with substantial time devoted to mock situations using an adversarial teamstructure.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5209 or 5242 or 5260; PROG: School of Law (LAWSC)

LAW 5283 - MENTAL HEALTH LAW

Minimum Credits: 2
Maximum Credits: 2
This course provides an introduction to the laws and issues that affect individuals with mental illness, many of whom find themselves in the criminal or civil justice systems. Emphasis will be on the issues surrounding civil commitment and the emerging use of treatment courts on the criminal side. This will require a review of Pennsylvania's mental health procedures act and other state and federal statutes, cases, and regulations. Students will be permitted to attend a session of mental health court.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5290 - EMPLOYMENT LAW

Minimum Credits: 3
Maximum Credits: 3
This course discusses select areas of employment laws and considers both legal principles and their applications. (The course will not cover labor law.)
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5291 - TRANSACTIONAL PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This course will offer an experiential learning opportunity in that all students will observe and perform many "lawyering" tasks normally entrusted to legal counsel who work on complex corporate and financing transactions. These tasks often require execution of instructions from a client or senior lawyer. Some require bilateral bargaining and judicious compromise. Some require collaboration or teamwork. The course will be cast primarily in the setting of a proposed acquisition of a "target company", as a going concern, by a so-called "private equity" investment firm. Students will be exposed to, and will engage by simulated participation in, the legal and practical dynamics by which transactions in this milieu are created, including: Negotiation of terms and bargaining over allocation of risks and uncertainties. Disclosure processes and protocols, for fulfillment of one party's appetite for information and the other's protective needs. Choice of transaction structure. Preparation of contract documents and drafting techniques. Dealing with "stakeholder" needs.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5112 or LAW 5141

LAW 5295 - EXPERT WITNESS

Minimum Credits: 2
Maximum Credits: 2
In recent years, the use of expert witnesses has proliferated as both civil and criminal litigation have become more complex and technical. In this course, students will learn when expert testimony is needed; where to find appropriate experts; how to work with the expert to develop a theory of the case; and many more issues leading up to the actual trial of the case. Once the case reaches the courtroom, students will learn how to organize and present their own expert's testimony in a clear and concise fashion, and how to pursue the challenging task of "doing battle" with the opposing expert. In the end, students will achieve a greater appreciation for the subtleties of expert testimony, while at the same time acquiring the tools to deal with witnesses who speak in technical and unfamiliar language.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5296 - CORPORATE GOVERNANCE

Minimum Credits: 2
Maximum Credits: 2
This course will examine the internal structures, processes and standards of behavior that are required by law in the governance of corporate organizations, utilizing a series of hypothetical problems. Particular attention will be given to the corporate director's duties of oversight, care and loyalty, to the shareholders' ability to enforce those duties, and to the concept of fiduciary "independence." some features of the Sarbanes-Oxley act of July 2002 and related rules will also be considered.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5297 - WORKERS' COMPENSATION

Minimum Credits: 2
Maximum Credits: 2
This course deals with the law, theory and practice of workers' compensation under state and federal administrative programs, including the Pennsylvania and other state acts; longshore and harbor workers' compensation act (LHWCA); federal employees' compensation act (FECA); and the federal employers' liability act (FELA). The student will study the essential aspects of such laws, including their development and purpose, coverages, the various levels and varieties of benefits provided and how claims are established andenforced. Special emphasis is placed on how such laws affect the rights of individuals to other remedies such as the ability to sue in tort or assert discrimination claims; how compensation programs are implicated in contemporary efforts to reform healthcare coverage and delivery; and the role workers' compensation plays in occupational safety and health. The student will become familiar with the uniform policy of insurance for compensation coverage and how compensation coverage and other regulatory requirements are policed by governmentalauthorities. A pervasive theme of the course is the status of workers' compensation as a unique hybrid of administrative law and tort, with the consequent effects of such status on the law, theory and practice of thefield.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5298 - LAND, RACE AND PROPERTY RIGHTS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5301 - FIRST AMENDMENT: FREEDOM OF EXPRESSION

Minimum Credits: 3
Maximum Credits: 3
This course will address the history, theory, case law, and practice of the First Amendment's protection of freedom of expression. We will cover the history and origin of the First Amendment's Speech Clause and the various freedom of expression doctrines developed in the case law, including (but not limited to) prior restraints, vagueness and overbreadth, political speech, symbolic speech, "time, place, and manner" restrictions on speech, the distinction between content-based and content-neutral restrictions on speech, and categories of "unprotected" or "less-protected" speech. We will not be covering the First Amendment's Religion Clauses because they are covered in other courses. Given time constraints, we also will not be covering the First Amendment's Press, Assembly, or Petitions Clauses in any detail (although we will likely reference them in connection with other freedom of expression doctrines).
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5101; PROG: School of Law (LAWSC)
Course Attributes: LAW COMM-Listening, LAW COMM-O Comm, LAW COMM-W Comm, LAW DEI-Competence, LAW DEI-Empathy, LAW DEI-Racial Just/Systems, LAW LAPS-Legal Reasoning/Analysis, LAW LAPS-Problem Solving

LAW 5303 - COMMERCIAL PAPER AND BANKING

Minimum Credits: 2
Maximum Credits: 2
This course will examine the law and practice concerning payment systems. The course examines the state and federal laws and cases governing negotiable instruments such as promissory notes and checks (articles 3 and 4 of the uniform commercial code, reg cc, and check 21), letters of credit (UCC article 5 and uniform customs & practices 600), electronic funds transfers and credit and debit cards (UCC article 4a, the federal electronic funds transfer act, expedited funds availability act, truth in lending act, the consumer credit protection act and the various applicable regulations, such as reg cc, reg e, reg z and regj).
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5304 - COMMERCIAL TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
This course explores the primary U.S. Legislation governing agreements to transfer an interest in goods -- article 2 of the uniform commercial code. It emphasizes aspects of UCC article 2 that are not covered in the first year contracts course. Subjects covered include applicability of article 2, selected contract formation rules; warranties; acceptance, rejection and revocation of acceptance of goods; risk of loss; excuse for failure to perform; and remedies for breach.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Global Studies

LAW 5307 - FOREIGN AFFAIRS, INTERNATIONAL LAW AND THE CONSTITUTION

Minimum Credits: 3
Maximum Credits: 3
The course looks at the role that international and constitutional law play in conduct of United States foreign policy; the incorporation of international law into our domestic legal structure; presidential vs. congressional war powers; the respective role of the senate, the president, and the judiciary in making, interpreting, and terminating international treaties; the role of the judiciary in deciding cases involving foreign affairs; and individual rights and foreign affairs; and the role of international and constitutional law in combatting foreign terrorism. The course also addresses the concrete problems of litigating foreign affairs issues in U.S. courts.

Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5308 - EDUCATION LAW

Minimum Credits: 3
Maximum Credits: 3
Consists of detailed considerations of selected practical and theoretical legal problems in the area of education. Among the topics will be student discipline and student rights; the rights and duties of professional personnel under probationary and tenure appointments; selection of school board members; powers and duties of the board of education; internal and external authority with respect to such issues as curriculum, admission, and purpose. Involves extensive constitutional analysis of the appropriate balance among divergent need of the state, the family and the child.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5319 - LAWYERS IN AMERICAN CULTURE

Minimum Credits: 3
Maximum Credits: 3
Lawyers like to think of themselves as members of one of the most helpful and important professions in American society. All too often, however, we encounter suspicion, derision or open hostility, not to mention nasty jokes. Public and private criticism of lawyers in the United States has become noticeably more intense in recent decades, but we have rarely attempted to survey its range, explore its roots, assess its legitimacy, or evaluate our own responses to it. This course proposes to do these things by examining characterizations and representations of lawyers in American culture from colonial times to the present day. We will relate changing views of American lawyers and lawyering to shifting social and professional circumstances; we will also explore the impact of those circumstances on fictionalized depictions of lawyers in American plays, novels, films, radio and TV, humor, art and song. We will consider what members of other prominent groups in American society, from 17th Puritan clergy to 20th century businessmen ' have said or alleged about lawyers. We will also discuss how, where and with what effect lawyers have presented, promoted and defended themselves before the American public. We will conclude the course by considering how lawyers might learn from past experience and leverage the opportunities and challenges of 21st century law practice to restore or at least improve their public standing.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5320 - LITIGATION STRATEGY AND PLANNING

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the planning that a litigator must do throughout the life of a case in developing strategies for the conduct of the litigation. It covers in part taking a case, anticipating pretrial procedures, preservation of evidence, deciding on causes of actions, obtaining expert witnesses, discovery strategy, motions practice, development of trial themes, demonstrative evidence, jury selection, order of witnesses, and settlementconsiderations.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5324 - INSURANCE

Minimum Credits: 2
Maximum Credits: 2
Among the topics to be covered are the nature and function of insurance, insurance contract formation and meaning, and insurance regulation. Some specific attention will be paid to particular types of insurance, including fire and first party insurance, life insurance, liability insurance, and automobile insurance. Additional issues considered include coordinating multiple coverages and the secondary markets. Some special emphasis is placed upon toxic tort and environmental coverage cases.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5325 - FEDERAL TAX PRACTICE AND PROCEDURE

Minimum Credits: 2
Maximum Credits: 2
This course will be conducted by two experienced practicing tax lawyers. The principal subject matter will be an examination of federal tax practice and procedure with particular emphasis upon issues of current importance and interest to tax counsel. The faculty will also cover material relevant and important to students who participate in the law school's low income tax clinic. In addition to procedural matters, the course will delve into matters of tax policy and issues of particular current interest in tax litigation and tax enforcement.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5328 - COPYRIGHT

Minimum Credits: 3
Maximum Credits: 3
Copyright law deals with legal protection for certain kinds of expressive work -- literature, music, film, photography, and computer software, among other things -- which is an essential element of modern culture, knowledge, and communication. The copyright law course will teach you about the many roles that copyright law plays in constructing businesses, markets and other institutions for creating, distributing, and consuming that work. For authors and publishers, how does copyright law help them make money based on their creative works, or based on others' creative works? For readers and consumers and society as a whole, how does copyright law preserve the power to access and use knowledge? The course will teach those things in the context of teaching the skills of copyright lawyering. How do practicing lawyers work with clients? How do practicing lawyers develop and exercise professional judgment? How do practicing lawyers solve copyright problems? The course will put students in the role of practicing lawyers and teach them to think, write, and act as lawyer's generally and especially as copyright lawyers.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Global Studies

LAW 5336 - LAND USE

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to provide students with a basic introduction to the mechanics and legal theories underlying land use controls. The course will strive to go beyond the theoretical by presenting a series of guest speakers (ranging from judges and zoning officials to land use planners and civil and transportation engineers) who deal with land use issues on a daily basis. Students will also be provided an opportunity to observe zoning board and court proceedings first hand and prepare class projects and papers based upon these proceedings. The course will emphasize the inter-relationship and conflict with environmental regulations. Class discussions and projects will focus upon recent judicial and legislative developments in land use law.
Academic Career: Law
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5339 - LAW OF DISABILITY DISCRIMINATION

Minimum Credits: 2
Maximum Credits: 2
This course will provide in-depth analysis and discussion of the major federal disability discrimination statutes, including the Americans with disabilities act, the individuals with disabilities education act, and section 504 of the rehabilitation act. Readings and class discussions will focus on the application of these laws to issues such as employment, public accommodations, education, architectural barriers, transportation and insurance. The course will explore how disability discrimination statutes interact with other statutes, such as the social security act, the family and medical leave act, and the genetic information nondiscrimination act.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5340 - ENVIRONMENTAL LAW

Minimum Credits: 3
Maximum Credits: 3
This course focuses on domestic environmental law and, in particular, on federal law rather than state law. The diverse and technical nature of modern environmental law is such that, in practice, lawyers often specialize in very narrow areas. Nevertheless, the same or similar moral, scientific, and policy arguments familiar to one area of the law are found in many of the others and similar regulatory approaches have been adopted or proposed for adoption to deal with very different types of environmental hazards. This course will focus its attention on the clean air and water acts, the national environmental policy act, the resource conservation and recovery act, the comprehensive environmental response, compensation, and liability act, and wetland protection, with passing coverage of various federal public land management statutes. We will explore the basic regulatory and non-regulatory approaches currently in place, including market-based systems to achieve better environmental quality, as well as proposals for changes to those approaches. A significant portion of the course will also be devoted to exploring issues presented by government and citizen suit enforcement of environmental laws. While administrative law is obviously relevant to much of environmental law given the fact that it is agencies which make and administer the law involved, the course will offer students an overview of administrative law principles which will be sufficient background for the purposes of this course.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Global Studies

LAW 5352 - LAW & ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This course introduces principles of positive and normative microeconomics to explore the extent to which they can explain the workings of the legal system and to examine the effect of legal rules on behavior. Covered topics include the Coase Theorem; the choice between property, liability, and inalienability rules; comparative liability rules (e.g., negligence versus strict liability); contractual damages; criminal liability; family law; game theory; and legal decision theory (e.g., risk, uncertainty
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5355 - NON-PROFIT ORGANIZATIONS

Minimum Credits: 2
Maximum Credits: 2

This class will survey the state and federal laws governing nonprofit tax exempt organizations. The course will examine the formation of nonprofit corporations under Pennsylvania law, principles of corporate management, and options for fundamental organizational change. In addition, the course will analyze the process of qualifying for tax exemption under the Internal Revenue Code and under the laws of Pennsylvania. Issues of private inurement, unrelated business income, charitable giving and fundraising regulations will be discussed. The course will include statutory and regulatory analysis, selected caselaw and case studies based on actual NPO's.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5359 - WORKERS' COMPENSATION PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
The student undertakes this practicum concurrently with the workers' compensation course taught by adjunct professor Torrey. The practicum is not a requirement of the workers' compensationcourse. The workers' compensation course provides the student with an exposure to the history and theory of the law, a survey of the different state and federal systems, and the manner in which employers insure for workers' compensation. The practicum works as a supplement, and provides the student with firsthand exposure to and activity in the field. The student will observe lawyers meeting with clients and evaluating their cases. In addition, the student will learn how lawyers communicate and/or work with physicians, and how employers contesting claims obtain and present rebuttal medical evidence. The student will be introduced to the practice of taking trial depositions of medical and other experts, and have the opportunity to attend a deposition to observe attorneys at work. The student will also have the opportunity to attend hearings and observe the procedures of the opposing attorneys and thejudge. In addition, the student will gain an understanding of the specific petitions that are advanced by the worker prosecuting the claim and the employer and/or insurance company that has contested entitlement. The participant in the practicum will be instructed in how to prepare written legal argument to the workers' compensation authorities, and briefs to the appeals courts. The student will also gain exposure to current practices surrounding evaluation of workers' compensation cases for possible lump sumsettlement.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5360 - SECURED TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5364 - ADVANCED BANKRUPTCY

Minimum Credits: 3
Maximum Credits: 3
Lectures on chapter 11 issues and procedures will set the stage for what is going to happen in the class. Practicing attorneys or other professionals will be invited when the issues involve direct participation with a client and decisions that must be made from the business or legal side of the case. Lectures will cover the theoretical underpinnings to the bankruptcy code and rules, as applicable, and illustrate the points with appropriate case law. Discussion will cover the nature of chapter 11 reorganization, kinds of relief available in business cases, need for cash, why certain motions are needed early in the case whereas others wait, how the business issues interplay with the bankruptcy case, pre and post filing issues, solicitation of creditors committee, plan negotiation process and more. Students will be required to read and analyze the relevant statutory text and rules and relevant cases. They will be assigned certain drafting work and/or papers to write regarding the issues involved. "Papers" may take the form of legal briefs. Each student will be required to argue on behalf of a "client" an assigned topic. To simulate the practice of law, students will file all assignments on the bankruptcy court's test data base for electronic filing.
Academic Career: Law
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5272; PROG: School of Law (LAWSC)

LAW 5365 - INTRODUCTION TO RUSSIAN AND UZBEKISTAN LEGAL SYSTEM

Minimum Credits: 2
Maximum Credits: 2
This course is designed to introduce students to the legal systems of the Russian federation and Uzbekistan. The foundation of the legal systems of these countries is almost identical, and by comparing one country's system to another, students will become more familiar with civil law systems. Special attention will be given to constitutions, court systems, the role of judges, state prosecutors, courtroom advocates and lawyers, as well as to the important commercial laws and treaties. I will use examples from my professional experience to give my students a realistic view of the legal systems of these countries. The class is intended to enhance student awareness of the legal environment and issues that often result from a decision to engage in relations or do business across nationalboundaries. Students must be prepared to actively discuss the assigned reading or other material in class eachweek.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Russian & East European Studies

LAW 5371 - PARTNERSHIP TAXATION

Minimum Credits: 3
Maximum Credits: 3
This course involves the study of the federal income tax treatment of partners and partnerships. We will examine the tax issues that arise in connection with the formation, operation, and liquidation of partnerships. We will also study the tax consequences of acquiring or transferring a partnership interest and of transactions between partners and partnerships. Some attention may be given to comparisons with the tax treatment of c and scorporations.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5380 - CYBERCRIME

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5386 - FOUNDATIONS OF LEGAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
Foundations of legal research is a one-credit practical skills course that builds on basic research skills learned in the first year legal writing program and emphasizes legal research as an integrated part of the practice of law. The course will integrate traditional print resources with online database resources and '"free"' internet resources, with emphasis on locating resources efficiently and cost-effectively.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5391 - ELDER LAW CLINIC

Minimum Credits: 7
Maximum Credits: 7
The Elder Law Clinic offers students who have completed three semesters of law school an opportunity to represent clients and develop practical lawyering. Students enrolled in the clinic are certified to practice law and take primary responsibility for client representation under the supervision of their faculty/supervising attorneys. Elder law clinic representation focuses on issues of capacity in medical treatment, mental health law, estate planning, contractual relations, and property management. Emphasis will be placed on long term planning, including estate planning and medical assistance (Medicaid) eligibility. Litigation skills focuses on practice in the orphans' court division, for example, guardianship proceedings. Students will develop practical skills such as interviewing, counseling, research, drafting, negotiation, and trial practice skills. Students may work in teams to represent their clients. The classroom component is an integral part of the clinic experience, consisting of a series of discussions focusing on substantive law, policy, and practical skills training. Experts in the fields of social work, psychology, psychiatry, and medicine will provide insights into interdisciplinary issues.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5393 - HEALTH LAW CLINIC

Minimum Credits: 7
Maximum Credits: 7
The civil practice clinics offer students who have completed three semesters of law school an opportunity to represent clients and develop practical lawyering skills. Students enrolled in the clinicsare certified to practice law and take primary responsibility for client representation under the supervision of their faculty/supervising attorneys. Health law clinic students represent their clients at all stages of seeking disability benefits through the social security administration. Students also represent clients in orphans' court in guardianship cases and in the US District Court on health related matters. They interview clients initially and if the case is accepted, proceed to gather and interpret evidence, develop case theory, prepare hearing memoranda, and represent clients at hearings or in court. The classroom component is an integral part of the clinic experience and consist of a series of lectures and discussions focusing on substantive law, policy, and practical skills training. Classroom simulations are designed to ready students for client work, and include an ADR exercise. The skills component of the course will be taught in tandem with the elder law clinic. Students may work in teams of two.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5395 - HEALTH LAW AND POLICY

Minimum Credits: 3
Maximum Credits: 3
This is a survey course of fundamental issues, covering a broad range of topics, in health law and policy intended both for students who merely wish to become acquainted with the field, and for those who plan on concentrating in the field. For those planning on concentrating, this course provides a foundation for in-depth courses such as health care business transactions, health care fraud and abuse, health care antitrust, and financing in the healthcare industry. For students not concentrating in health law, it provides an introduction to the multitude of issues with which lawyers working with clients in the health care industry need to be familiar. The course examines the role that law plays in achieving three societal goals: increasing access to health care, controlling health care costs, and assuring quality of health care. Specific topics are the structure of the health care system(including integrated health care delivery systems); regulating quality through licensing, staff privileges, and accreditation; labor and employment issues; the legal obligation to provide treatment, including Emtala); tax exemption and charitable purposes; health care reform; state and federal regulation of health insurance and managed care (including Erisa); federal initiatives to expand private insurance coverage(including HIPAA, COBRA and ADA); Medicare/Medicaid eligibility, benefits, and reform efforts; health care fraud and abuse (false claims act, anti-kickback statute, stark); and antitrust issues in the health care industry. This course does not examine issues of professional liability, and it does not cover ethical issues in health care (covered in, which is the subject of "bioethics and law").
Academic Career: Law
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5398 - FAMILY EMPOWERMENT & LEGAL ACCESS CLINIC

Minimum Credits: 4
Maximum Credits: 4
The Family Empowerment and Legal Access Clinic is a yearlong clinic. In the Family Empowerment and Legal Access Clinic, law students develop the knowledge, skills, and values necessary for a professionally effective - and satisfying - client representation practice. JD students provide brief advice and legal representation to clients experiencing family law issues in Allegheny County and represent families in Special Immigrant Juvenile matters. During their practice, students are supervised by clinical faculty and certified by the Supreme Court of Pennsylvania to provide legal services to pro se litigants.
Academic Career: Law
Course Component: Clinical
Grade Component: LG/SU3 Elective Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5402 - CRIMINAL PROCEDURE II

Minimum Credits: 3
Maximum Credits: 3
Criminal Procedure II (The Adjudication Process) -addresses all of the major federal constitutional issues that arise during criminal adversarial proceedings in the United States - in both the state and federal court systems. This course will provide a detailed, practical, and realistic understanding of what occurs in a criminal case from the time an accused is arrested until the time of conviction, sentence, and appeal. Procedures in both federal and state courts will be discussed including preliminary issues such as arrest procedure, prosecutorial discretion in determining what charges will be filed, bail concerns, preliminary hearings, and grand jury proceedings. The course will then address pre-trial matters such as discovery, Brady material, and pre-trial motions practice. This section will include but not be limited to joinder and severance, speedy trial, plea bargaining, and pre-trial habeas corpus. The "trial" section of the course will discuss jury issues including jury selection and a variety of procedural issues that arise at trial including confrontation clause, hearsay, double jeopardy, and Bruton issues. Supreme Court cases, such as Apprendi and Alleyne, will generate an important discussion of not only appropriate language in indictments, but verdicts and verdict slips as well. Time will also be spent on sentencing, both state and federal. We will also briefly cover the appellate and collateral attack post-conviction processes.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5404 - CYBERSPACE AND THE LAW

Minimum Credits: 3
Maximum Credits: 3
This course will examine legal and public policy issues that pertain specifically to the existence, operation, and governance of the network of networks that we call "'the internet'" and the metaphorical experience that we sometimes refer to as "'cyberspace.'" what legal and policy problems are unique to the internet and cyberspace? When and how should "'ordinary'" legal problems be treated differently if they concern the internet or cyberspace in some respect? Specific topics are expected to include the construction and definition of the internet; internet governance, including domain name regulation and network neutrality; and network and information security. It is expected that the course will not consider intellectual property topics, freedom of expression topics, or jurisdictional (civil and criminal procedure) questions. The course will focus primarily on public policy questions wrapped up in legal questions, rather than on principles of law as such.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Global Studies

LAW 5407 - TRIAL ADVOCACY

Minimum Credits: 2
Maximum Credits: 2
A course devoted to the art of presentation and persuasion in the courtroom. Students will be engaged in preparation for, and performance of, all basic phases of a typical trial including jury selection, opening statements, direct examination, cross examination, techniques for introducing evidence, closing argument, etc. Emphasis will be on actual performance of mock problems in a true courtroom setting, as well as instructor's critique of those performances.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5103; PROG: School of Law (LAWSC)

LAW 5413 - MERGERS AND ACQUISITIONS

Minimum Credits: 3
Maximum Credits: 3
Mergers and acquisitions is a standard third year elective at many United States law schools. The course concerns itself mainly with the legal implications and practical aspects of the combination of business entities. Attention is paid to the economic and business reality which creates the context in which the legal issues arise. The course materials take a chronological review of the subject, from preliminary negotiations and letter of intent stages through definitive agreement drafting and closing, with litigation which may arise afterwards.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5112 or LAW 5141; COREQ: LAW 5112

LAW 5414 - ESTATE PLANNING

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5417 - LAWYERING PROCESS SUMMER CLINIC

Minimum Credits: 2
Maximum Credits: 2
Students will be able to gain live client experience in performing an ensemble of essential lawyering skills, including: interviewing, counseling, negotiation, document/pleading drafting, and representation before the court of common pleas. Modeling, training and supervision will be provided by experienced staff attorneys at the field-based setting in Washington and the professor in a one-hour weekly group review meeting at the law school/online through Lync. Family law ' protection from abuse, custody, divorce, and child dependency ' will be the principal area of practice, with students provided preparatory substantive instruction/materials by staff attorneys and professor. Family law is not a required prerequisite. Scheduling of clinical hours will be adjusted to accommodate each student's other work commitments. Transportation costs associated with travel to/from the office will be reimbursed.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5418 - IMMIGRATION LAW

Minimum Credits: 2
Maximum Credits: 2
This administrative law course will examine the constitutional, statutory and regulatory system associated with the admission and exclusion of foreign nationals into and from the United States. While not a prerequisite, completion of administrative law is an advantage in the

course's procedural aspects. Taught from the practitioner's perspective, the course will address the particular challenges in the effective representation of noncitizen clients. The course will include business, employment and investment Visa categories (both temporary and permanent), asylum law and procedures as well as exclusion and deportation litigation.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Global Studies

LAW 5422 - ALTERNATIVE DISPUTE RESOLUTION

Minimum Credits: 3
Maximum Credits: 3
Legal and other disputes are increasingly resolved by dispute resolution processes other than litigation. Given this trend, it is important for law students to be familiar with these alternative processes, such as arbitration and mediation, and the benefits and risks they present. At the same time, these alternative processes require creative and interdisciplinary problem-solving perspectives and skills. This course begins with an overview of problem-solving approaches, and is followed by the study of arbitration, mediation, and hybrid processes. The course emphasizes interactive student discussion and activities, including role-plays, exercises, and presentations that simulate professional activities of lawyers, arbitrators, mediators, and clients. The classes build on each other, so that knowledge that we acquire in the earlier classes will be integrated into our materials, discussion, and activities in later classes.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Asian Studies

LAW 5424 - INTERVIEWING AND COUNSELING

Minimum Credits: 2
Maximum Credits: 2
Proficiency in interviewing and counseling is essential to both the litigator and transactional lawyer. Lawyering process I will provide the student with theoretical understanding of interviewing/counseling and intensive training designed to develop these essential skills. Through lectures, readings, demonstrative videotapes and class discussions, the "client-centered" model advocated by the instructor as well as the "traditional approach" will be introduced, examined, and collectively critiqued. Practice will involve observing/critiquing weekly in-class simulations (with students as "client," "lawyer"). Periodic quizzes and two videotaped exercises at mid-point and end of course (with students interviewing/counseling 'outside' client) will be scheduled. Consistent attendance is required in order to ensure the effectiveness of in-class simulated exercises and to acquire comprehensive knowledge of/practice in each essential skill.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5425 - LOW-INCOME TAX CLINIC

Minimum Credits: 3
Maximum Credits: 3
Working under the supervision of experienced tax attorneys, students participating in this clinic will assist in all aspects of the delivery of legal services to low income taxpayers in disputes with the internal revenue service. Students may expect to engage in interviewing, counseling, research, drafting, and negotiation with the I.R.S. Calendar and the disposition of the cases taken. In addition to the client work, students will also meet for weekly case reviewsessions.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5429 - COMMUNITY LAWYERING

Minimum Credits: 2
Maximum Credits: 2
Gain experience with live clients, performing such essential lawyering tasks as interviewing, counseling, negotiating, drafting documents and pleadings, and providing representation before the Court of Common Pleas. Students receive modeling, training, and supervision from experienced Southeastern PA Legal Services staff attorneys.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: LAW COMM-Advocacy, LAW COMM-Client, LAW COMM-Listening, LAW COMM-Negotiation, LAW COMM-O Comm, LAW COMM-W Comm, LAW LAPS-Legal Reasoning/Analysis, LAW LAPS-Legal Research, LAW LAPS-Problem Solving, LAW PE-Ethics, LAW PE-Professionalism, LAW PSD-Self Assessment

LAW 5430 - INFORMATION PRIVACY: LAW AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This introductory course will provide a comprehensive overview of the primary laws, regulations and guidelines dictating data protection safeguards in the health care industry. It will begin with an introduction to the origins and philosophical perspectives that provide the framework for current privacy laws. Students will then explore the HIPPA privacy/security rules, provisions of Hi-tech breach notification standards, technical, physical and administrative safeguards and their intersection with the various state data protection laws. This course will include an introduction to the legal challenges associated with securing electronic data along the information highway and within the cloud, while attempting to safeguard against cybersecurity threats. Students will be introduced to the implications of privacy to the health care provider, health plans, health care clearinghouses, business associates, and the enforcement activities belonging to the office for civil rights. It will also afford students an opportunity to examine privacy from the financial and international perspectives.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5433 - OCCUPATIONAL SAFETY & HEALTH

Minimum Credits: 2
Maximum Credits: 2
With the explosion of COVID regulations from federal, state and local regulators, this class will take what was once the niche area of occupational health & safety and teach the administrative law skills needed by a new generation of lawyers as this historically-rooted specialty suddenly impacts the operations of offices, restaurants, manufacturers, and virtually every other type of client any lawyer might represent. The course will briefly review historic dangers posed to workers and move into a study of the modern regulatory state with the creation of OSHA. The course will study several tragic incidents the faculty have personally been involved with and walk students through handling an emergency investigation, managing public relations, filing an initial appeal, conducting a mandatory settlement conference, and litigating on the expedited OSHA timeline. The course will focus on how lawyers interact with experts and clients to quickly conduct a root cause analysis and examine broader legal defenses to OSHA actions such as unanticipated employee misconduct. The course will also examine risks for clients beyond any discrete citation, with discussions about OSHA's national "one" employer doctrine. Course faculty will leverage the international reach of their Dentons colleagues and other guest speakers to add different perspectives to the material. A particular focus of the course will be issues of racial and financial inequities in some OSHA matters. At least one class will focus on COVID-era class actions filed on behalf of largely minority essential workers.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5460 - REAL ESTATE TRANSACTIONS

Minimum Credits: 2
Maximum Credits: 2
This is a practical course teaching students how to represent the client in a real estate transaction and covering all appropriate issues which might occur. The class will cover residential and commercial agreements of sale, deeds, financing the real estate transaction including drafting mortgages, notes and other finance documents, real estate appraisal practice, leases, what caused the real estate crises, title examinations, title commitments, title insurance, eminent domain, condominiums, issues affecting the real estate transactions, such as easements, licenses, adjoining landowner relationships, liens and their duration and priorities, real estate brokers, mortgage bankers, foreclosure proceedings, inter alia.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5464 - BIOETHICS AND LAW

Minimum Credits: 3
Maximum Credits: 3
This is an introduction to a variety of issues in biomedical ethics brought about primarily by the innovative techniques and technologies that the biomedical sciences have developed such as artificial procreation (e.g., In vitro fertilization, surrogacy, cloning), genetic screening and engineering, and life support systems (e.g., Respirators, medications, artificial nutrition and hydration). The primary focus of our inquiry will be whether these innovations should be regulated by law and if so how.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5468 - PSYCHOLOGY AND LAW

Minimum Credits: 3
Maximum Credits: 3
An understanding of the issues at the law-psychiatry interface, focusing on topics such as the psychiatrist-patient relationship, confidentiality and privilege, civil commitment and patient rights, malpractice and other forms of liability.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROGRAM: School of Law

LAW 5469 - FRENCH FOR LAWYERS 1

Minimum Credits: 2
Maximum Credits: 2
This is a course designed to develop the conversational, writing and reading skills in French to permit an American lawyer to communicate effectively with French-speaking clients, and to understand references to the French legal system and to the European union likely to arise in the course of an international law practice in the United States or an American law practice conducted in France. The course will differ from that of a typical college French class in that it will be oriented towards the law in the areas of vocabulary, composition topics, readings, dictations and in-class conversation.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: West European Studies

LAW 5474 - JOURNAL OF HEALTH LAW & POLICY

Minimum Credits: 1
Maximum Credits: 2
The University of Pittsburgh Journal of Health Law and Policy is a periodical published by second and third-year students. The journal builds on Pitt Law's longstanding leadership in health law and will serve as a platform for legal scholars, practitioners, policymakers, and healthcare professionals to engage with critical issues shaping health systems and public policy. The publication will feature both an annual long-form volume and more frequent short-form contributions that offer concise, practical insights into emerging health law topics.
Academic Career: Law
Course Component: Workshop
Grade Component: Grad HSU Basis

LAW 5475 - SPANISH FOR LAWYERS

Minimum Credits: 2
Maximum Credits: 2
This is a Spanish language course in a legal context, designed to acquaint students with the rudiments of the Spanish language and with Spanish legal vocabulary sufficient to permit an American attorney to communicate effectively with Spanish-speaking clients. Vocabulary, readings, class discussions and written work will be in a legal context. No prior study of Spanish is required.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: West European Studies

LAW 5476 - SPANISH FOR LAWYERS 2

Minimum Credits: 2
Maximum Credits: 2
This course is a continuation of Spanish for lawyers 1. Students either should have completed Spanish for lawyers 1 or have had a minimum of one semester of priorstudy.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: West European Studies

LAW 5477 - TRANSNATIONAL LITIGATION IN PRACTICE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5478 - HIGHER EDUCATION AND THE LAW

Minimum Credits: 2
Maximum Credits: 2
Colleges and Universities occupy a unique role in American society and culture. Courts in case law vividly describe colleges and universities as "marketplaces of ideas" and consider higher education to play a critical role in our democratic society. As a result, concepts such as academic freedom and free speech shape the legal landscape in unique ways. In addition, many statutes specific to higher education govern the day-to-day actions and obligations. At the same time, many areas of the law apply to colleges and universities in the same manner as they would to any other institution. This course will provide students an overview of the legal principles that shape higher education law. Students will then learn to apply the unique legal concepts to the analysis of the myriad of issues that commonly arise on campus.

Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5481 - INTELLECTUAL PROPERTY LICENSING

Minimum Credits: 2
Maximum Credits: 2
This course will concentrate on contract drafting and the application of intellectual property and contract law to license agreements; licensing provisions and legal issues regarding copyrights, patents, trade secrets, trademarks and computer software will be reviewed as will related antitrust, international and tax law issues; issues related to the internet and University technology transfer will also be discussed.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5485 - CLINIC EXTENSION

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5487 - ADVANCED TRIAL ADVOCACY

Minimum Credits: 1
Maximum Credits: 1
This course is for students who will represent Pitt Law in an interschool trial competition. The course will support and enhance both development of a case file from competitions materials and all aspects of competition participation. You will deepen your skills in identifying a theme for your case, crafting a compelling story, effectively teaching through your advocacy. You will also learn and practice oral advocacy skills with a focus on careful listening, persuasive response, and smooth transitions. You will also focus on trial evidence and its application to a judicial proceeding. Through class exercises, reflection, and self-assessment, you will prepare both for your competition and for the most exciting aspect of your legal career: continuous learning and growth.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5491 - ADVANCED LEGAL RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course will build on the material presented in the foundations of legal research course, and will provide students with a broader array of strategies and skills to approach legal research projects. The course is to be broadly divided into three components. The first component focuses on strategic approaches to legal research, how to incorporate the research process into the litigation or transactional problem presented and to more effectively integrate the various legal research tools available into that strategic approach. Cost-effective research strategies, including strategies to effectively manage real-world lexis and Westlaw costs will also be covered. This component will somewhat overlap with, but significantly expand on material from the foundations course, and will give students a broader understanding of the research process. The second component of the course recognizes that not all substantive areas of the law utilize the same research resources, strategies and techniques. During this component of the course, students will self-select into one of three topical research tracks-expected to be intellectual property, environmental law, and health and disability law-and spend several weeks looking at the unique

resources and research challenges presented by those areas. The third component of the course returns all students to the same material and focuses on non-legal research areas such as medical and scientific research, business and corporate research, investigative research, and financial and marketplace research.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5494 - IN-HOUSE COUNSEL AND MODERN CORPORATION

Minimum Credits: 2
Maximum Credits: 2
This course will explore the unique legal and practical challenges that face counsel working in corporate law departments of various size, including entrepreneurial industries. Students will come to understand the use of the legal function as a tool which is critical to innovation and furthering business objectives. Themes addressed will include client service, driving business objectives through the legal function, and the independent duties owed by a corporate attorney to the corporation, as well as, where tensions arise between those themes. These themes will be examined through topics such as selecting and managing outside counsel and expense, developing internal training programs, and reducing litigation risk, each as distinct from the responsibilities of outside counsel. The course will also examine matters of corporate compliance and governance, attorney-client privilege, and the Sarbanes-Oxley act specific to the in-house context.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5507 - EVIDENCE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This writing seminar will examine selected topics in evidence law and policy from a more advanced, and often more critical, theoretical, and practical perspective than is feasible in the basic Evidence course. We will examine current doctrinal controversies and explore scholarly critiques of specific rules and principles, including critical or interdisciplinary perspectives on the traditional approaches underlying evidence law. Each student will produce a substantial research paper on a related topic to be chosen in consultation with the instructor, and a significant portion of the course will be devoted to the development, writing, and editing of those papers, both during class meetings and in individual meetings with the instructor.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: LAW 5103; PROG: School of Law

LAW 5508 - PERFORMING JUSTICE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Anyone who has set foot in a courtroom knows that what goes on there has as much to do with drama as with rational inquiry. Judges act as if they are finding legal rulings by applying objective rules, while making subjective choices about which rules to apply and how. Witnesses testify as if responding spontaneously to questions that actually have been rehearsed. Lawyers are professionally histrionic - paid to play righteous believers in their clients' virtue. This is the decision making process Jeremy Bentham called "theater of justice" and the American Legal Realists derided as a "ceremonial routine" of "word jugglery," "legal ritual," "magic solving words" and verbal "sleight of hand." In this seminar we will explore some standard critiques of law as performance. Along the way we will consider how the theatrical, ritual, and perhaps even magical aspects of legal process might both detract from and contribute to the production of justice. We will approach these questions through reading and discussing a wide range of texts, including, judicial opinions, law review articles, performance theory, plays, social criticism, and ethnography. There will be at least one "field trip" to see some legal performance live, and we will likely make use of film and video as well.
Academic Career: Law
Course Component: Seminar

Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5510 - SUPREME COURT PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to practice before the Supreme Court of the United States, with an emphasis on understanding the rules that govern the Court's handling of cases and the Court's decision-making processes. Over the duration of the course, we will track the progress of recent cases before the Supreme Court from beginning to end through certiorari filings, decisions to grant or deny certiorari, merits filings, oral arguments, and opinions. We will also take a closer look at three cases as examples that the students in the class will help us select. In particular, we will ask for student help to pick a case that was decided last Term, one that is scheduled to be argued during the course, and one that will be argued later in the Term. Our final exercise in the course will be to do a mock Conference in which we will try to predict the outcome in the case we select that has been argued but not yet decided by the Court. This course will continue to build student skills in (1) reading and analyzing cases, particularly Supreme Court cases; (2) identifying issues and considerations that might lead the Court to adopt a particular holding; (3) understanding how various argument strategies might affect outcomes; and (4) analyzing legal problems, including stating the established law, identifying open or unresolved or new issues in the law, and applying law to the facts to resolve a problem.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5511 - TAX LAW & POLICY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course will consider the theoretical, social, and philosophical underpinnings to any tax system. In addition, this course will consider both alternative tax systems and current issues in our tax policy. Students should come away from this course with a greater understanding of the political, economic and social constraints on our tax system.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5527 - INTERNATIONAL IP SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar surveys current issues in international and comparative intellectual property law, focusing on aspects of copyright, trademark, patent, and related laws. It introduces key international IP treaties, and contrasts different countries' approaches to IP protection.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5547 - INTERNATIONAL INTELLECTUAL PROPERTY LAW

Minimum Credits: 3
Maximum Credits: 3
International intellectual property law has expanded substantially over the past few decades, and today seeks broadly to regulate transnational flows of information and culture. This course analyzes the international IP regime, situating it within the dynamics of globalizing flows of information and cultural objects. It provides an overview of the law, theory, and politics of this area of law, and will use case studies to illuminate the interaction between the three. Subjects covered include copyright and related rights (moral rights, traditional cultural expression, performers rights); trademarks and geographical indications; Internet domain names; trade secrets and

patents. Case studies may include considerations of access to medicines, moral rights in Europe, and "piracy" in China as well as copyright formalities and Berne retroactivity.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5572 - PENNSYLVANIA INNOCENCE PROJECT PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
The Pennsylvania Innocence Project Practicum is a one-semester course (with the option of a second semester) offered by Pitt and Duquesne Law Schools. This unique program allows students to develop their lawyering skills by reviewing and investigating actual claims of innocence from Pennsylvania inmates. Under the supervision of the Project's Director and Managing Attorney, students are assigned real cases and engage in a wide range of hands-on activities. These include reviewing criminal files, collaborating with investigators, contacting past trial and appellate counsel, interviewing clients, gathering documentation, and preparing legal documents and memoranda. Students also have the opportunity to tour the Allegheny County Medical Examiner's Office, the Allegheny County Jail, and a state correctional facility. While most claims are resolved through written pleadings and briefs, students are encouraged to attend court proceedings whenever possible. Additionally, students evaluate new applications to identify viable innocence claims. Through this practicum, students gain valuable experience in legal analysis, legal writing, and problem-solving. As they progress, they explore substantive and procedural issues within their assigned cases and discuss ethical considerations inherent to this area of practice. The classroom component covers key topics such as defining claims of innocence, investigating and litigating innocence claims under Pennsylvania law, preserving claims for federal review, post-conviction discovery rules, state and federal post-conviction procedures, investigative techniques, DNA and scientific evidence, and evidentiary rules governing admissibility.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5585 - EDUCATION AND JUSTICE AND CIVIL RIGHTS SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to education and civil rights law and policy that are the foundation for civil rights protections in K-12 public education. Students will explore key education and civil rights issues in the following topic areas: school segregation (past and present), the criminalization of students of color, school privatization, and social movements for education justice. Students will emerge from this class with an understanding of historical and current flashpoints in education and civil rights in the United States and the role of lawyers and the law. In addition to analyzing key cases, articles, and social science research, students will explore how law students and lawyers can play a meaningful role through policy, litigation, and advocacy for social change.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5609 - PROFESSIONAL RESPONSIBILITY

Minimum Credits: 3
Maximum Credits: 3
This course will cover selected topics on the law governing lawyers. Major topics will include formation and termination of the attorney-client relationship and its attendant obligations, fee issues, conflicts of interest, ethics in advocacy, transactional lawyering, and entity representations, among others. The course will cover these topics from the vantage point of the model rules of professional conduct and the restatement of the law governing lawyers, as well as those aspects of constitutional law, evidence law, agency law, tort law, and procedural rules (both civil and criminal) that bear on an attorney's obligations to clients, courts, opposing parties and their attorneys, and the legal system at large. Class discussions will incorporate in-depth analysis of case law and the rules, as well as analysis of practical hypothetical scenarios in which a lawyer seeks advice about his or her legal and ethical options for moving forward in dealing with his or her clients.

Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5616 - MOCK TRIAL STRATEGY AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
In this class, you will learn fundamentals associated with trying a jury case. You will learn how to conduct each phase of the trial from opening statements to closing arguments and everything in between. There will be a focus on the use of trial evidence which will serve as a good supplement to a regular evidence class. This is very much a learning by doing environment, and you will be required to participate in class each work to demonstrate your understanding of the assignment. It cannot be emphasized enough that grading will not be based on overall skill, but instead focused on individual improvement throughout the semester. This class will also serve as a springboard into competing on the Law School's Mock Trial teams. Although this class is focused on trial practice, it is beneficial to all students regardless of their anticipated career path. Through the semester, you will learn how to synthesize, sort and present ideas in a persuasive fashion to your audience
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5618 - ARABIC FOR LAWYERS 1

Minimum Credits: 2
Maximum Credits: 2
Arabic for lawyers is a two semester course comprised of both Arabic for lawyers I and Arabic for lawyers II. Arabic for lawyers is a course that helps students to familiarize themselves with Arabic legal terminology and basic Arabic grammar. This is a beginner class that assumes no prior knowledge of or exposure to the language. As such, native speakers and those with formal training over a period of years may not enroll. The course is a two semester (full year) course and students are encouraged to take both semesters in order to benefit from the course. However, students are permitted to take only the first semester if they wish. They may take only the second semester with the professor's permission if they have had some modest experience with the Arabic alphabet. The first semester of the course deals with learning the Arabic alphabet, mastering pronunciation and developing the ability to write in Arabic by hand. In the second semester, we will turn to learning basic rules of grammar and developing vocabulary in a manner that is designed to be of interest and use to lawyers and legal professionals. The class will conclude by reading simple cases, laws and other basic legal materials. To facilitate the learning experience, laptops will not be permitted in class.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5619 - ARABIC FOR LAWYERS 2

Minimum Credits: 2
Maximum Credits: 2
Arabic for lawyers is a course that helps students to familiarize themselves with Arabic legal terminology and basic Arabic grammar. This is a beginner class that assumes no prior knowledge of or exposure to the language. As such, native speakers and those with formal training over a period of years may not enroll. The course is a two semester (full year) course and students are encouraged to take both semesters in order to benefit from the course. However, students are permitted to take only the first semester if they wish. They may take only the second semester with the professor's permission if they have had some modest experience with the Arabic alphabet. The first semester of the course deals with learning the Arabic alphabet, mastering pronunciation and developing the ability to write in arabic by hand. In the second semester, we will turn to learning basic rules of grammar and developing vocabulary in a manner that is designed to be of interest and use to lawyers and legal professionals. The class will conclude by reading simple cases, laws and other basic legal materials. To facilitate the learning experience, laptops will not be permitted in class.
Academic Career: Law
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5622 - COMPARATIVE PROFESSIONAL RESPONSIBILITY

Minimum Credits: 3
Maximum Credits: 3
The course provides an exploration of the organization and the sources of regulation of the legal profession in the United States, and an overview of select countries in the Americas as well as Europe, briefly highlighting the main differences existing in lawyers' ethical standards in civil law and common law systems. It focuses on the main standards of professional legal ethics in the United States, and compares them with those of Latin American and European countries. The course will be centered on the ABA Model Rules of Professional Responsibility. The Model Rules will be compared with the rules of professional conduct proposed by international associations such as the International Bar Association and the rules proposed by bar associations in the MERCOSUR zone. The course also seeks to engage students in an exploration of the challenges posed by the increase in cross-border, transnational legal practice, and an overview of the ethical regulatory responses attempted so far in this field. This course meets the New York professional responsibility requirement. N.Y. Court Rules for Admission of Attorneys and Counselors at Law Rule 520.3(c)(1)(iii).
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5623 - CYBER POLICY, CRIME & NATIONAL SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course will explore theoretical and practical aspects of nation-state legal issues concerning cyberspace, with a particular focus on computer-related crime, espionage, war, and international governance. The course will review key legal cases, policy, and legislation. In tandem with a series of expert guest speakers from the field, the course will reflect on the roles of national and international governments, the legal and ethical dimensions of cybersecurity, the relationship between the public and private sectors, and the increasing tensions between privacy and national security. The course will consist of four major components: (1) an assessment of the current cybercrime threat landscape, (2) a review of the relevant national and international legal frameworks, (3) analysis of case studies of significant prosecutions, and (4) assessments of domestic and international policy and security challenges, including gaps in existing frameworks. Students who complete the course will obtain an enhanced understanding of the legal, policy, and security frameworks at the core of these challenging issues for nation-states.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5626 - LOBBYING AND ADVOCACY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5627 - WICKED PROBLEM INNOVATION

Minimum Credits: 3
Maximum Credits: 3
"Wicked Problem Innovation" is a new, innovative, cross-disciplinary course that brings together graduate students from Pitt Law, the Katz School of Business, and other units across the University of Pittsburgh to engage deeply in a selected acute problem that faces Pittsburgh and the broader world. "Wicked" problems are stubborn, complex societal and business challenges, like global climate change, income

disparity, inclusive economic growth, and universal healthcare. These problems arise from a variety of causes and affect multiple stakeholder groups, each of which has a different idea of how the problem arises and what can be done to improve it. While it is likely not possible to "solve" these problems in a traditional sense, it is possible to make sustained progress in tackling them. Course participants will research the selected problem from legal, business, historical, and other perspectives, identify and consult with stakeholders, and ultimately design a process to improve progress on the selected problem. During the course, students will learn to work collaboratively with peers and instructors from a variety of disciplines, and will practice a host of practical skills, including interviewing witnesses and clients, negotiating outcomes, and actively problem solving across a range of subject matter areas. Additionally, students will gain substantial and deep contacts in local, state, and potentially national, government, nonprofit, and business communities. Students will come away from the course will critical skills in working collaboratively across subject matter boundaries and experience creating an innovative problem-solving process from the ground up.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5630 - FEDERAL CIVIL LITIGATION SKILLS

Minimum Credits: 2
Maximum Credits: 2
This course explores practical and procedural pretrial litigation activities encountered in federal civil litigation. The course is designed to develop practical case management, advocacy and negotiation skills while increasing awareness and familiarity with the local rules which govern litigation in the United States district court (W.D. Pa.). The course will consist of both lectures and 'hands on' exercises, both written and role-play, that track the procedural progress of a federal case.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5631 - LAW AND ENTREPRENEURSHIP

Minimum Credits: 3
Maximum Credits: 3
This hands-on, practical course is intended to expose law students to entrepreneurs, innovation companies and the legal issues they face. The course will take students through the life cycle of a technology start-up company, from concept and formation to exit (IPO or sale), through careful analysis of relevant legal documents and case studies, as well as participation in lectures, workshops and simulations. The course will cover choice of entity and formation (including tax issues at start up and early stage fundraising), employee hiring and compensation, evaluation and protection of intellectual property and the development of a comprehensive IP strategy, valuation and financing (investment opportunities), licensing and sales, multinational operations, and exit strategy. The course will provide students with the legal framework and tools necessary to launch and grow a successful technology start-up, and to advise and assist entrepreneurs interested in launching a new business.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5640 - DIVERSITY INTERGROUP DIALOGUE

Minimum Credits: 1
Maximum Credits: 1
The Diversity Intergroup Dialogue Workshop is open to all 2L, 3L, LLM, MSL and joint-degree Pitt Law students and brings together those with diverse cultural and social identities in a small group setting, with the goal of engaging students in experiential learning as well as open and constructive dialogue concerning issues of intergroup relations, conflict and community. Students will learn from each other's experiences and examine how race, ethnicity, class, religion, age, disability, sexual orientation, gender identity and expression relate to power and privilege; and will practice constructive approaches to dialogue and the bridging of differences. Students will also consider how attorneys in a pluralistic society can use Intergroup Dialogue skills to better serve clients, advance causes and enhance professional

satisfaction. The workshop process is designed to stimulate learning, growth and engagement across the cultural identities identified above to provide students with the affective, behavioral and cognitive acumen that will promote skill-building to navigate effectively in our increasingly pluralistic nation and world.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5641 - SECTION 1983

Minimum Credits: 2
Maximum Credits: 2
This is a course in advanced constitutional rights litigation brought pursuant to 42 USA1983-- the federal statute which puts constitutional rights in action. It focuses on the means by which constitutional rights claims are actually litigated in lawsuits against public officials and local governments. Topics will include what it means to act "under color of state law;" absolute and qualified immunities; government liability for the acts of individual officials; remedies for constitutional violations, including monetary and injunctive relief; structural reform litigation; and the award of attorney's fees. The objective of the course is to provide students with the threshold substantive knowledge- to be able to bring or defend a 1983 case--- with the presentation facilitated by using "real-life cases" actually litigated by the instructors-- who between them have over 80 years of combined 1983 federal court trial and appellate litigation experience; and who accordingly--expect to provide practical insights into how 1983 cases are litigated.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5642 - FEDERAL HATE CRIMES

Minimum Credits: 2
Maximum Credits: 2
This course will focus on federal hate crimes. Students will examine and analyze relevant statues and key cases with a focus on gaining a practical understanding of the elements and application of these statutes. Students will have the opportunity to engage in discussions regarding the larger societal conversations relevant to these cases in order to better understand the various lenses through which prospective jurors may view such cases. Students will also learn about the tailored strategies applicable to investigating and litigating federal hate crimes cases, as many of these strategies are unique to this specific area of law. In addition to exploring various fact patterns through in-class discussion, students will utilize a specific hypothetical case fact pattern throughout the duration of the course that will serve as a basis for exploring the relevant statutes and strategies. As the course progresses, students will investigate the hypothetical case (including through an "investigation workshop"), analyze evidence related to the case, and litigate the case (through a "litigation workshop" and mock trial exercises). Please note that the subject matter of this course will require students to read about, view, listen to, and discuss material that may be disturbing or offensive to some or all students. Such material may include recordings or descriptions of the use of racial slurs and other offensive language, recordings or descriptions of the use of violence targeting victims based on a specific trait (race, ethnicity, gender, sexual orientation, religion, etc.), and other similar material.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5643 - THE PRESS AND THE LAW

Minimum Credits: 2
Maximum Credits: 2
The press often requires representation to ensure that it has access to the news and to ensure it can gather and report news without interference. There is a considerable body of law on the press' rights of access to government actions and the right to report news. The body of law also protects the press' sources and research from government intrusion. The course, taught by an attorney with extensive experience in representing the press, will review this body of law. It will afford students practical experience in representing the press by mock court appearances and arguments, and pleading preparation. Among the topics to be covered are: A. Origins of Freedom of Press History of Censorship of the Colonies and the Development of the Protection of the Press in the Bill of Rights B. Prohibition on Prior Restraint of the Press - New York Times v. United States of America C. Protections of the Reporter in Covering News -The Qualified First Amendment

Privilege and the Pennsylvania Shield Law D. Access to Judicial Proceedings and Judicial Records 1. The common law right of access 2. The higher First Amendment right of access 3. The Pennsylvania Constitution protections 4. How the press can assert its right of access E. Access to the Executive Branch 1. Freedom of Information Act 2. Pennsylvania Right to Know Law and Sunshine Law and similar state laws
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5644 - PHILOSOPHY OF CRIME & PUNISHMENT - NATIONAL & INTERNATIONAL PERSPECTIVE

Minimum Credits: 2
Maximum Credits: 2
This class will examine the philosophical and moral justifications for punishment in both American and international criminal justice systems, with a specific focus on the impact that the philosophy of punishment has on the individual and more broadly, on society as a whole. We will examine legal theory and concepts while fostering philosophical contemplation and discussion. There are four main theories of punishment: deterrence, retribution, rehabilitation and incapacitation. Depending on era and country, different views take a different approach and order of importance; this class will examine the four main theories in other countries, as well as our own. We will examine which philosophy of punishment is most effective and why. As we attempt to move toward a more socially conscious view of justice, we must ask a series of "why" and "how" questions: why do we punish those who have violated the law, and how do we decide the proportionality of the punishment in question? What philosophy do other countries use/ what philosophy has shaped our modern view of crime and punishment? Are we becoming more or less moral? Whose standards of morals? Are we becoming a more or less compassionate society? And how do those standards compare to the moral/philosophical views of comparative criminal justice systems in other countries? This class will be taught by lecture and discussion and will require short essays and one longer research paper. The purpose of these essays will be to make a well-reasoned argument supported by the readings, as well as counterpoints.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5645 - INTERNATIONAL BANKRUPTCY

Minimum Credits: 2
Maximum Credits: 2
Each spring semester the American College of Bankruptcy offers a live internet-based course in international insolvency law. This innovative course is shared by law schools across the United States and in foreign countries through live interactive video over the internet. Experts from around the globe are brought in by the College as guest lecturers for each class session. Robert Lapowsky, a College Fellow and the course professor at Penn, serves as Course Leader in charge of scheduling the speakers and coordinating the lectures. In addition, Prof. Schaffer will be present to amplify and explain points made by the lecturers and to cover additional materials as necessary.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5646 - FEDERAL CRIMINAL PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This introductory course will provide an overview of federal criminal law from the perspectives of one or more attorneys with extensive experience in both the US Attorneys' Office as well as the Federal Public Defenders' Office . The course will develop and supplement students' knowledge of substantive and procedural criminal law through the lens of how criminal prosecutions actually work in the federal context. Specific topics will include charging decisions, right to counsel, discovery, plea bargaining, and trial. Students will learn about the goals of prosecutors and defenders when approaching cases. This course is especially helpful for students who will have a federal judicial clerkship, and those who anticipate a career in litigation.
Academic Career: Law
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5647 - INTRODUCTORY ENTERTAINMENT LAW

Minimum Credits: 3
Maximum Credits: 3
Introductory Entertainment Law exposes students to a wide range of legal knowledge, practical skills, industry experts, potential clientele and content genre encountered in the field of entertainment, sports and art law. Students will learn. from their professors, who have worked in these fields, as well as other outside speakers, including lawyers, athletes, entertainers, artists and/or other industry experts. The course will focus on a wide variety of sports, entertainment and artistic genre, including film, television, amateur and professional sports, video games, music, theater and visual art content. Course legal issues will include: Representation by lawyers, agents, and managers; protection, licensing, infringement and fair use of intellectual property; labor and employment law; negotiation and drafting of contracts; representing for-profit, non-profit, governmental and social benefit organizations; investment, debt, governmental and charitable financing; and specific legal issues related to film, television, sports, video games, music, art and live entertainment. Student projects will include oral presentation and a final paper expanding in a sports, entertainment and or/art law topic.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5653 - INTERNATIONAL HUMAN RIGHTS

Minimum Credits: 3
Maximum Credits: 3
This course will examine the history of the development of international human rights laws, the concepts behind the current status of those laws, and the mechanics present for enforcing those laws in international, regional, and domestic legal systems. The course will include a discussion of the theories behind international human rights law and the ability (or lack thereof) to enforce international human rights standards. The course will look at different examples of human rights crises throughout the world, how those crises are being addressed and how we believe they should be addressed in light of established law and morality. In light of the growing importance of the r2p ("responsibility to protect") doctrine and the related doctrine of "human rights intervention," we will examine these doctrines closely, whether they comport with international human rights law and whether they in fact accomplish what they claim to accomplish.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: African Studies

LAW 5666 - LOBBYING AND ADVOCACY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5667 - POLICY EXTERNSHIP

Minimum Credits: 4
Maximum Credits: 8
Academic Career: Law
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5668 - POLICY COLLOQUIUM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Law
Course Component: Colloquium
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5669 - POLICE MISCONDUCT & HATE CRIMES

Minimum Credits: 2
Maximum Credits: 2
This course will address civil rights with a focus on police misconduct and hate crimes. While these are distinct areas of criminal law, they represent the two primary categories of federal criminal civil rights enforcement. Students will examine and analyze relevant statues and key cases with a focus on gaining a practical understanding of the elements (and application thereof) of each crime. Students will also learn about the strategies applicable to investigating and litigating these matters. Students will then apply their understanding to real-world fact patterns examined through in-class discussions, mock hearing and trial exercises, and assignments focusing on the development of written and oral litigation skills. Please note that because this course addresses police misconduct and hate crimes, the subject matter will require students to read about, view, listen to, and discuss material that may be disturbing or offensive to some or all students. Such material may include videos of police shootings, recordings or descriptions of the use of racial slurs and other offensive language, recordings or descriptions of the use of violence targeting victims based on a specific trait (race, ethnicity, gender, sexual orientation, religion, etc.), and other similar material.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5670 - PERSONAL FINANCIAL PLANNING & BUSINESS START-UP PLANNING

Minimum Credits: 1
Maximum Credits: 1
This course deals with the basics of personal financial planning and startup business planning. Students will create personal financial plans based on projected horizons of 1, 3 and 5 years. The primary focus is on near term planning with emphasis on: initial savings, paying off student debt, judicious use of credit, and investing for short and long term goals. Also, students will create a comprehensive business plan for starting a law firm after graduation. This plan's focus should be on business structure, financing, cash management and cost control. Topics such as benefits and insurance should be covered as well. Students will prioritize and codify their plans based on personal, professional and lifestyle objectives projected over each plans stated horizons.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5671 - CYBERSECURITY, PRIVACY, AND AMERICAN DEMOCRACY

Minimum Credits: 3
Maximum Credits: 3
This course will explore the intersection of cybersecurity issues and American democracy. The proliferation of technology in the cyber age has not only collided with existing norms and laws around privacy, but also stressed American democracy in profound ways. The proliferation of algorithmic tools within government and cyber threats to our critical election infrastructure (including digital disinformation and hacking) are among the most pressing challenges that our democracy must confront to preserve popular legitimacy in the face of cyber's growth. By first exploring the legal framework around cybersecurity and privacy, students will have a sufficient grounding to examine these complex issues facing American democracy.
Academic Career: Law

Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5672 - IMPLICIT BIAS IN HEALTH CARE

Minimum Credits: 2
Maximum Credits: 2
Equity of care, cultural competence, implicit bias, diversity, patient health management, population health, and their connection to federal law and informed consent liability can be among the most challenging of myriad legal mandates for health care providers. Long described as just "doing the right thing," culturally competent health care is now a legal imperative, with significant implications for physicians and health care providers' practices, livelihoods, and the health of their patients. Academic studies demonstrate that culturally competent, civil rights compliant care reduces costs while also driving new business, attracting new customers, increasing workplace productivity, improving patient outcomes, and heightening medical staff satisfaction. In this class, we will discuss the new legal landscape of cultural competence and the consequences for providers. We will examine health care diversity and inclusion, implicit bias, its daily manifestations in health care and everyday life, including organizational culture and the BLM movement and protests. We will discuss how to identify such bias and how to minimize its influence on vital health care and professional decision making. We will analyze federal health care civil rights laws and apply them to real life health care situations while providing students with behind the scenes information about little known court decisions, leadership courtroom testimony, and health care defense practices that tipped the balance in multiple courtrooms across the United States.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5673 - HEALTH CARE FRAUD, ABUSE, AND COMPLIANCE

Minimum Credits: 2
Maximum Credits: 2
United States health care spending reached $3.6 trillion in 2018, accounting for 17.7% of the gross domestic product. Government officials have been quoted as saying that up to ten percent of this spending is due to fraud, waste, or abuse. In fiscal year 2019, the federal government won or negotiated $2.6 billion in health care fraud and abuse judgments and settlements, as well as additional amounts from administrative cases. As one of the most highly regulated industries in the United States, health care entities are required to comply with numerous statutes and regulations, including those related to fraud and abuse. These laws are increasingly complex, thereby exposing health care entities to liability for non-compliance. Thus, individuals involved in the administration and delivery of health care and lawyers who wish to practice health law must be well-versed in the laws and regulations that govern health care fraud, abuse, and compliance, as well as the strategies health care entities employ to address these concerns. In this course, students will explore the major federal civil, administrative, and criminal laws that have been used to combat health care fraud and abuse. These laws include the False Claims Act, the Anti-Kickback Statute, the Physician Self-Referral Law, and the Civil Monetary Penalties Law. Related compliance strategies and the practical compliance issues faced by health care providers will also be covered, including the seven elements of effective compliance programs, conflicts of interest and governance, repayments and disclosures, privacy and security, and corporate integrity agreements.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5674 - THE STATE ATTORNEYS GENERAL

Minimum Credits: 2
Maximum Credits: 2
The course will cover the day-to-day challenges faced by state Attorneys General and their staffs in enforcing state and Federal laws and defending state agency clients in a constitutional and ethical manner. The course will focus special attention on the 1,000-person Pennsylvania Office of Attorney General and on consumer financial issues, including enforcement of the Consumer Financial Protection Act and other federal consumer financial laws. Although each State is unique, the course will demonstrate the remarkable congruence that exists among State Attorneys General when addressing similar challenges and issues. Each office possesses broad jurisdiction and to varying degrees is independent from the executive and the legislative branch of state government. Attorneys General in 43 states are elected statewide on a partisan basis. The combination of sweeping jurisdiction and constitutional independence has given rise to a unique American legal institution of growing importance. The course considers the unique ethics issues that Attorneys General and their staffs

must confront. The course will also cover the relationship of Attorneys General with Governors, state legislatures and agencies, the federal government, the private bar, and a myriad of advocacy organizations.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5675 - DOMESTIC ARBITRATION: LAW, POLICY & PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This course will discuss not only the governing legal framework for domestic arbitration but also how to approach arbitration as a practitioner, with a particular focus on arbitrations in the employment and consumer contexts. Students will consider on what grounds arbitration can be compelled or, in the alternative, opposed. Students will also learn how arbitrations are actually conducted and the key practical differences between arbitration and litigation. Finally, students will consider the policy implications of the trend toward resolving disputes through arbitration rather than litigation. The course will utilize simulations, role-playing exercises, mock arguments, and similar methodologies to ensure that students are active and engaged discussion participants.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

LAW 5676 - PERSONAL FINANCE & BUSINESS FOUNDATIONS

Minimum Credits: 2
Maximum Credits: 2
This course deals with the basics of how to develop and implement a sound personal financial plan and startup business plan. Students will create both a personal plan and a business plan based on projected horizons of 1, 3 and 5 years. The primary focus is on near term planning with emphasis on: initial savings, paying off student debt, judicious use of credit, and investing for short and long term goals. Also, students will create a comprehensive business plan for starting a law firm after graduation. This plan's focus should be on business structure, financing, cash management and cost control. Topics such as benefits and insurance should be covered as well. Students will prioritize and codify their plans based on personal, professional and lifestyle objectives projected over each plans stated horizons.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5677 - CORPORATE IN-HOUSE COUNSEL PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This practical business law concentration, three credit experiential course, will explore the unique legal and real-world challenges that face counsel working in a typical corporate law department. Students will continually engage as a member of legal affairs for a fictional corporation addressing various topics. Themes include: serving stakeholders and the client, furthering business objectives, adding value and weighing the independent duties owed by a corporate attorney to the corporation, as well as, managing the tensions that arise in the role. Themes will be explored through selecting and managing outside counsel and budgeting, advocating for and integrating legal technology, applying effective practices as part of legal operations, administering merger and acquisition transactions and managing litigation, each as distinct from the responsibilities of outside counsel. Students will examine matters of fulfilling corporate compliance and governance requirements, awareness of legal knowledge versus application of legal intelligence, and the operation of the attorney-client privilege specific to the in-house context. Students will learn that the demands of business operations will encourage innovation, often substantiating use of technology, and they will recognize that expectations to be innovative are largely directed by the increasing need to be a predictive, forward-looking and problem-solving lawyer. Students will build practical skills for writing business-oriented communications, training and counseling the non-lawyer business client in order to realize legal and business objectives. Students will repeatedly interact with in-house practitioners and other guest speakers, as well as, participate in a shadow program for a day in the life inside a law department.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

LAW 5678 - SOCIAL JUSTICE IN ACTION

Minimum Credits: 3
Maximum Credits: 3
This course is a continuation of the fall term course Social Education Justice Project. The spring semester of the course will be primarily experiential in nature, both as a simulation course and a clinic course. The simulation component will involve students as attorneys supervising junior attorneys in the preparation of an appellate brief and oral argument for a national moot court competition. Students will be placed in a lawyer role representing a client and completing lawyering tasks. I will supervise them directly and provide frequent feedback. The students will participate in a classroom component throughout the semester. The clinic component will place students in the role of facilitative lawyer, acting as a third party neutral and advising an individual or entity who is pursuing a social justice initiative or project in the community. I will supervise the students' work directly as they serve in the lawyer role and I will provide regular feedback. The students will participate in a classroom component throughout the semester.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

LAW 5679 - INSIDE-OUT PRISON EXCHANGE PROGRAM

Minimum Credits: 3
Maximum Credits: 3
This course, which will be taught using the Inside-Out method, will explore some of the most fundamental and current issues arising in criminal justice and the law. Among them those issues and questions: What is the history of prisons in the U.S., and why do we have prisons now? Why has the U.S. engaged in one of the largest experiments in mass incarceration the world has ever seen? Why do people commit crime? Are there alternatives to incarceration that would produce better outcomes and a more just system? What role has race played in criminal justice in the U.S., and what would a more just system look like? The course will bring together students from the School of Law (and perhaps undergraduates from the University of Pittsburgh) with students who are incarcerated at a correctional institution in the region. All students will study together, with most class sessions taking place at the institution. Students will use reading and group discussions as well as writing assignments to bring together theoretical knowledge and learning, lived experience, and the experience gained in the class. The Inside-Out method emphasizes collaboration and dialogue facilitated by the instructor, which invites all participants in the class to address topics under discussion with a willingness to discuss things with honesty and integrity and to learn from each other. Students should anticipate that they will have the opportunity to test and sharpen their understanding of criminal justice issues, in an environment that will depend upon an honest exchange of ideas through real dialogue. In doing so, we will create real connection between students on the outside, and students on the inside.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5680 - CAPITAL MARKETS/INTERNATIONAL BANKRUPTCY

Minimum Credits: 3
Maximum Credits: 3
This class offers a unique opportunity to study two interrelated areas of law: capital markets and international bankruptcy. Among the skills developed in this class are legal reasoning and analysis, problem solving, negotiation, and cultural competence. Introductory bankruptcy is not a prerequisite for this class. Capital markets are at the heart of contemporary finance. How do businesses get the funds they need to succeed? Bankruptcy can present critical capital markets challenges. In times of distress, how do businesses get the funds they need to survive? This class looks at these issues generally and in the context of international bankruptcy.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5681 - PRACTICE OF INTERNATIONAL LITIGATION & ARBITRATION

Minimum Credits: 3
Maximum Credits: 3
There has been a dramatic rise in complex global disputes, often between private parties and sovereign states. These cases carry significant

political, economic, and legal consequences, and the legal regime governing these disputes is both complicated and underdeveloped. This reality create both pitfalls and strategic opportunities for creative counsel. This course provides students a unique opportunity to explore the evolving area of cross-border disputes, while obtaining substantial stand-up advocacy experience that translates to any dispute-resolution setting. Based upon a realistic simulation of a cross-border dispute between a U.S. company and a foreign state-owned entity, students will prepare submissions that they will then argue to mock panels comprised of prominent arbitrators, corporate counsel and leading practitioners. Reflecting the reality of global disputes, roughly 30% of the class is dedicated to transnational litigation, 50% is dedicated to international arbitration, and 20% focuses on mediation. Students will leave with first-hand experience in the substantive and procedural aspects of international litigation and arbitration, with the additional overlay of complex and delicate facts involving foreign sovereigns. The focus of the course is on practical skills and strategic considerations, and the lectures are designed to provide sufficient context and background to make the simulations accessible for students with little prior exposure to this area of law. In this way, the course is as useful to student who might be taking the course to primarily to hone their advocacy skills as it is for those students with a background and interest in international disputes and international law.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

LAW 5682 - GLOBAL CHALLENGES & TRADE LAW

Minimum Credits: 1
Maximum Credits: 1
The ongoing transformation of the international economic legal order and of global governance institutions is generally attributed to globalization. The establishment of global governance institutions is linked with the need of solving issues that affects, due to their nature, the international community. Yet, both globalization and institutions established for its promotion are in a profound crisis of identity. Concerns arise as to the coherence and compatibility of these trading processes and efforts with respect to national and global challenges. Both public opinion and policy makers fear that international trade, in particular a further liberalization thereof, may undermine or jeopardize policies and measures enacted for facing global challenges. This is the domain of this course; the law and policy of relations between national governments concerning the regulation of economic transactions that have cross-border effects also on the life of the population at large. The course covers the relevant WTO agreements and look into the interaction among trade, economic globalisation and global challenges. This course will also deal with past and present debates over the role of the legal order in economic development, analyzing today's most important issues in this domain: environmental crisis and the rise of emerging economies. Emerging economies, especially China, are increasingly taking the lead in reforms attempt of international economic law and from rule taker are now shaping the future of this field. Trade wars, the securitization of international trade as well as COVID-19 implications on international economic law are 2 also covered in this course to demonstrate the broader crisis of what we can term as multilateralism.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5683 - TRANSACTION NEGOTIATION & DOCUMENT DRAFTING

Minimum Credits: 2
Maximum Credits: 2
This course is designed to strengthen students skills in two areas of fundamental importance to any transactional lawyer negotiation and drafting. Specifically, students will learn how to develop and most effectively deploy their own negotiation style, understand the bargaining process, and then develop what they have learned to draft negotiated agreements with counterparties. The course is experiential, and it will rely largely on simulations and mock exercises to assess student progress in realizing the course objectives.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5684 - MEDIATION SKILLS

Minimum Credits: 3
Maximum Credits: 3
Mediation continues to be utilized by parties and the judicial system as a preferred alternative to litigation. This course is designed to train students to become mediators and to meet the minimum standards set by the courts for mediation of cases. Students may use this course to

satisfy accepted requirements for a basic 40-hour mediation training program. This course focuses on the structure and goals of the mediation process and on the skills and techniques used to assist parties in overcoming barriers to dispute resolution. This will be achieved through a thorough discussion of the theories and sources of conflict, theories of conflict resolution conciliation processes, mediation, negotiation, and professional ethics. These theories are then tested in simulations, exercises, and role plays to allow the students to develop mediation skills, implement creative options for resolving conflict, and explore the effectuation of the theories and their skills. In addition, it is incumbent on all lawyers to be familiar with the mediation process and become competent in representing clients in mediation. The course also will cover ethical issues for lawyers and mediators, dealing with difficult people, power imbalances, and cultural considerations.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5685 - CYBER LAW & POLICY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Cyberspace is the critical infrastructure that runs our world. Yet, much remains ungoverned and the threats are constantly evolving. This course will explore theoretical and practical aspects of nation-state legal issues concerning cyberspace, including computer-related crime, espionage, war, and international governance. The seminar will review key legal cases, policy, and legislation. In tandem with a series of expert guest speakers from the field, the course will reflect on the roles of national and international governments, the legal and ethical dimensions of cybersecurity, the relationship between the public and private sectors, and the increasing tensions between privacy and security.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5686 - LEGAL INSTITUTIONS & THE HOLOCAUST

Minimum Credits: 3
Maximum Credits: 3
The Legal Holocaust in Hitler's Europe and its Aftermath in US Federal Court. This course examines the development of racial laws during WWII in France, Germany, and the British Channel Islands. We will use original documents and actual statutes and cases to understand how what was once legally grotesque became "law" in these places. We will then fast forward a half century, via the Nuremberg war-crimes of 1946, to the time when victims or their heirs began bringing restitution lawsuits in US federal courts, a development that continues to this day, the instructor being one of the plaintiffs' lawyers in a half dozen such cases, including a pending matter in the Seventh Circuit. Thus the course examines historical material as well as complex contemporary questions under US federal law and standards of professional ethics.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5687 - RE-IMAGINING POLICING SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course will explore issues arising around policing, and ask students to re-imagine our entire concept of public safety. In recent history, any discussion of public safety was always a discussion of policing, and often little else. The course will ask students to take a broader look at the whole concept of safety without limiting themselves to policing. What is necessary to create public safety for everyone? The course will require students to use all of their legal and analytical skills to re-imagine how public safety should be created and delivered to all, from the ground up. Subjects considered may include such topics as the origin and purposes of policing agencies; handling crises related to mental health, homelessness, and drug addiction; the recruiting and training of police; and accountability for police misconduct. Students will use assigned readings, group discussions, presentations, and writing assignments to bring together theoretical knowledge and learning, lived experience, and the experience gained in the class.

Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5688 - SOCIAL JUSTICE EDUCATION PROJECT

Minimum Credits: 3
Maximum Credits: 3
The Social Justice Education Project offers University of Pittsburgh upper-level law, social work, and education students the opportunity to teach 11th grade students at The Neighborhood Academy High School located in the Stanton Heights neighborhood of Pittsburgh. The Neighborhood Academy is an independent, college preparatory school that provides a holistic education and works to break the cycle of generational poverty. Currently, all of the Academy students are Black. Pitt students will work with Pitt and Academy faculty to develop and teach a core social justice course for the Academy's junior class. They will introduce Academy students to selected constitutional law concepts and cases, the social history that informs the cases, and critical race theory. Pitt students will also prepare Academy students to participate in a national moot appellate moot court competition sponsored by the Marshall-Brennan Center on Constitutional Literacy. In addition, Pitt students will work with Academy students to develop and implement actual social justice projects in the Pittsburgh community.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5689 - CANNABIS AND THE LAW

Minimum Credits: 2
Maximum Credits: 2
Although still federally illegal, cannabis is big business in the United States. Medical marijuana is now legal in 37 states, including Pennsylvania, and the District of Columbia. "Adult-use," or "recreational," marijuana is now legal in 18 states and the District of Columbia. According to multiple reports, the U.S. cannabis industry is projected to soon exceed $40 billion and potentially employ approximately a half-million individuals nationally. "Mainstream" businesses have now entered this space. Many more ancillary businesses - such as architects, landlords, packaging companies, and insurance companies - interact routinely with this industry. As such, outside and/or in-house counsel representing "conventional" companies - as well as ones advising plant-touching companies, such as cannabis dispensaries, growers, and processors - must understand the unique legal challenges the U.S. cannabis industry presents. This course will address those challenges -- such as (i) whether one can be found to have violated federal criminal law when complying with state cannabis law, (ii) whether other federal statutes (e.g., the federal Fair Labor Standards Act) apply to this industry, and (iii) whether federal courts will enforce contracts relating to cannabis - while also considering if and how established law can adapt/apply to novel industries. It will also consider other important legal, legislative, and public-policy issues facing the dynamic U.S. cannabis industry, such as access to banking and mitigating risk in corporate transactions and agreements.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5690 - BLOCKCHAIN FOR LAWYERS

Minimum Credits: 2
Maximum Credits: 2
The Blockchain course reviews how Blockchain technology is significantly altering the way business is being conducted generally and in specific fields like finance, healthcare and data privacy, to only name a few. Those changes, in turn, will bring many new legal challenges that our laws and courts , regulatory agencies and other institutions must address. This course will consider some of the legal opportunities and challenges facing existing and new applications of the blockchain technology.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5691 - LATINOS/LATINAS AND THE LAW

Minimum Credits: 3
Maximum Credits: 3
This seminar will offer a critical approach to the role that law has played in the shaping of the Latino and Latina communities in the United States. It will also critically analyze legal issues of particular relevance to the Latino(a) communities in the United States. The course will explore sociological and historical readings to address questions of who Latinas/os are in terms of demography and the multiplicity of latino(a) identities. The course will also use case studies (based principally around governmental policies and programs and U.S. or state Supreme Court opinions) to explore issues of relevance to the Latino(a) communities : civil rights, colonialism, litigation over the right to serve on juries, education, language regulation, radical latino(a) movements, incarceration, identity issues and various issues in immigration law. In studying the legal issues affecting Latina/os, much attention will be paid to Critical Race Theory and critical Latina/o (LatCrit) theory and intersectionality. The readings are interdisciplinary in focus and include research in the social sciences and the humanities as well as legal sources.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5692 - CORPORATE & VENTURE FINANCE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Corporate & Venture Finance is an elective worth three credits toward graduation. Business Organizations is a prerequisite for this course, which is an intense examination of the law and finance of corporate capital structure and markets. Students will produce a 20-page portfolio that will be developed and reviewed with feedback over the course of the semester. Students will draft materials that clients would use to make investment decisions, evaluate venture financing and options, and decide how to structure an executive compensation package. Students will use Excel to do analysis and develop competence to review banker proposals and issue fairness opinions for deals. No advanced background in accounting, economics, finance, mathematics, or securities is presumed or required, but some familiarity will be developed over the course of the semester.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5693 - CRIMINAL POLICE MISCONDUCT

Minimum Credits: 2
Maximum Credits: 2
This course will address federal criminal police misconduct with a specific focus on the use of excessive force by police. Students will examine and analyze relevant statues and key cases with a focus on gaining a practical understanding of the elements and application of these statutes. Students will have the opportunity to engage in discussions regarding the larger societal conversations relevant to these cases in order to better understand the various lenses through which prospective jurors may view such cases. Students will also learn about the tailored strategies applicable to investigating and litigating police misconduct cases, as many of these strategies are unique to this specific area of law. In addition to exploring various fact patterns through in-class discussion, students will utilize a specific hypothetical case fact pattern throughout the duration of the course that will serve as a basis for exploring the relevant statutes and strategies. As the course progresses, students will investigate the hypothetical case (including through an "investigation workshop"), analyze evidence related to the case, and litigate the case (through a "litigation workshop" and mock trial exercises). Please note that the subject matter of this course will require students to read about, view, listen to, and discuss material that may be disturbing or offensive to some or all students. Such material may include videos of police shootings, recordings or descriptions of the use of offensive language, and other similar material
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5694 - TRADEMARK LAW

Minimum Credits: 3
Maximum Credits: 3
Trademark law deals with legal bases for obtaining and enforcing interests in commercial symbols, including logos, slogans, and the like,

which play central roles both in modern commercial transactions (selling and buying stuff) and in daily conversation. Trademarks are partly information and partly the stuff of speech. The trademark law course will teach you about the many roles that trademark law plays in positioning trademarks as part of business strategies, commercial markets and other institutions, and everyday life. For producers of goods and services, how does trademark law help them make money? For competitors, for purchasers of goods and services, and for firms and citizens generally, how does trademark law preserve the power to access and use trademarks as information about commercial things, information that shapes about the commercial sphere, and information that guides daily experience (if that's separate from the commercial sphere). The course will teach those things in the context of teaching the skills of trademark lawyering. How do practicing lawyers work with clients? How do practicing lawyers develop and exercise professional judgment? How do practicing lawyers solve trademark problems? The course will put students in the role of practicing lawyers and teach them to think, write, and act as lawyers generally and especially as trademark lawyers.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5695 - TRADEMARK LAW PRACTICE

Minimum Credits: 2
Maximum Credits: 2
A course to delve into trademark and unfair competition practice before the USPTO, trademark trial and appeal board and in state and federal courts. The course will advance practice oriented trademark issues including: the identification, protection and enforcement of trademark rights; the relief that can be acquired through enforcement of those rights; the role of lawyer as counselor in adopting trademarks as part of the branding process; avoiding infringement of others' trademarks; and the assignment and licensing of trademarks. The course will probe these same concepts in other jurisdictions, aswell.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5260 or 5694; PROG: School of Law (LAWSC)

LAW 5696 - MILITARY LAW

Minimum Credits: 3
Maximum Credits: 3
The United States Military has become a unique training ground for lawyers in the modern era. Military lawyers or "JAG's" operate worldwide in almost every discipline of law in almost every country on the planet. This course will instruct upon the fundamentals and foundations of the military justice system including its origin and evolution, Special and General Courts?Martial, Administrative Separation procedures, unique evidentiary considerations, the Uniform Code of Military Justice and the Law of Armed Conflict. This course will also discuss the role and relationship between military lawyers and their commanding officers and the many ethical considerations surrounding military decision?making processes.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5697 - PRACTICAL ASPECTS OF GLOBAL DISPUTES

Minimum Credits: 2
Maximum Credits: 2
The focus of the course is on practical skills and strategic considerations that arise in the management and resolution of global disputes. The course will take students through a hypothetical dispute based upon realistic scenarios so that they can master the practical and strategic problems present when a multinational company becomes embroiled in a dispute with a foreign sovereign entity. The lectures will cover all of the substantive and procedural aspects of suing a foreign sovereign or sovereign entity in a U.S. court (like the Foreign Sovereign Immunity Act and the Act of State Doctrine). The course will also address the practical considerations of litigating in foreign courts, and the tools available for litigators to coordinate parallel U.S. and foreign litigation (like transnational discovery and antisuit injunctions). It will then explore commercial and treaty-based arbitration against foreign state-owned entities and states themselves, which

may be pursued alternatively or in addition to U.S. and foreign litigation. As most disputes are ultimately mediated and settled, the course addresses the different ways by which the parties can reach a negotiated solution. Finally, the course reviews the issues surrounding asset attachment and recognition of judgment and arbitral awards against foreign sovereigns. Illustrating the practical and theoretical interplay among these scenarios, the focus will be on the strategic options presented at various junctures, as well as a focus on advocacy skills required across the domestic, foreign, and arbitral fora.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5698 - INTERSECTION OF LAW & POLICY - LAWYER IN POLICY DEVELOPMENT

Minimum Credits: 2
Maximum Credits: 2
This course focuses on what it means to be a lawyer working in policy development. To examine the lawyer's role in the policy development context, this course will first explore the intersection of law and policy, focusing on the Federal government and higher education. The course will then analyze the role of an attorney in developing policies generally and in these institutions specifically. Building on these discussions, the course will conclude by examining, and providing an opportunity to develop or strengthen, the skills used to navigate the relationship between law and policy in order to create and implement effective policies. There are two central purposes of this class. The first is to enrich students' understanding of how policies are developed in the Federal government and in higher education. To do this, the course will provide an opportunity to talk with practitioners, who are experts in these fields and have been actively engaged in shaping policy, as well as read and discuss publications by those who have studied or are currently studying policy development and articles describing contemporary examples illustrating why policy and process are important. The second central purpose of the class is to develop and strengthen the students' skills that lawyers use when creating and implementing policy. These skills will be practiced and examined through case studies, group exercises, and writing assignments. These assignments will allow students to practice the skills they learned through the course readings and guest presentations.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5699 - LEGAL ORIGINS OF BREXIT

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to familiarize students with evolutions of EU-law that contributed to the proto-federalization of the European Union, and to the political alienation in some member states, particularly in the UK. Topics will be addressed through a combination of reading assignments, lectures, and classroom discussion. The course is accessible to students without prior knowledge of EU-law or international law.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5701 - HEALTH CARE FRAUD AND ABUSE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
United States health care spending reached $3.2 trillion in 2015, accounting for 17.8% of the gross domestic product. Government officials have been quoted as saying that up to 10 percent of the money the United States spends on healthcare is due to fraud, waste, or abusive practices. If true, that now amounts to over $3 billion per year. In Fiscal Year 2016, the federal government won or negotiated over $2.5 billion in health care fraud judgments and settlements, as well as additional amounts from administrative cases. Thus, health care fraud is a major priority of both federal and state agencies and lawyers who wish to practice health law would be wise to understand the laws that govern health care fraud and abuse. This course focuses on the major civil, administrative and criminal laws that have been used to combat health care fraud and abuse, broadly defined as actions by health care providers (e.g., hospitals, physicians and physician practices, nursing homes, medical device and pharmaceutical manufacturers, home health agencies, clinical laboratories, and rehabilitation facilities) that are

inconsistent with accepted business and medical practices. These laws include the federal civil False Claims Act, the federal Anti-Kickback Statute, the Stark Law, and the Civil Monetary Penalties Law. While the class focuses on federal law, health care fraud and abuse laws at the state level will also be discussed. Related compliance strategies and the practical compliance issues faced by healthcare providers will also be covered.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5706 - CRIMINAL RECORDS AND EXPUNGEMENT SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5709 - LAW OF SLAVERY, ABOLITION & FREEDOM SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine the constitutional, statutory, common law, historical, and theoretical frameworks that created and sustained the institution of American slavery; the changes in those laws and policies that led to the abolition of slavery and the social forces that drove those changes; the legal barriers to true freedom that remained even following the end of slavery; and the contemporary relevance of the legal doctrines arising from the American slave regime and the abolition thereof.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: LAW COMM-Advocacy, LAW COMM-Listening, LAW COMM-O Comm, LAW COMM-W Comm, LAW DEI-Competence, LAW DEI-Empathy, LAW DEI-Racial Just/Systems, LAW LAPS-Legal Reasoning/Analysis, LAW LAPS-Legal Research, LAW LAPS-Problem Solving, LAW PE-Ethics, LAW PE-Professionalism, LAW PSD-Self Assessment

LAW 5714 - ENVIRONMENTAL POLICY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
In many areas of law, the daily practice is not black-letter analysis and trial practice, but interdisciplinary collaboration and policy development. This is particularly true of environmental law, which combines legal issues in the common law, statutory frameworks, administrative law, international and transnational law, and constitutional law, along with scientific understanding, public communications, political persuasion, and ethics. Focusing on environmental issues, this discussion section and practicum will provide students with a chance to explore interdisciplinary policy practice through an open-ended semester-long simulation. The simulation is paired with a weekly discussion section to discuss a variety of issues in environmental law and policy. This course's practical simulation will put students into teams to address a real-world environmental policy issue. Each team will approach the issue from a different perspective (for example, one team will represent environmental interests while another will represent a regulated industry or the government). Students will prepare memos, comment letters, presentations, and public statements based on their own research, in response to the arguments of their classmates, and in consideration of their overall strategic and legal goals. In the discussion component of the course, students will dive into readings and discussions about the law, policy, ethics, and practical realities of environmental law.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5717 - TELECOMMUNICATIONS LAW

Minimum Credits: 2
Maximum Credits: 2
This course explores the regulation and evolution of electronic communications in the United States. We will survey the legal framework of telecommunications, broadband and the Internet at several significant points in its development. Following the respective regulatory paths of broadcast, wireline and wireless telephony, cable, and broadband, the analysis will include early Federal Communications Commission broadcast regulation; the Communications Act of 1934 and its progeny; the advent of long-distance and local market telephone competition; the evolution of multichannel video communications; and the changes wrought by the Telecommunications Act of 1996. Finally, we will examine technological convergence, the emergent dominance of broadband and wireless communications, and the impact of rapid technological changes. We will also look at telecommunications from a policy and practice-oriented perspective, keeping in mind that regulations and statutes have played as important (if not more so) a role as court decisions in the development of telecommunications law. Themes that will be addressed include: conflicts between federal and state/local jurisdiction; monopoly versus competitive market regulation and issues associated with transitioning from the former to the latter; universal service issues; and the impact of such concerns as intellectual property and free speech. No prior knowledge of the telecommunications industry (or associated law) is necessary. Exposure to administrative law or antitrust law might be beneficial.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5718 - TECHNOLOGY AND EMPLOYMENT LAW

Minimum Credits: 2
Maximum Credits: 2
This course explores the evolving application of employment laws with a focus on how the law responds to technological, social, and economic changes. It examines changing definitions of the employment relationship in light of evolving tech platforms and the "gig economy." It analyzes issues of employee privacy and data security as well as developments in post-employment restrictions, confidentiality, and trade secret and intellectual property protection. Throughout the course, students will be exposed to core employment doctrines such as wage and hour law and discrimination with a particular focus on how disruptive forces such as big data, social media, and virtual workplaces are reframing traditional views of these doctrines.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5719 - APPLIED LEGAL DATA ANALYTICS AND AI

Minimum Credits: 3
Maximum Credits: 3
Technological advances are affecting the legal profession. While it is hard to predict the changes that machine learning and natural language processing will bring, legal professionals certainly will need to understand the new techniques and how to use and evaluate them. This course, co-taught by instructors from the University of Pittsburgh School of Law and Intelligent Systems Program, provides a hands-on practical introduction to the fields of artificial intelligence, machine learning and natural language processing as they are being applied to support the work of legal professionals, researchers, and administrators. Researchers in the field of Artificial Intelligence and Law (AI&Law) have been applying recent advances in natural language processing and machine learning to extract semantic information from legal documents and to use it to solve legal problems. Meanwhile, the commercial LegalTech sector is thriving. Companies and startups have been tapping into the legal industry's need to make large-scale document analysis tasks more efficient, and to use predictive analytics for better decision making. This course will help law students gain literacy with these technologies and learn how to apply them to the kinds of legal problems they have studied or will encounter in practice. This course not only teaches law students about the new tools, but enables students to gain practical experience using them under close mentorship and in project-based collaboration with students from computer science backgrounds who want to learn about the law. Lecture sessions will alternate with working sessions where instructors assist groups with projects.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5720 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 0
Maximum Credits: 0
Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethical standards.
Academic Career: Law
Course Component: Clinical
Grade Component: No Grade Required
Course Requirements: PROG: School of Law (LAWSC)

LAW 5721 - FDA LAW & POLICY

Minimum Credits: 3
Maximum Credits: 3
The Food & Drug Administration is charged with enforcing the laws and regulations surrounding the development, sale, and marketing of medical products, like drugs, devices, biologics, and supplements. These laws and regulations dramatically impact medical innovation, access to medical technologies, and consumer safety. The goals of this course are twofold: (1) to provide students with a doctrinal understanding of selected topics in FDA law; and (2) to critically examine these laws and regulations to see whether they strike the right balance between competing values.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5722 - TECHNOLOGY, RACE & THE LAW

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine the myriad social and legal issues that lie at the intersection of technology, race, and the law. Informed by the nascent field of critical race and technology studies, this seminar seeks to understand the impact that technology has had on our understandings of racial difference while exploring the manner in which science and technology can perpetuate racism and disparate social outcomes. This course will address the racialized aspects of cutting-edge issues such as predictive analytics, artificial intelligence, algorithmic bias, biotechnology and race-based health research, population and ancestry genetics, surveillance technologies, digital databases, and social media platforms.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5723 - WORKING WITH PUBLIC INTEREST TECHNOLOGIES AND CIVIC DATA

Minimum Credits: 3
Maximum Credits: 3
This class is designed to equip students passionate about social justice issues to work with public interest technologies and civic data using a curriculum co-developed by four Pitt centers: Center for Analytical Approaches for Social Innovation (CAASI), Western Pennsylvania Regional Data Center (WPRDC), the Office of Diversity, Equity and Inclusion (DEI), and the University Honors College (UHC). The goal is to discern the opportunities and challenges that can come from working with technology and civic data, prepare students to understand and account for community dynamics, develop socially-responsible research and data practices, and implement projects that hold benefits for both community partners and students. This is not a quantitative course and no programming experience is expected.
Academic Career: Law

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5728 - EXPUNGEMENT OF CRIMINAL RECORDS

Minimum Credits: 3
Maximum Credits: 3
This course provides hands-on experiential learning, working directly with clients on their expungement-related needs. This includes client consultation, drafting of petitions and other legal documents, and court representation as needed. Training and ongoing supervision by Neighborhood Legal Services (NLS). This course is also part of a research study on the effectiveness of expungement in improving employment and housing opportunities for those who were formerly in the criminal justice system. The research study is coordinated by Harvard Law School and jointly sponsored by Pitt Law, NLS, and Duquesne Law. In addition to time servicing clients, students will also have writing assignments throughout the semester to reflect on their experiences and its relationship to their legal education and professional development, and to demonstrate their mastery of the laws and their application.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: LAWSC

LAW 5729 - HEALTH LAW CLINIC

Minimum Credits: 6
Maximum Credits: 6
The Health Law Clinic is a medical-legal partnership between Children's Hospital of Pittsburgh of UPMC and the University of Pittsburgh School of Law Legal Clinics. The Health Law Clinic provides legal needs screening and brief advice in matters involving childhood SSI, special education rights, and medical decision-making. Students enrolled in the clinic must apply for and obtain a certified legal intern designation from the Pennsylvania Bar. Students take primary responsibility for client representation under the supervision of their professor/supervising attorney. Students will have opportunities to represent parents of children with disabilities in Court and in administrative hearings, as well as in negotiations with area school districts. The clinic seminar provides an opportunity to engage in inter-professional learning with students from the Pitt Schools of Medicine and Nursing, while exploring policies that challenge, and structures that reinforce, health outcome disparity.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5731 - CURRENT ISSUES IN HEALTH LAW

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to increase the awareness of students in the health law certificate program to the rapidly changing health care industry and the equally rapidly changing field of health law. It is difficult, if not impossible, to understand the law regulating the health care industry without understanding the industry itself. Another purpose of the course is to expose students to a more in-depth treatment of selected topics than they can obtain in the basic survey course in health law and policy. The course also exposes students to topics that are not covered in the basic course, providing a broader view of the field of health law, which helps in the selection of other course offerings and of a topic for the faculty supervised writing requirement. In addition, the course introduces students to the variety of settings in which lawyers are involved in health law and the range of kinds of clients they represent. Classes will be taught by leading experts in the fields of health management and health law practicing in Pittsburgh andelsewhere.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Health Law

LAW 5733 - MARSHALL-BRENNAN CONSTITUTIONAL LITERACY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar relates to the Marshall-Brennan constitutional literacy component of the law school's pipeline diversity program. The Marshall-Brennan constitutional literacy project prepares students to teach a constitutional literacy seminar in Pittsburgh area high schools. Students selected for the Marshall-Brennan constitutional literacy project are required to participate in the Marshall-Brennan Constitutional Literacy seminar concurrent with their teaching assignment at a Pittsburgh area high school. The seminar will focus on teaching methodology and review of constitutional doctrine in the areas to be covered in the high school course. Areas of focus will include the first, fourth, fifth, sixth and eighth amendments to the United State constitution, with particular emphasis on the constitutional rights of high school students and young people generally. Students will develop detailed lesson plans relating to topics to be covered in the high school course. In addition, students will be required to produce a substantial paper relating to one of the topics covered in the curriculum.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5734 - COPYRIGHT & MUSIC SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar explores intersections among copyright law, technological innovation, entertainment industries, and political and cultural change, using music as its central case study. Copyright law plays an important role in the contemporary landscape of the music industry. Digital platforms and cultural norms also increasingly shape how music is made, distributed, and enjoyed. Students will learn about how law is only one part of the entertainment sector. Part history, part law, part economics, and part culture, this collaborative seminar will feature faculty members in dialogue with one another and with guests who work in the art and business of music.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5735 - AI - PRACTICALITY & GOVERNANCE

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to Artificial Intelligence (AI) in both the legal and industry settings with practical legal service and healthcare use case scenarios. You will learn what AI, generative AI, machine learning, and large language models (LLMs) are, how they function, and how we anticipate they will function in the future. The course will include current best practices and policies for AI governance, fairness, and safety. Regulation of AI in healthcare and non-healthcare settings is in its infancy, but transactions and contracts involving these technologies are well-established, though ever-changing. The class will include guest speakers and cover such topics as use in public interest settings, use in law firms, operationalizing ethics, transparency in machine learning, assessing and mitigating AI hallucinations and bias, development of legislation/regulation/standards, and the impact of the technology on the disability community. Students will be queried throughout the course about how to best tailor the course to fit student ambitions.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5736 - POLICY ENTREPRENEURSHIP SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Did you come to law school to learn how to make policy change happen? Is the West Wing one of your secret (or not so secret) favorite shows? Come join Professor of Practice Aadil Ginwala in a seminar exploring the nuts and bolts of what it means to be a policy entrepreneur and make change happen. The course will focus on the policy entrepreneurship lessons Professor Ginwala has gained from his past experience in the White House, Department of Commerce, and outside of government. This seminar will heavily feature case studies of actual successful policy change efforts, frequently with live guest speakers who made the change happen. Some case studies might include - changing US organ donation policy to help eliminate the kidney waiting list, creating and funding a critical non-profit to ensure first-generation college students can afford to finish college, and finding a way to get free internet to low-income public elderly housing in

Baltimore. Students in this seminar will be expected to have or develop a desired policy change and work throughout the semester on applying the lessons and techniques learned to a final project plan to help make that change a reality. This course especially well-suited to students who have a passion project already, though all are welcome. Let's learn how to make it happen!
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5737 - EQUAL PROTECTION SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar will provide an opportunity for a more in-depth analysis of constitutional equal protection law than is possible in the 1L Constitutional Law survey course. The course will examine the theory, doctrine, and history of the equal protection clause. There will be two simultaneous components of the course: in-class discussion of readings on various topics related to equal protection rights, and an intensive writing experience in which students research and write academic papers (20 pages minimum) on a topic of their choice related to equal protection. Readings will consist of legal scholarship (such as law review articles) and case law. Topics to be covered include: theories and critiques of equality, rational basis review, heightened scrutiny and its triggers, racial and gender equality, intersectional and multi-dimensional approaches to suspect classes, recent controversies around transgender rights, fundamental interests in an equality analysis, and more. Papers will be submitted initially in draft form at a midpoint in the semester; students will receive extensive feedback from the professor and will revise the papers in response to the feedback. Final drafts will be due at the end of the exam period. Students will be expected to present and discuss their own research.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5738 - LAW INTERSESSION - WRITING

Minimum Credits: 1
Maximum Credits: 1
The Law School's intersession runs the week before regular spring semester classes begin. During the intersession, we make available a selection of short, intensive one credit courses to our students that they might otherwise find difficult to enroll in. For a specific description of each particular course offered during the intersession, please go to the link for the course located at the Law School's online Catalog of Courses. To receive credit for any of the courses offered during the intersession, students must attend class every day for approximately 2.5 hours and should expect to spend roughly twice that amount of time outside of class working on class related activities.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5739 - LAW INTERSESSION - INTERNATIONAL/COMPARATIVE

Minimum Credits: 1
Maximum Credits: 1
The Law School's intersession runs the week before regular spring semester classes begin. During the intersession, we make available a selection of short, intensive one credit courses to our students that they might otherwise find difficult to enroll in. For a specific description of each particular course offered during the intersession, please go to the link for the course located at the Law School's online Catalog of Courses. To receive credit for any of the courses offered during the intersession, students must attend class every day for approximately 2.5 hours and should expect to spend roughly twice that amount of time outside of class working on class related activities.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5740 - LAW INTERSESSION - EXPERIENTIAL LEARNING

Minimum Credits: 1
Maximum Credits: 1

The Law School's intersession runs the week before regular spring semester classes begin. During the intersession, we make available a selection of short, intensive one credit courses to our students that they might otherwise find difficult to enroll in. For a specific description of each particular course offered during the intersession, please go to the link for the course located at the Law School's online Catalog of Courses. To receive credit for any of the courses offered during the intersession, students must attend class every day for approximately 2.5 hours and should expect to spend roughly twice that amount of time outside of class working on class related activities.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5741 - PUBLIC INTEREST ADVOCACY TOOLS

Minimum Credits: 2
Maximum Credits: 2
This course is designed for students embarking on careers in public interest law or policy and explores the many necessary techniques to become highly effective advocates for social change. Students will be presented with a fact pattern and spend the semester workshopping strategies to address the challenges presented. The purpose of the class is to help class participants develop creative advocacy approaches and learn to think beyond litigation and other traditional legal strategies to meet key client and societal goals. In particular, the course will: 1) Explore how coalition building, grassroots organizing, and public policy advocacy can be used to enhance legal strategies; 2) Teach basic public interest advocacy skills, including media relations, legislative advocacy, leveraging data and research, social marketing and public opinion, and digital strategies; and 3) Introduce students to dynamic experts in relevant issue areas, from community organizers to communications experts.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5742 - SENTENCING LAW & POLICY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The course examines the law and policy of sentencing, paying particular attention to the intersection of race and class. As a course that focuses on sentencing law, it necessarily focuses on the policies that animate the statues, sentencing guidelines, and case law that we will be studying. Perhaps unlike other areas of legal practice, sentencing is an area that demands practitioners have competence in policy considerations at different stages of the punishment phase. Whether one is arguing for a suspended sentence, enhancement, reduction, or to spare a life, understanding punishment policy is critical to the job. The course is an opportunity for students to engage in supervised research leading to a substantial independent research paper in this area of law. Assessments focus on improving students' written skills and argumentation, oral advocacy, and editing skills; they include producing an original draft and redraft of the research paper, oral presentations, and peer editing. Topics include guilty pleas, rights during sentencing, sentencing guidelines, community-based sanctions, plea bargaining, and capital execution.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5743 - FORESIGHT/HINDSIGHT/OVERSIGHT: THE ROLE OF DIRECTORS IN CORPORATE LAW

Minimum Credits: 3
Maximum Credits: 3
This is a seminar that utilizes lectures and team-based simulation modules to examine the law of corporate directors. Students will work on case studies that span the life of a company, from its inception all the way to its potential sale; over the course of that time, students will grapple with a myriad of practical legal issues that face corporate directors, including control, fiduciary duties, financial valuation, and governance.
Academic Career: Law
Course Component: Seminar

Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5112

LAW 5744 - HEALTH LAW CLINIC

Minimum Credits: 4
Maximum Credits: 4
Health Law Clinic is a medical-legal partnership with UPMC - Children's Hospital of Pittsburgh. Medical-legal partnerships enable legal advocates to collaborate with a patient's medical care team. Recognizing that acute, preventative, and rehabilitative care are only part of the whole health equation, the Health Law Clinic specifically addresses the role of income, education, caregiver stability, and self-determination on patient health. Providing "legal care" in the form of access to counsel can mitigate the collateral impact on mental and physical health that legal problems can cause. Students in this clinic will receive substantive instruction in childhood SSI, adult guardianship, and special education law. Students will have opportunities to represent parents of children with disabilities in administrative hearings, in Orphan's Court, as well as in negotiations with area school districts. The Health Law Clinic provides a meaningful opportunity to gain course credit while acquiring and developing practical legal skills.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

LAW 5747 - LAW OF MENTAL HEALTH SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the laws and issues that affect individuals with mental illness, many of whom find themselves in the criminal or civil justice systems. Emphasis will be on the issues surrounding civil commitment and the emerging use of treatment courts on the criminal side. This will require a review of Pennsylvania¿s Mental Health Procedures Act and other state and federal statutes, cases, and regulations. Students will be permitted to attend a session of mental health court.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5748 - RACE,RELIGION,&CRIMINAL JUSTICE

Minimum Credits: 3
Maximum Credits: 3
This course examines the legal treatment of religion in various contexts, paying particular attention to the intersection of race and criminal justice. As a course that is primarily interdisciplinary in its approach, this exploration necessarily involves study of how law impacts and shapes religion, and in turn how religion impacts law and policy. The class focuses on the Religion Clauses of the First Amendment as well as other areas of law, including the Religious Freedom Restoration Act (RFRA) and the Religious Land Use and Institutionalized Persons Act (RLUIPA). Topics include Civil Religion, Death Penalty, Intoxicants and Worship, Prison Rights, and Islam in Prison. The course will involve the development of a research topic and plan of research, development of a working outline of the project, submission of an initial draft, and submission of a final draft
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5749 - SORBONNE EXCHANGE

Minimum Credits: 9
Maximum Credits: 18
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5750 - STUDY ABROAD

Minimum Credits: 1
Maximum Credits: 18
Academic Career: Law
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Non-Pitt Class

LAW 5754 - TECHNOLOGY, LAW & LEADERSHIP

Minimum Credits: 3
Maximum Credits: 3
The theme of this seminar is change. Technologies are changing in ways that we often do not even see. The character of law, legal institutions, and law practice is changing rapidly and dramatically. As humans, our capabilities and futures are changing. How do we identify and assess the virtues and drawbacks of all of this? As lawyers and as professionals in other fields, what if anything can and should we do about it? The seminar approaches those questions by diving into deep critical examinations of how technological change is generating and reflecting new ideas about what law is and what law does, at both global and local scales. The payoff is greater than learning about contemporary technology law. The payoff is an introduction to leadership competencies and capabilities that help new lawyers and other professionals thrive in this new world.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5755 - RACIAL HARASSMENT IN THE WORKPLACE

Minimum Credits: 3
Maximum Credits: 3
This seminar explores racial harassment in the workplace, including how frequently it occurs and its different forms. We discuss the legal framework and dispute-resolution processes for racial harassment, including their current shortcomings and ideas for more effectively remedying racial harassment. We also draw from sexual harassment research and law -- and consider how society and the justice system treat sexual harassment and racial harassment similarly and differently. In consultation with the professor, students will select a topic on racial harassment, sexual harassment, or another form of harassment to research and present in a power-point presentation and paper. In addition to the professor's feedback on their research and writing, Professor Wysor of the Law School Writing Center will also provide feedback.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5756 - BASIC BUSINESS CONTRACT DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course demonstrates how "design thinking" can be used when drafting basic business contracts that provide positive incentives for the parties to perform their obligations. Reading assignments explain design thinking, the role of incentives in business, foundational concepts in law and economics relevant to business concepts and how transactional business law practice differs from litigation-practice. Students practice "aligning" basic business contracts with clients' business goals through practical drafting assignments. These assignments permit students to compare and contrast the skills required to align contract language with transactional business goals for global multinational businesses, small and medium sized businesses and private individuals engaged in business. Students are trained to distinguish appropriate and inappropriate copying of contract language from "drafting precedents" and to carry out legal research on contract drafting issues for which there is no case law. One "capstone" assignment invite students to apply their new "incentive design" skills to drafting a law firm engagement letter for "value-based billing," a new business law billing model that is replacing billable hours and contingency fees. A second "capstone" assignment invites students to research a contract drafting issue that highlights how the business ethics of Walmart differ

from those of Toyota and the impact of that difference on the professional responsibility of attorneys.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5757 - LAW PRACTICE INNOVATIONS

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to selected innovations in law practice technology most likely to have a major impact on the legal profession and legal institutions in the future. No prior knowledge of programming is required, and this is not a course designed to teach students how to program. The focus is instead on learning to think critically about what technological innovations can and cannot contribute to the practice of law and the administration of justice in America. Reading assignments provide theoretical perspectives and historical context for changes occurring in law practice today. Lab assignments simulate situations in which new technologies could be applied to a few basic law practice challenges. Students develop and write a short paper about an idea for an innovation in law practice (which may be a technology solution, a new process, etc)
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5758 - TRANSNATIONAL TRADE LAW

Minimum Credits: 3
Maximum Credits: 3
The ongoing transformation of the international economic legal order and of global governance institutions is generally attributed to globalization. The establishment of global governance institutions is linked with the need of solving issues that affects, due to their nature, the international community. Both globalization and institutions established for its promotion are in a profound crisis of identity. Concerns arise as to the coherence and compatibility of these trading processes and efforts with respect to national and global challenges. Both public opinion and policy makers fear that international trade, in particular a further liberalization thereof, may undermine or jeopardize policies and measures enacted for facing global challenges. This is the domain of this course; the law and policy of relations between national governments concerning the regulation of economic transactions that have cross-border effects also on the life of the population at large. The course covers the relevant WTO cardinal principles (nondiscrimination, most-favored nation, national treatment, free trade, etc), the WTO agreements, the WTO Dispute Settlement Mechanism and the foundational case law. A brief overview on the most recent or problematic case law on national security, state interference in the market, subsidies and countervailing duties and intellectual property is also provided. The course looks into the interaction among trade, economic globalisation and global challenges. It also deals with past and present debates over the role of the legal order in economic development, analysing some of today's most important issues in this domain: the relations between law and development and the rise of emerging economies. Emerging economies, especially China, are increasingly taking the lead in the reform attempts of the international economic law and from rule taker are now shaping the future of this field. Trade wars, trade sanctions, the securitization of international trade as well as COVID-19 implications on international economic law are also covered in this course to demonstrate the broader crisis of what we can term as multilateralism. In addition, this course is addressing the international trade law and its domestic regulation and policy in different countries with cases studies on the U.S., the European Union, and other economic powers.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5759 - INTERNATIONAL ENVIRONMENTAL LAW

Minimum Credits: 3
Maximum Credits: 3
Climate change is one of the most fundamental challenges ever to confront humanity. The United Nations climate change negotiations offer a historical opportunity to step up international action on climate change. Over the last forty years discussions of international environmental law and policy have grown in number and frequency, and treaties addressing the topic have become common. Many of the treaties contain concepts that have now become accepted as commonplace, such as the ecosystem approach and the precautionary principle. The early beginnings of the subject can be found in bilateral and multilateral efforts to protect shared and jointly exploited natural resources

like fur seals and fisheries, but now the subject of international environmental law and policy has grown into a complex code of treaties and other instruments that impose obligations on states to protect their own environments as well as to refrain from causing extra-territorial environmental harm. This course examines the basic objectives, principles, techniques, and content of international environmental law and policy and how international environmental law is related with core areas. It starts by examining the main environmental challenges and root causes, and then looks at the role that the global economic system plays in creating and perpetuating the problems. Once a foundation for understanding the genesis of the issues has been laid, global challenges are analysed. More specifically, the intersection between international environmental law and policy, international environmental negotiations and the following fields will be analysed: Climate Change, Energy, Trade, Human Rights, Water, Intellectual Property Rights, Biodiversity, Food Security, Traditional Knowledge, and Climate Justice. The course will conclude with reflections on the future of international environmental law and on how to meaningfully address global challenges. In addition, the course intends to present in an inclusive way the different perspectives on sustainable development, climate change, the protection of the environment and biodiversity from both the North and the Global South with classes and case studies dedicated not only to U.S, Europe and the other Western countries and Western categories, but also to China, India, Latin American, Africa, Middle East, South East Asia. At the end of the course, students will be expected to know the basic principles and issues of international environmental law and policy.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: LAW LAPS-Legal Reasoning/Analysis

LAW 5760 - HEALTH JUSTICE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Although the United States likes to pride itself on having the most advanced medical care in the world, its residents' experiences diverge widely with respect to the care they receive, as well as their health status and outcomes. Health disparities based on race have received the most attention, but disparities also exist with respect to ethnicity, gender, disability status, and sexual minority status, among others. Nowhere have those disparities been more glaring than in the context of the COVID-19 pandemic, which has disproportionately affected communities of color and people with disabilities. Significant health disparities call into question both the justice and the quality of the U.S. health care system. What role does or could the law play in addressing these inequities? Conversely, how has the law contributed to them? This seminar provides students with an opportunity to explore in depth topics relating to the law's responses (and potential responses) to health inequality. While the seminar's central concern is with the law, readings and discussions will explore and integrate evidence and knowledge from multiple professional and academic disciplines. Topics covered might include, simply by way of example, health equity issues associated with Medicaid policy decisions; the ACA's contraceptive coverage mandate, gender equality, and religious liberty; disparities in insurance coverage and access to care for persons with mental illness; and health care providers' obligations to provide accommodations to disabled patients.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5761 - ADVANCED PRIVACY LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course is an upper-level writing seminar about data privacy law. The topics discussed in this class include the basic structure of the European General Data Protection Regulation (GDPR), the evolution of privacy protection in the U.S., select provisions in the California Consumer Privacy Act, FTC regulations, differences in the protection of online users' personal information and data in various countries, cross-border data transfer, information fiduciary duty, and the future of privacy protection. There are no formal prerequisites for this course. Final grades will be based on a 25-page paper on data privacy law.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5762 - LOOTED ART & CULTURAL OBJECTS

Minimum Credits: 3
Maximum Credits: 3
Should art and cultural objects be returned if they have been illicitly taken under the auspices of colonialism, armed conflict, archaeological looting, or other forms of abuse of power? In what ways are art and cultural objects legally protected from looting, and how effective are these protections? This course will examine the legal and cultural frameworks concerning the protection and repatriation of art and cultural objects, including international law, US and foreign laws, institutional policies, and social norms. This course is part of the Semester in DC Program; it will be taught in person for students in DC and offered remotely for students in Pittsburgh.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5763 - ANTIRACIST INTELLECTUAL PROPERTY LAW

Minimum Credits: 3
Maximum Credits: 3
This course approaches special topics in intellectual property law from the vantage point of antiracist activism. Through engagement with case studies centered on racial justice issues in copyright, patent, trademark, and more, it brings experts into conversation with students to consider how antiracist intellectual property regimes might look in coming decades. Examples of Case studies include: abolitionist intellectual property, publishing equity, vaccine apartheid, and more.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5764 - STREET MEDICINE PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
This practicum will offer students the opportunity to work alongside physicians, medical students, and other professionals in addressing the healthcare, legal, and social needs of persons experiencing homelessness in Pittsburgh. The practicum is structured as a partnership with Pitt Med's medical residency track in Street Medicine and the student group Street Medicine @ Pitt. Law students will participate in Street Rounds, held weekly, and will provide brief advice to unhoused persons on issues that may include access to health insurance and public benefits, criminal record expungements, and housing-related issues, among others; law students also will assist with referrals to legal services providers for issues that require attorney representation. Students will gain transferable skills for any lawyering context, such as interviewing, legal research and writing, problem-solving, and inter-professional communication and teamwork. The practicum's weekly seminar sessions (which may also be attended by medical students/residents) will address (1) skills needed for communicating effectively with persons served by Street Medicine; (2) basic law regarding the legal needs frequently experienced by unhoused persons; (3) social drivers of health and structural factors that contribute to and arise from homelessness; and (4) legal and policy strategies for addressing homelessness as a social and public health problem. The field work component will consist of regular participation in Street Rounds and any follow-up work needed. Street Rounds are held mainly on Wednesdays from 6:30-9:00 p.m. in Downtown Pittsburgh and East Liberty/Oakland. Students who enroll must be able to attend Street Rounds on a regular basis. To allow students prompt opportunities to participate in Street Rounds, a mandatory in-person orientation session will be held on the Friday prior to the first week of classes.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5765 - LAW, CAPITALISM & DISTRIBUTIVE JUSTICE

Minimum Credits: 3
Maximum Credits: 3
This seminar course explores the role of law in constituting the institutions of capitalism and how law creates or contributes to a structure for society that is unjust in the distribution of important social goods. Markets in large-scale settings of social cooperation are constituted by law. Law is a human created institution. We decide collectively as a society how important social goods are allocated through law. The outcomes of some social choices implemented through law have often been inequality, domination, exploitation, and expropriation. This course focuses on the law that creates these unjust outcomes. It also provides students with a theoretical and cross-disciplinary framework by which to critique law on these grounds.

Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5766 - BUSINESS FUNDAMENTALS FOR LAWYERS

Minimum Credits: 2
Maximum Credits: 2
Business Fundamentals for Lawyers provides an introduction to key business concepts and issues. This orientation will allow insights into client and employer needs and how lawyers must operate within a broader set of economic interests. Students will learn the "vocabulary" of business. Topics will include: the economics of the practice of law, business structures and corporate governance, principles of finance and accounting, common business contracts and transactions, role in business strategy and risk management, employment issues, ethics. The substance of the course will be relevant to private practice, government and public interest attorneys. The course will primarily use a lecture format and make use of guest speakers from law firms and industry. This will also help deepen relationships with the Pittsburgh Legal and Business Community.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5767 - SUPREME COURT ADVOCACY

Minimum Credits: 2
Maximum Credits: 2
This course is an experiential course based on a case that Professor Lobel is scheduled to argue before the Supreme Court the end of January or early February 2026. The case is Exxon v. Cimex: Exxon suing Cuban governmental agencies for the nationalization of its gas stations and oil refinery in Cuba after the 1959 Cuban Revolution. The question before the Court is whether Title III of the Helms Burton Act providing US Citizens a right to sue Cuban entities and other companies trafficking in nationalized property abrogates the immunities accorded in the Foreign Sovereign Immunities Act. The students will help Prof Lobel prepare for oral argument by drafting bench memos based on the briefs in the case and participating in moot courts prior to argument and possibly in strategy sessions with Prof Lobel's legal team. The students will be expected to travel to D.C. to attend the S.Ct. argument, meet with Cuba's lawyers afterwards to analyze the argument, and draft an opinion in the case based on the briefs and oral argument. Timing will be critical. Students will have be emailed the briefs by January 1, read the briefs and do some research and write bench memos before the class starts and then participate in moot courts and strategic discussions the first two weeks of the spring semester
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5768 - THRIVING IN LAW SEMINAR

Minimum Credits: 2
Maximum Credits: 2
This seminar is a two-semester class arising out of Professors St. Val's and Sinsheimer's work with the Legal Initiative for Fortitude and Transformation (LIFT), a dynamic program of research and practice that promotes adaptive and resilient mindsets in students in law and other graduate and professional programs. This seminar will both prepare students to serve as Teaching Aides for the intersession course, Thriving in the Law, and introduce students to literature from the fields of law and psychology pertaining to psychological resilience, engagement and well-being
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5769 - CRITICAL RACE THEORY

Minimum Credits: 3
Maximum Credits: 3
As civil rights gains were rolled back in the 1970s & 1980s, a group of legal scholars, including the late Derrick Bell, sought to critique

notions of "formal equality" and "colorblindness" that pervade American conceptions of "equality" and "justice." This course explores the body of theory that these scholars pioneered, now called Critical Race Theory (CRT), and some of its interdisciplinary directions. In it, we will consider 1) the intersectional appellate legal histories and presents of race and racial inequality in the United States, 2) how formal equality obscures racial inequality through claims to race neutrality, and 3) why American conceptions of liberalism, with their attendant reliance on individual responsibility and meritocracy, serve as consistent and effective alibis for racial inequality. The major assignment for this writing and discussion-driven course will be a substantial analytic paper that takes the theories that we discuss and applies them to a contemporary or historical problem of (in)equality under the law.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5770 - PHILOSOPHY OF PRIVATE LAW

Minimum Credits: 3
Maximum Credits: 3
This seminar examines the philosophical foundations of private law. Private law is the law of contract, tort, property, and unjust enrichment. It governs the horizontal relationships between persons rather than the vertical relationship between citizen and state. This seminar focuses on several competing accounts of private law: rights-based and corrective-justice views hold that private law is intelligible only in terms of the bilateral relationship between the parties, contractualist accounts justify private law's principles by reference to what persons could reasonably agree to or could not reasonably reject, and relational justice accounts locate private law's normativity in the equal standing and respect the parties owe one another in the interaction itself. Readings will cover whether distributive justice is relevant for private law. The course will cover the concept of private law itself and how it differs from public law. Course coverage may also reflect on differences between English, European and American approaches to private law.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 5797 - PASS THE BAR FALL

Minimum Credits: 3
Maximum Credits: 3
This course is a fall semester offering of early bar preparation designed to assist students graduating "off" a semester. All students in the class should either be a joint degree student or a student who is otherwise graduating in December. Students will be guided in structuring written responses to bar exam prompts as well as in answering multiple choice questions. The course meetings will be determined once enrollment is set to be flexible with the limited number of December graduates.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5798 - LEGAL WRITING III

Minimum Credits: 2
Maximum Credits: 2
his is a continuation of Legal Writing II. This course is designed for those students who need additional practical experience in developing the skills they began to acquire in the first-year Legal Analysis and Writing course. Students will engage in a series of challenging writing projects, focusing primarily on issues arising in the area of commercial law. Assignments will include the drafting of commercial documents, with supporting memoranda to explain and discuss the students' work product. Some student work product will be based on negotiation or mediation exercises held within the class. Some assignments will be drawn from materials used on the bar examination. Students will complete approximately one assignment per week, and will receive extensive feedback from the instructor regarding each assignment.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5799 - RACE AND AMERICAN LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar addresses the racial and legal history of major racial groups in the U.S., including African Americans, Native Americans, Asian Americans, Latinos and Whites. In addition to these histories, the seminar includes the following topics: competing definitions of race and racism; the legal system's contribution to the construction of race; race, voting, and participation in democracy; developing notions of equality; segregation and education; race, marriage, and family; race and crime; and responses to racism.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5801 - RAISING THE BAR

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROGRAM: School of Law

LAW 5805 - PERSUASIVE NARRATIVE

Minimum Credits: 3
Maximum Credits: 3
Effective lawyering requires the ability to communicate a convincing story from a client's point of view. In this class, students will improve their critical reading skills, their writing skills, and their ability to tell a persuasive story by (1) reading and critically discussing well-written short fiction and similar forms of communication, such as poetry, song lyrics, and speeches; and (2) producing their own written work to be critically reviewed and discussed by the class. Students will read and discuss several examples of quality writing produced by a diverse group of authors, all with a law-related theme, and often exploring sensitive topics. Student written work will be similarly reviewed and discussed by the entire class. Students will be expected to develop a clear theme, and to present their writing in a focused, coherent manner. The focus on short stories and similar materials is intended to expose students to a higher quality of writing than that typically found in legal authorities such as cases and statutes. The class will emphasize critical reading skills and the importance of thorough editing and refinement of one's work. We will also explore the persuasive power of effective story telling. Regular attendance and thorough preparation will be critical.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5807 - ENVIRONMENTAL JUSTICE LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROGRAM: School of Law

LAW 5811 - HEALTH CARE BUSINESS TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
This course will expose students to a variety of commercial transactions prevalent in the health care industry. The course will focus initially on health care as a regulated commercial enterprise. After studying the case law, statutes and regulations applicable to health care providers, students will begin an in-depth study of negotiated health care transactions. This study will begin with an examination of the

fundamental elements of the acquisition process and an analysis of the tax, antitrust, regulatory and successor liability considerations generally addressed in health care combinations. Students will then be exposed to the various stages of the negotiated acquisition process: due diligence; preliminary negotiations and agreements; transaction structure; final negotiations; definitive agreements; and post-closing relationships. We will also explore the financing mechanisms required to support healthcare entities. The course will examine sources of funding, enterprise valuation, healthcare cost controls, capital structure, traditional debt financing, tax exempt bond financing, securities filings, and insolvency. By the end of the course, the students will have acquired an understanding of the complexities of health care financing and will be familiar with the health care acquisition process from its inception toconclusion.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5814 - INTERNATIONAL AND COMPARATIVE LAW SURVEY

Minimum Credits: 1
Maximum Credits: 1
The Deans' Office has surveyed our JD students with significant non-US contacts and has discovered that a number of them have expressed a strong desire for a comparative and international law survey course that enables them to learn more about specific areas of law in jurisdictions other than the United States. This course fills that need. It requires special permission so as to be limited to those students who have significant experience living in jurisdictions other than the United States. It is further designed to be an in person class with much interaction between faculty and student - no remote option will be offered or delivered for this course. If gatherings are restricted in number because of public health guidelines, the class will be divided into as many sections as necessary to continue in person instruction. Any instructor unable to teach the course in person will be replaced by another determined by the remaining professors. The course will be divided into 13 one hour modules to be delivered by the professors co teaching the course or other guest lecturers. It will discuss various areas of law: commercial law, intellectual property law, real property law, environmental law, tort law, and legislation and regulation, among others as well as research methods for how to locate that law.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5815 - STUDENT ADVISORY COUNSEL

Minimum Credits: 1
Maximum Credits: 1
The Student Advisory Council is the OEIE-affiliated student organization. The Council has been charged with developing guidelines and processes for both when a student applies with troubling issues in their past, as well as when it is discovered that a student who is already part of the law school has done something troubling in the past. This course will facilitate broad student participation, and enable students to earn course credit for their work on the counsel.
Academic Career: Law
Course Component: Workshop
Grade Component: Grad LG/SU3 Basis

LAW 5817 - CORPORATE TAXATION

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the specific rules of subchapter C related to the taxation of corporations and shareholders. Using a "cradle to grave" approach, the course proceeds through a study of the tax consequences upon formation (birth of the corporation, including incorporation of going concerns), operation (life of the corporation, including distributions of cash or property, stock dividends, and redemption's), mergers and acquisitions (marriage and corporate offspring), and complete liquidation (death, including liquidation of a controlled subsidiary).
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5818 - LAW INTERSESSION

Minimum Credits: 1
Maximum Credits: 1
The Law School's intersession runs the week before regular spring semester classes begin. During the intersession, we make available a selection of short, intensive one credit courses to our students that they might otherwise find difficult to enroll in. For a specific description of each particular course offered during the intersession, please go to the link for the course located at the Law School's online Catalog of Courses. To receive credit for any of the courses offered during the intersession, students must attend class every day for approximately 2.5 hours and should expect to spend roughly twice that amount of time outside of class working on class related activities.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 5820 - LL.M COLLOQUIUM

Minimum Credits: 1
Maximum Credits: 1
This is a required course for all students in the ll.m. Program for foreign law graduates. The course will include guidance in the development and writing of projects for seminars or independent study projects. Students will be assisted with topic selection, developing an analytical focus, and writing the paper. Students doing independent studies will present their papers in the class for feedback. The course will also provide an opportunity to address specific issues of interest to students as well as opportunities to observe settings involving practical legalskills.
Academic Career: Law
Course Component: Colloquium
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5822 - STATE CRIMINAL DEFENSE PRACTICUM

Minimum Credits: 4
Maximum Credits: 4
This Practicum will teach law students about the practice of criminal defense, with field placement coordinated with the Allegheny County Public Defender's office. The class will consist of lecture and class discussions, courtroom observation, and direct in-court participation. This class is open to all students. Students who have completed Evidence will be required to become Certified Legal Interns, working under the direct supervision of attorneys in the Pretrial and Trial Division of the Public Defender's Office. Students who have not completed Evidence will participate in observation and client interaction.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5824 - ELDER LAW LAB

Minimum Credits: 4
Maximum Credits: 4
This course is the clinical companion to the Elder Law Seminar. Those enrolled in the lab must take the seminar, but the lab is optional for those in the Seminar. This course offers students who have completed three semesters of law school an opportunity to represent clients and develop practical lawyering skills. Students enrolled in the Clinics are certified to practice law and take primary responsibility for client representation under the supervision of their faculty/supervising attorneys. Client representation will focus on guardianship of older adults and/or disabled adults; estate planning for clients of limited means, including powers of attorney, health care directives Wills and testamentary special needs trusts; and eligibility for government benefits for long term care.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5839 - LAW ENTERTAINMENT AND SOCIAL ENTERPRISE PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
Law, entertainment and social enterprise ("lese") will expose students to the legal knowledge, skills and roles entailed in the representation of a social entertainment enterprise. Students will gain a broad understanding of the operations of the entertainment industry and the intellectual, corporate and securities matters that permeate the industry. We will specifically use a case study of the steel town entertainment project ("steel town"), a local social entertainment enterprise that is dedicated to building a socially and commercially significant entertainment sector in southwestern Pennsylvania. The course will involve cross-disciplinary and experiential learning and immersion opportunities. In lese, students will acquire substantive knowledge, practical skills and role models needed by lawyers representing a social entertainment enterprise ("see"). Students will learn about social enterprise, entertainment, intellectual property, corporate and securities law. Students will learn to research and draft a private placement memorandum based on a business plan for a strategic entertainment investment fund see will launch in the spring of 2010. Students will work closely with practicing lawyers who represent or volunteer for the steel town entertainment works and other social entertainment enterprises in southwestern Pennsylvania such as WQED, family communications and Pittsburgh Filmmakers. Students will gain a broad understanding of the business operations and legal needs of various social enterprise entertainment clients in the industry, including but not limited to incorporation, strategic alliances, licensing and venture capital.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5841 - INTERNATIONAL TAX

Minimum Credits: 3
Maximum Credits: 3
This course will serve as an introduction to the U.S. Federal tax aspects of the cross-border flow of capital and labor. At the most basic level, we will explore the distinction, both for income and for estate and gift tax purposes, between a U.S. And a foreign person. We will then compare and contrast the manner in which U.S. And foreign persons (including tax expatriates) are subject to income tax. We will also cover the special tax regimes applicable to investments made by U.S. Persons in foreign corporations (i.e., The controlled foreign corporation and passive foreign investment company regimes) as well as an introduction to the foreign tax credit rules. Throughout the course of the semester we will consider the potential impact of tax treaties on the rules in the internal revenue code. The grade for the course will be based on a series of drafting projects.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5105

LAW 5843 - LITERATURE AND THE LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
In this seminar, we will read and discuss stories about law. In such writers as Dostoevski, Melville, Glaspell, Wright, Lee, Shakespeare, Camus, Kafka, Porter, and Malamud, and in many popular culture and on-line media, LAW is represented, criticized, admired, and deconstructed, There is no better -- or more enjoyable! -- way to learn about the underlying premises and prejudices of legal systems than to participate in the real conflicts depicted in great stories, In this seminar, too, we will take a COMPARATIVE approach, because the writers chosen come from varied backgrounds, and their careful depictions of trials, investigations, and lawyers in action permit us to see how legal systems differ one from another.. Thus by perusing carefully Dostoevski , Kafka, and Camus, for example, we will see how criminal procedure on the continent of Europe differs markedly from common law approaches to guilt and innocence. The stuff of stories will be supplemented, where helpful, by readings in comparative law. Meanwhile these stories also permit us to raise questions of race, religion, and gender both within specific contexts (Shakespeare's Venice; Susan Glaspell's early 20th century America; Richard Wright's Chicago; Harper Lee's Jim Crow south) and comparatively (Bernard Malamud's recreation of the "blood libel trials").
Academic Career: Law
Course Component: Seminar

Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5847 - GENDER AND LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course will examine how gender influences legal doctrine and how legal doctrine in a number of specific areas of law affects women and shapes societal understandings of gender. The objectives of the course are twofold: (1) to explore how an understanding of gender and feminist legal theory can enrich the study of law; and (2) to learn specific areas of legal doctrine that are particularly relevant to women and societal understandings of gender. The course will cover a number of areas related to issues of gender equality, such as employment, education, family and domestic responsibilities, sexual harassment, and domestic violence. Various feminist legal theories will provide a framework for studying these areas oflaw.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5854 - LAW AND ECONOMICS SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar introduces principles of positive and normative microeconomics to explore the extent to which they can explain the workings of the legal system and to examine the effect of legal rules on behavior. Covered topics include the coase theorem; the choice between property, liability, and inalienability rules; comparative liability rules (e.g., Negligence versus strict liability); contractual damages; criminal liability; family law; game theory; and legal decision theory (e.g., Risk, uncertainty).
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5860 - ANCIENT LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar will introduce students to the very beginnings of Western legal history. Through a comparative examination of the legal systems and practices of ancient Mesopotamia (including Hammurabi's Babylon, c. 1700 B.C.), Ancient Egypt, ancient Israel, ancient Anatolia (the Hittite empire, c. 1500 B.C.), Ancient Greece and ancient Rome, we will investigate the historical origins of "law" as an idea. We will see how each of these societies created law in the image of its own beliefs and needs. We will look at what differentiated the resulting legal systems, and what united them. We will examine not merely the ancient "law in the books" (the formal written codes that have received so much historical and philological attention over the years) but also the ancient "law in action" (the performances, rituals and ceremonies that created legal rights and duties in all these proto-literate societies). We will look at some of the earliest surviving trial records. Throughout the seminar, emphasis will be placed on developing a broad interdisciplinary perspective on the ancient legal cultures examined; readings will be drawn not only from the fields of law and history, but also from religion, anthropology, archaeology, literature and communication studies.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: West European Studies

LAW 5862 - FOUNDATIONS OF INTELLECTUAL PROPERTY LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3

This seminar deals with the theoretical and policy foundations of patent, copyright, and trademark law. The readings consist of both contemporary and "classic" law review articles and other primary and secondary sources that explore connections between intellectual property law and a variety of possible justifications for the law and its leading cases, statutes, and treaties, including history, liberal political theory, economics and other social sciences, literary theory, and cultural theory. The bulk of the work of the seminar consists of supervision and discussion of original research by students (that is, research in print collections and other collections of analog sources, and digital archives of print collections) on historical intellectual property topics of their choosing, and the production and classroom presentation of a significant piece of original writing by each student.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5209 or 5260 or 5276 or 5328 or 5694; PROG: School of Law (LAWSC)

LAW 5865 - ELDER LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine the legal issues that arise because of the decline and loss of mental capacity among the elderly. We will examine the difficulties that the loss of capacity causes individuals and their families and the legal responses, such as surrogate decision-making through powers of attorney, guardianship and other legal responses to incapacity, as well as governmental programs that affect elderly clients such as Social Security, Medicare and Medicaid .
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5866 - ISLAMIC LAW AND JURISPRUDENCE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course will focus primarily on Islamic law, and Islamic jurisprudence, in the modern era, using the classical period only as the backdrop against which modern notions and understandings of Islamic law may be tested. We will begin with a brief introduction into the creation and development of Islamic law from its earliest formative period through its golden, classical era in an effort to explore the principles of Islamic jurisprudence. We will then move quickly to address central questions concerning how that law has evolved given that the empires that gave rise to law in the classical era have evaporated and been replaced with nation states that have adopted by and large transplanted political and legal ideas, among them constitutionalism and reliance on secular legal codes to resolve legal questions. In this context, our primary focus will be on the judicial application of Islamic law in Muslim and non-Muslim countries, surveying court practice in states as varied as Egypt, Iraq, Indonesia and Malaysia. We will also address the increased pan-national use of concepts that purport to be based on Islamic law, from Islamic finance to jihad.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: African Studies

LAW 5871 - INTERNATIONAL CRIMINAL LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar is an introductory survey of the substantive and procedural aspects of international criminal law, a new and evolving area of law that has gained in prominence in the past decade. The course starts with an overview of fundamentals, focusing on the notion of international crimes and their historical evolution, as well as the general features and sources of international criminal law. The second part of the seminar analyzes the substantive law, especially the definitions and subjective and objective elements of genocide, crimes against humanity and war crimes. The discussion will take place within the context of a comparative evaluation of the main international judicial mechanisms developed after World War II to prosecute these crimes. Particular attention is paid to the International Military Tribunal at Nuremberg, the ad hoc United Nations International Criminal Tribunals for the former Yugoslavia and Rwanda, the Special Court for

Sierra Leone and the permanent International Criminal Court. In the final part, we examine the fair trial rights and the limited defenses and immunities available to alleged perpetrators of international crimes. A key question students will be expected to engage throughout is whether, and if so to what extent, individual criminal prosecution is a legitimate and effective tool to address mass human rights violations during or after conflict.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: African Studies

LAW 5872 - CRIME, LAW AND SOCIETY IN "THE WIRE"

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5047; PROG: School of Law (LAWSC)

LAW 5873 - PRIVATE INTERNATIONAL LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Private international law traditionally covers three areas important to cross-border transactions and dispute settlement often referred to in the United States as conflict of laws: jurisdiction, the determination of applicable law, and the recognition and enforcement of judgments. This course will focus on these core issues and give attention to broader issues of international private law dealt with under the rubric of private international law in the U.S. Department of state, including international arbitration law, judicial cooperation, and other areas. We will review major international legal instruments (treaties, model laws, sets of principles, European regulations, etc.) And their importance to both transactional and litigation practice. Particular attention will be given to the expanded role of the European union institutions in the development and implementation of rules of private international law, as well as to the work of the Hague conference on private international law, the united nations commission on international trade law (Uncitral), and the international institute for the unification of private law (Unidroit). During the second half of the semester, each student will present the results of his or her research in preparation for the finalpaper.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: African Studies

LAW 5874 - SECURITIES ARBITRATION CLINIC

Minimum Credits: 4
Maximum Credits: 4
The securities arbitration clinic is a two-semester clinic; however, students may enroll in either the spring or the fall semesters, but must complete 2 semesters in order to receive credit. Total credits hours for the two semesters are 8 credits. The securities arbitration clinic offers a practical and educational opportunity in the securities arbitration process. In this course, the students will represent individual small investors with controversies of up to $75,000.00 before a securities panel under the supervision of practicing attorneys. The securities arbitration clinic is designed to impart negotiation, advocacy and trial litigation skills to the students, as well as provide a service to investors that might otherwise be unrepresented. Each student will handle all aspects of assigned a particular client's case, including:' review case file ' meeting with the client to review facts, request supporting documents, and determine relevant issues ' research of applicable securities laws ' meeting with supervising attorney to determine course of action ' if case is accepted, file power of attorney or entry of appearance with the Pennsylvania supreme court or securities and exchange commission, preparing and filing a statement of claim with finra and following through with all aspects of case preparation. 'Contact sec attorneys, opposing counsel and the sro to discuss recourse and schedule the arbitration panel if necessary. ' For arbitrations: prepare case to be presented to the arbitration panel, including obtaining all necessary documents and witnesses, as well as completion of all research on the law; represent the client in arbitration;

complete post arbitration work, including review of stipulated decision, if case is settled before arbitration.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5877 - PUBLIC POLICY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar will explore the processes of federal law-making and public policy development through examination of a series of selected topics concerning lobbying, the legislative process, judicial challenges to new laws, and administrative rule-making and enforcement. A primary purpose of the seminar is to enrich students' understanding of law-making and policy development by focusing on a series of case studies concerning particular laws and policies and introducing information about the relevant political dynamics, bureaucratic systems, and other real-world factors. Thus, in addition to studying written materials, students will talk with Washington-based attorneys and others who are experts in the relevant fields. The selected topics will vary from year to year.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law; PREQ: LAW 5032 or 5201 or 5237

LAW 5880 - IMMIGRATION LAW CLINIC

Minimum Credits: 4
Maximum Credits: 4
The Immigration Law Clinic is a two semester clinic.In the Immigration Clinic students represent immigrants requesting asylum, facing removal from the United States, and seeking special protection under the Violence Against Women Act. In representing clients under the supervision of the clinical professor, students perform all aspects of case preparation including interviewing clients, writing pleadings, appearing in Immigration Court, appearing before administrative agencies and managing post-relief issues. Clinic students also assist their clients in overcoming linguistic and cultural barriers that could impede their clients' success in the U.S. legal system. Clients may include refugees, immigrant women and children survivors of domestic violence applying to change their status, persons with criminal convictions who seek relief from removal from the United States and other immigrant populations. Students are also expected to collaborate with community based organizations that serve the foreign born population in the city.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5883 - ENVIRONMENTAL LAW & POLICY CLINIC

Minimum Credits: 6
Maximum Credits: 6
The Environmental Law and Policy Clinic is a place-based, community resource with a threefold mission to foster local climate change mitigation and adaptation policy and projects, ensure a safe and clean environment for all regardless of race or income, and facilitate green and equitable economic opportunities. The clinic provides students an opportunity to explore each of these fast-evolving aspects of environmental law while serving the Pittsburgh community and surrounding region. Students engage with partners and clients in a variety of matters including regulatory advocacy, legislative advocacy, public outreach and education, and client counseling - positioning them for impactful careers in environmental law across the government, public-interest, or private sectors.
Academic Career: Law
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5889 - LEGAL ANALYSIS AND WRITING 2

Minimum Credits: 3
Maximum Credits: 3
This course is designed for those students who need additional practical experience in developing the skills they began to acquire in the first-year legal analysis and writing course. Students will engage in a series of challenging writing projects, focusing primarily on issues arising in the area of commercial law. Assignments will include the drafting of commercial documents, with supporting memoranda to explain and discuss the students' work product.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5890 - ELECTRONIC DISCOVERY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The discovery process has undergone a revolutionary change in the last quarter-century. Today, the vast majority of documents are created, stored and retrieved electronically, and the sheer volume of electronically-stored information ("ESI") has multiplied exponentially. This explosion in the volume of ESI has raised a host of legal, ethical and technological challenges for litigators and courts alike. This seminar will address many of the pressing legal issues that electronic discovery raises, including the creation, preservation and production of ESI; the distribution of the costs of e-discovery; the risk of spoliation; and the ethical and privilege issues that arise in connection with e-discovery.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5891 - LITIGATION AND SOCIAL CHANGE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5901 - LEGAL WRITING INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 1
All students in order to graduate must successfully fulfill a faculty supervised writing requirement, defined as a paper evidencing significant legal or empirical research and thoughtful writing. This supervised writing requires at least two drafts.
Academic Career: Law
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5902 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 1
Completion of a paper of publishable quality under the direction and supervision of a full-time faculty member.
Academic Career: Law
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5903 - INDEPENDENT STUDY

Minimum Credits: 2
Maximum Credits: 2
Completion of a paper of publishable quality under the direction and supervision of a full-time faculty member.
Academic Career: Law
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5904 - INTERNAL SKILLS COMPETITION

Minimum Credits: 1
Maximum Credits: 2
This intra-school moot court competition is open to all second and third year students. During the initial fall round, students write a brief and orally argue it. The winning participants go on to an intermediate level "round robin". Participants advance through the round-robin based upon the relative quality of their oral advocacy. The final rounds, usually occurring after the winter break, consist of the successful participants from the previous semester's round-robin. Participants completing the first round receive one credit awarded in second semester.
Academic Career: Law
Course Component: Colloquium
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5906 - INTERSCHOLASTIC SKILLS COMPETITION

Minimum Credits: 1
Maximum Credits: 2
This is a national moot court competition that features international law. It is open to second and third year students. Students are selected to represent the school based on proficiency in international law and appellate court advocacy as demonstrated in an interschool competition.
Academic Career: Law
Course Component: Colloquium
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5908 - INTERSCHOLASTIC MOCK TRIAL

Minimum Credits: 1
Maximum Credits: 2
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Academic Career: Law
Course Component: Colloquium
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5910 - LAW REVIEW

Minimum Credits: 1
Maximum Credits: 2
The Law Review is a quarterly legal journal published by second and third year students. Members not only write scholarly commentaries on recent developments in legislative and court decisions, but also analyze and edit student and non-student works, preparing those selected for publication. Students with high academic averages are invited to become members following completion of their first year, and, to a limited extent their second year. All first year students may enter a writing competition held over the summer from which additional

members are chosen.
Academic Career: Law
Course Component: Workshop
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: LAW COMM-W Comm, LAW LAPS-Legal Reasoning/Analysis, LAW LAPS-Legal Research, LAW PSD-Leadership

LAW 5911 - JOURNAL OF LAW AND COMMERCE

Minimum Credits: 1
Maximum Credits: 2
The journal of law and commerce is a semi-annual legal periodical published by second and third year students. Focusing on material of a commercial nature, the journal attempts to provide scholarly yet practical articles and book reviews written by professionals and students. Journal members must have exhibited superior abilities either through academic performance or through submission of a research paper in the annual writing competition.
Academic Career: Law
Course Component: Workshop
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: LAW COMM-Client, LAW COMM-Listening, LAW COMM-Negotiation, LAW COMM-O Comm, LAW COMM-W Comm, LAW DEI-Competence, LAW DEI-Empathy, LAW LAPS-Legal Reasoning/Analysis, LAW LAPS-Legal Research, LAW LAPS-Problem Solving, LAW PSD-Business Dev, LAW PSD-Leadership, LAW PSD-Self Assessment

LAW 5919 - PITTSBURGH JOURNAL OF TECHNOLOGY LAW AND POLICY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Law
Course Component: Workshop
Grade Component: Grad HSU Basis

LAW 5921 - LEGAL WRITING INDEPENDENT STUDY

Minimum Credits: 2
Maximum Credits: 2
All students in order to graduate must successfully fulfill a faculty supervised writing requirement, defined as a paper evidencing significant legal or empirical research and thoughtful writing. This supervised writing requires at least two drafts.
Academic Career: Law
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5924 - PITTSBURGH JOURNAL OF ENVIRONMENTAL AND PUBLIC HEALTH LAW

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Law
Course Component: Workshop
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5929 - PA PRACTICE PRACTICUM

Minimum Credits: 4
Maximum Credits: 4
This course offers students a great opportunity to help indigent clients and to learn important lawyering skills under the close supervision of an experienced attorney at neighborhood legal services association or laurel legal services. Students will work on cases involving poverty law issues such as eviction, custody, protection from abuse, public benefits, and debt collection. The classroom component will focus on various substantive and procedural poverty law issues, on ethical considerations, and on lawyering skills - such as interviewing, counseling, fact-gathering, legal analysis, negotiation, research, drafting, and litigation - critical to many types of legal practice. Classroom assignments will include simulation exercises and preparing a monthly journal. The field component will focus on advising and representing indigent clients. Field assignments will be available in Pittsburgh, Bridgeville, new castle, and butler. This is an excellent opportunity for students to gain experience in the county where they live or hope to practice. Most field assignments will include courtroom experience, and most students will be able to complete the field component before final exams. Every attempt will be made to schedule the field assignment at times convenient to the student.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5931 - PITTSBURGH TAX REVIEW

Minimum Credits: 1
Maximum Credits: 2
The Pittsburgh Tax Review is a semiannual legal journal focusing on all aspects of tax law that is published by second- and third-year students under the supervision of the Faculty Editors, who select all work for publication through a peer-review process. Members not only write scholarly notes on an area of tax law, but also edit all works selected for publication. Students with high academic averages are invited to become members following completion of their first year. Students who receive a grade of A- or higher in Federal Income Tax are invited to become members during the next academic year. All first-year students may enter a writing competition held over the summer from which additional members are chosen.
Academic Career: Law
Course Component: Workshop
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: LAW PSD-Leadership, LAW PSD-Self Assessment

LAW 5932 - MOOT COURT BOARD

Minimum Credits: 1
Maximum Credits: 2
The University of Pittsburgh School of Law Moot Court Board organizes and administers the Murray S. Love Trial Moot Court Competition, the Appellate Competition, and the Negotiations Competition.All associate members must also complete an academic component during each year of Board service by working in a group that researches and creates a competition problem. Board members who complete the requisite academic and administrative duties are eligible to receive credit for Board service.
Academic Career: Law
Course Component: Colloquium
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5937 - PA PRACTICE ANTI-EVICTION PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
"Eviction is a cause, not just a condition, of poverty" Matthew Desmond, Evicted The PA Practice Practicum is focused on providing students with skills needed to practice law. It does this through a focus on anti-eviction representation. Research has shown that tenants who are represented by counsel have a much better chance of maintaining housing stability. Students will learn substantive law and practical skills and use them to protect low income clients from eviction and its devastating consequences. There are no exams. Writing assignments take the form of advice letters to clients. There will be weekly class sessions as needed at the offices of Neighborhood Legal

Services to learn applicable law and client skills such as interviewing, negotiating, and representing in court. Students must be eligible to be certified to appear in court, and must be available Thursday mornings because that is when many of the hearings are.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5939 - CRIMINAL DEFENSE PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
This Practicum will teach law students about the practice of criminal public defense. The class will consist of lecture and class discussions, courtroom observation, and direct in-court participation. Students will be required to become Certified Legal Interns and will work under the direct supervision of licensed attorneys in the Pretrial and Trial Division of the Public Defender's Office. By the end of the semester, the following learning objectives are expected: 1. Students should have a comprehensive knowledge of the process by which criminal cases move through the system and be able to articulate the separate stages of a criminal case. Students should be able to explain this process in an understandable and relatable way to clients. 2. Students should have knowledge of the bail and detainer process and understand how these concepts relate to incarcerated clients pre-trial, including the process of writing bond motions. 3. Students should understand the law and ethics around representing individuals in criminal matters, and the importance of zealous, client-centered representation through hands-on experience. 4. Students should be able to conduct a preliminary hearing from beginning to end, including cross-examination of witnesses. 5. Students should be able to formulate compelling arguments based on the elements of the charged offenses. 6. Students should have refined their interview skills and be able to interview clients and extract relevant and pertinent information in preparation for preliminary hearings. Students will be expected to formulate a weekly schedule for the semester and adhere to that schedule. The schedule will include both courtroom and office hours.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5946 - CARDOZO MOOT COURT

Minimum Credits: 1
Maximum Credits: 1
This interscholastic appellate moot court competition is sponsored by Cardozo school of law in New York City, and focuses on current issues in the entertainment and communications fields. The national competition is held in New York City in late march each year.
Academic Career: Law
Course Component: Colloquium
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5952 - CRIMINAL PROSECUTION PRACTICUM

Minimum Credits: 0
Maximum Credits: 0
The office of the district attorney of Allegheny county administers the criminal prosecution practicum under the auspices of former prosecutor, judge Edward J. Borkowski. The practicum runs the full school year, with the 8 credits awarded upon completion of the spring term. Those interested must devote both semesters to the program to receive credit.. The practicum combines classroom instruction with actual courtroom prosecution experience in order to prepare students for the practice of criminal law. The classroom portion of the course requires students to attend a two hour class once a week in the courtroom of judge Borkowski in the Allegheny county courthouse. Students will be instructed on and be required to conduct opening statements, closing arguments, and direct and cross examination of lay and expert witnesses. Students are provided with a vehicle that includes police reports, lab reports, and transcripts of taped statements based on the class model (a homicide case) from which the exercises are performed in class by the students in a live courtroom setting with a judge and defense attorney present and participating as such. The practical portion of the course requires students to extern ten (10) hours per week in Stephen A. Zappala'"s Allegheny county district attorney's office. Certified students are permitted to litigate guilty pleas, suppression motions, and nonjury trials in the Allegheny county court of common pleas. The goal of the practicum is to give students a broad overview of the inner workings of a prosecution office while providing hands-on experience in prosecuting cases.

Academic Career: Law
Course Component: Practicum
Grade Component: No Grade Required
Course Requirements: PROG: School of Law (LAWSC)

LAW 5953 - CRIMINAL PROSECUTION PRACTICUM

Minimum Credits: 8
Maximum Credits: 8
The office of the district attorney of Allegheny county administers the criminal prosecution practicum under the auspices of former prosecutor, judge Edward J. Borkowski. The practicum runs the full school year, so those interested must devote both semesters to the program. The practicum combines classroom instruction with actual courtroom prosecution experience in order to prepare students for the practice of criminal law. The classroom portion of the course requires students to attend a two hour class once a week in the courtroom of judge Borkowski in the Allegheny county courthouse. Students will be instructed on and be required to conduct opening statements, closing arguments, and direct and cross examination of lay and expert witnesses. Students are provided with a vehicle that includes police reports, lab reports, and transcripts of taped statements based on the class model (a homicide case) from which the exercises are performed in class by the students in a live courtroom setting with a judge and defense attorney present and participating as such. The practical portion of the course requires students to extern ten (10) hours per week in Stephen a. Zappala"'s Allegheny county district attorney's office. Certified students are permitted to litigate guilty pleas, suppression motions, and nonjury trials in the Allegheny county court of common pleas. The goal of the practicum is to give students a broad overview of the inner workings of a prosecution office while providing hands-on experience in prosecuting cases.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5954 - D.C. SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The D.C. Seminar is one component of the semester in D.C. Program. The other component of the semester in D.C. Program is the D.C. Externship, which is described separately. Students must enroll in both the D.C. Externship and the D.C. Seminar in order to participate in the semester in D.C. Program. The D.C. Seminar will provide intensive skills training, meetings with alumni and practitioners, and opportunities to reflect on and analyze students' externship experiences. The seminar will meet in the law school's D.C. Classroom. The three seminar credits will be graded. Grades will be based on class participation, a weekly journal, and a significant paper regarding a legal issue or set of issues relating to the externship. The paper can be used to satisfy the upper level writing requirement. Students interested in participating in the semester in D.C. Program should: (a) contact prof. Deasy and/or prof. Baylis directly to discuss the program requirements and externship application process and (b) sign the semester in D.C. Program statement of interest form included with the registration materials and return it to the registrar's office when they submit their registration materials. Students who sign the statement of interest for the semester in D.C. Program should also register for classes as they normally would, in order to keep open the option of taking a regular course load until they have obtained an externship position. Upon securing an externship position, students can drop their other classes and add the D.C. Externship and D.C. Seminar.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5955 - D.C. EXTERNSHIP

Minimum Credits: 8
Maximum Credits: 10
The D.C. Externship is one component of the Semester in D.C. Program. The D.C. Externship grants credit for an unpaid externship in Washington, D.C. with a government office or non-profit organization. The 8 - 10 externship credits will be awarded on a satisfactory/unsatisfactory basis. Students enrolling in the D.C. Externship must also enroll in the D.C. Seminar
Academic Career: Law

Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5961 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Hands-on teaching practicum course for Law students to learn about university-level teaching.
Academic Career: Law
Course Component: Workshop
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5966 - PRISON LAW AND LITIGATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5967 - EXTERNSHIP

Minimum Credits: 2
Maximum Credits: 2
This second- and third-year elective introduces students to the working skills of an attorney or judicial clerk. Students are assigned to public legal agencies with a high volume of legal work or as clerks for federal, state and county judges. Type of work varies with each assignment but may include legal research, drafting memoranda and legal documents, investigating cases, interviewing clients and witnesses, and negotiating on behalf of clients. Third-year students, if certified, may appear on behalf of clients in court.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5968 - SUMMER EXTERNSHIP

Minimum Credits: 2
Maximum Credits: 2
This second and third-year elective is intended to introduce students to the working skills of an attorney or judicial clerk. Students are assigned to public legal agencies with a high volume of legal work or as clerks for federal, state, and county judges. Work required of interns varies according to the assignment, but responsibilities may include legal research, drafting memoranda and legal documents, investigating cases, interviewing clients and witnesses, and negotiating on behalf of clients.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5969 - SUMMER EXTERNSHIP

Minimum Credits: 4
Maximum Credits: 4
This second and third-year elective is intended to introduce students to the working skills of an attorney or judicial clerk. Students are

assigned to public legal agencies with a high volume of legal work or as clerks for federal, state, and county judges. The work required of interns varies according to the assignment, but responsibilities may include legal research, drafting memoranda and legal documents, investigating cases, interviewing clients and witnesses, and negotiating on behalf of clients.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5970 - SUMMER EXTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5972 - EXTERNSHIP

Minimum Credits: 4
Maximum Credits: 4
This second- and third-year elective introduces students to the working skills of an attorney or judicial clerk. Students are assigned to public legal agencies with a high volume of legal work or as clerks for federal, state and county judges. Type of work varies with each assignment but may include legal research, drafting memoranda and legal documents, investigating cases, interviewing clients and witnesses, and negotiating on behalf of clients. Third-year students, if certified, may appear on behalf of clients in court.
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5976 - EXTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5977 - INTRODUCTION TO AMERICAN LAW

Minimum Credits: 3
Maximum Credits: 3
This is a required course for all students in the ll.M. Program for foreign law graduates. It provides a basic overview of the U.S. Legal system. An effort is made to provide both broad coverage of important areas of American law as well as a detailed look at specific issues. Students will be introduced to some of the most important cases in U.S. Legalhistory.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5980 - ETHICAL ISSUES IN CLINICAL CARE

Minimum Credits: 3
Maximum Credits: 3
In this intensive seminar students observe and analyze ethical and health law issues as they arise in two clinical settings: an intensive care unit (ICU) and a medical unit in University hospitals. Students spend ~20 hours/week, allocated across two mornings and one full day per week, observing in the clinical setting. They accompany physicians and other healthcare professionals on clinical rounds, observe family meetings or ethics consultations, and attend one or more ethics committee meetings. Students are expected to complete a self-paced medical terminology text; must attend an orientation session (time and location to be determined); and must participate in the weekly meeting (typically in the late afternoon or early evening) that synthesizes their observational experience. This affords students the opportunity to analyze their experience and the issues they observe, in light of assigned readings. Relatively light reading is assigned for each week. Readings bring social science perspectives to bear on medicine and healthcare and illuminate clinical ethics issues. Students also make a case presentation, write a case analysis, maintain a journal or field notes of the clinical experience, and submit those field notes for review and comment.
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5984 - TRADE SECRETS & CORPORATE ESPIONAGE

Minimum Credits: 2
Maximum Credits: 2
This course will cover various aspects of trade secret law with an emphasis on practical considerations relevant to the business environment. Students will examine public policy considerations of trade secret law, compare the Uniform Trade Secrets Act (UTSA) to the Restatement Approach and to the Pennsylvania UTSA (as well as the law of other jurisdictions), and compare trade secret protection with other forms of intellectual property. We will review the elements of a trade secret and compare the types of information and the circumstances under which courts have recognized or denied trade secret protection. The rights of a trade secret owner relative to its employees and third parties will be examined in detail, including use of confidentiality agreements and non-competition agreements. Enforcement of trade secret rights will be surveyed and include civil and criminal proceedings including the Economic Espionage Act (EEA). Practical issues from the business world are strongly emphasized in this course including drafting and negotiating non-compete, non-solicitation and confidentiality agreements, establishment of business policies and procedures for trade secret protection, practical considerations surrounding the bringing and settling of trade secret cases. This course will feature presentations by various trial lawyers, computer forensics experts and other professionals who are routinely engaged in litigation involving corporate espionage and the theft of competitive intelligence. Particular emphasis will be placed on the strategy behind launching and pursuing such litigation, together with an investigation of the various ways that individuals and corporations defend themselves against such claims. This course will also explore the various forms of equitable and legal relief typically requested in such cases, with a focus on certain recent damages awards in the tens of millions of dollars. Technological advancements in securing competitively sensitive information, together with novel efforts to gain access to such data, will be studied in detail, with particular attention given to the manner in which courts have tried to shape the law in a fast-changing business environment.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: LAW COMM-Listening, LAW COMM-O Comm, LAW COMM-W Comm, LAW LAPS-Legal Reasoning/Analysis, LAW LAPS-Legal Research, LAW LAPS-Problem Solving

LAW 5986 - INTERNATIONAL ARBITRATION SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5990 - WRITING FOR RESULTS

Minimum Credits: 2
Maximum Credits: 2
This course will introduce students to the written components of the bar exam in all states, essay questions and performance tests, which together are worth between one-half and two-thirds of the overall score depending on the state. Students will learn effective techniques for reading, outlining, and writing answers and will practice these techniques by taking multiple practice questions under timed, exam-taking conditions during class. Students will receive feedback on their answers through a variety of methods, including at one or more required individual meetings with theprofessor.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5991 - SUMMER EXTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
Externship
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5992 - EXTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 7747 - LAW OF MENTAL HEALTH SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the laws and issues that affect individuals with mental illness, many of whom find themselves in the criminal or civil justice systems. Emphasis will be on the issues surrounding civil commitment and the emerging use of treatment courts on the criminal side. This will require a review of Pennsylvania's Mental Health Procedures Act and other state and federal statutes, cases, and regulations. Students will be permitted to attend a session of mental health court
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

Law - MSL (graduate program) course offerings

LAW 2001 - INTRODUCTION TO US & INTERNATIONAL BUSINESS LAW

Minimum Credits: 3
Maximum Credits: 3
This course will provide an introduction to US and International Law for the non-lawyer and/or the foreign lawyer. It will provide the baseline knowledge necessary for students to understand how the US legal system works, and how transborder transactions can be approached.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2002 - COMMERCIAL ASPECTS OF CROSS-BORDER TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
This course will introduce the student to commercial transactions that cross borders. Students will consider the impacts of choices of law and choices of forum on the transaction
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2003 - SPECIALTY AREAS IN CROSS-BORDER TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
This course will introduce the student to commercial transactions that cross borders. Students will consider the impacts of choices of law and choices of forum on the transaction. Topics covered will include: Contracts for the sale of goods including the US Uniform Commercial Code (UCC) and the UN Convention on the International Sale of Goods (UN CISG) Contracts for the provision of cross-border services Contracts for secured transactions across borders Contracts for the purchase or sale of a business (acquisitions, divestitures, mergers, and joint ventures)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2004 - FOUNDATIONS OF INTERNATIONAL DISPUTE RESOLUTION & LITIGATION

Minimum Credits: 3
Maximum Credits: 3
This course will introduce the resolution of disputes in cross-border transactions. Students will learn the basics of how disputes arise, how to avoid or resolve them, and how to litigate them when cases are filed. Topics covered will include: Avoiding disputes via contractual language Mediation Arbitration - domestic or international Domestic Litigation Strategic choices of forum
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2005 - SPECIAL TOPICS IN INTERNATIONAL OR DISPUTE RESOLUTION

Minimum Credits: 3
Maximum Credits: 3
This seminar study will allow the student to take an in-depth look at either (i) an international transactional issue; or (ii) the challenges of doing business in a specific geographic area, including Latin America, Africa, the Middle East or Russia; or (iii) an international dispute case. It will consist of a five- to ten-page written project and a five-minute online presentation, as well as a final exam.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2006 - INTRODUCTIO TO THE LAW & BUSINESS OF SPORTS, ENTERTAINMENT, & ARTS LAW

Minimum Credits: 3
Maximum Credits: 3
Introduction to the Law & Business of Sports, Entertainment, & Arts Law
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2007 - LABOR & EMPLOYMENT LAW IN SPORTS, ENTERTAINMENT AND ART LAW

Minimum Credits: 3
Maximum Credits: 3
course description is under development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2008 - CONSTITUTIONAL LAW I

Minimum Credits: 1
Maximum Credits: 1
This course is an introduction to American constitutional law, with an emphasis on U.S. Supreme Court decisions interpreting and applying the U.S. Constitution. The course explores various methods of interpreting the Constitution and the doctrines that guide judges' application of its provisions. You will explore such topics as the role of the judiciary in reviewing acts of the political branches of government; the separation of powers and relations among the three branches of the federal government; the powers of the national government and how the concept of federalism limits the powers of Congress and the states; and constitutional protection of the rights of individuals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2009 - CONSTITUTIONAL LAW II

Minimum Credits: 1
Maximum Credits: 1
This course is an introduction to American constitutional law, with an emphasis on U.S. Supreme Court decisions interpreting and applying the U.S. Constitution. The course explores various methods of interpreting the Constitution and the doctrines that guide judges' application of its provisions. You will explore such topics as the role of the judiciary in reviewing acts of the political branches of government; the separation of powers and relations among the three branches of the federal government; the powers of the national government and how the concept of federalism limits the powers of Congress and the states; and constitutional protection of the rights of individuals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2011 - INTRODUCTION TO CORPORATE COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
This course will provide an introduction to Corporate Compliance Programs for US and foreign lawyers as well non-lawyers. It will provide the basics of a compliance program and how to approach corporate compliance. Topics covered in this course will include: - Importance of a Compliance Program - Importance of ethics, organizational culture (vision and values) and a code of conduct - Understanding the key issues of an organization's compliance policies and procedures - Understanding which policies and procedures should be covered in a compliance program - Incorporating compliance and ethics standards in a contractual arrangements.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2012 - ETHICS & COMPLIANCE PROGRAMS

Minimum Credits: 3
Maximum Credits: 3
New course still in development. description will follow.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2013 - DESIGNING, MEASURING EFFECTIVENESS & AUDITING COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to designing and measuring effective audit compliance programs. This will be based on the Department of Justice Sentencing Guidelines. Topics covered will include: Administering an effective compliance program, such that the goals and objectives are achieved Defining the authority and role of ethics and compliance professionals, including reporting lines and access to an organization's board of directors or audit committee Creating an annual ethics and compliance work plan Ensuring that the organization has processes in place to assess key areas of risk, including intermediary review and assessment Compliance lines and other telephone or online reporting mechanisms Communication, education and training of a compliance risk program Monitoring for organizational misconducts Monitoring ethics and compliance related activities and risks Conducting a risk-based assessment of the compliance program
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2014 - CONDUCTING INVESTIGATIONS

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to conducting investigations and risk assessments and teaches them how to conduct an internal investigation. Topics covered will include: Representing the company, not the interviewee. Purpose of the interview: Legal and ethical considerations of internal investigations in foreign jurisdictions, i.e., preserving attorney client privilege where it exists. Responding to governmental inquiries and investigations and voluntary disclosures to regulatory agencies EU Dawn Raids and other unannounced governmental investigations Conducting periodic risk assessments Use and development of risk assessment methodology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2015 - SPECIAL TOPICS IN CORPORATE COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
This seminar study will allow the student to take an in-depth look at special topics in CorporateCompliance (for example, Foreign Corrupt Practices Act, UK Antibribery Act, Antitrust Compliance, Joint Ventures, Enterprise Risk Management, Financial Compliance, International Trade and Export Compliance, Pharmaceutical and Medical Device Compliance, Securities Compliance, including SEC Disclosures)
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2016 - PROPERTY

Minimum Credits: 2
Maximum Credits: 2
Property law governs relationships among people with respect to "things." These "things" include real property, personal property, and intellectual property. The course examines how real property rights may be limited in certain situations, and how the law balances the rights of a property owner against the rights of others. You will learn how a person or entity acquires property and the key attributes of property ownership; you will also study the law of leases (landlord-tenant law), land sales, easements and private covenants, public land use regulation including zoning, and limits on government authority to "take" private property for public use.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2017 - TORTS

Minimum Credits: 2
Maximum Credits: 2
This course explores the field of private wrongs, which form the majority of lawsuits filed in U.S. courts. You will study the methods and policies for allocating responsibility and compensating losses when a person harms another person, their property, or other interests under civil (as opposed to criminal) law. The course examines the three main theories of tort liability - intentional, negligent, and strict liability - and surveys key categories of tort claims that MSL students are likely to come across in professional and personal pursuits. You will complete a variety of research and writing exercises aimed at cementing a foundational knowledge of tort law.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2018 - CRIMINAL LAW

Minimum Credits: 2
Maximum Credits: 2
This course introduces MSL students to the fascinating area of criminal law. The course analyzes doctrines of substantive criminal law, both traditional and current. It focuses on such issues as theories of punishment, the formal elements of various crimes, the theory of homicide and the different degrees of that crime, criminal causation, liability as an accessory to a crime, conspiracy, and defenses to crimes including excuse and justification. The course also covers white collar crimes, which are crimes relating to financial fraud in business or government transactions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2019 - LEGISLATION AND REGULATION

Minimum Credits: 2
Maximum Credits: 2
This course has three main goals: first, to offer MSL students an overall sense of how the legislative, administrative, and judicial arms of government interrelate to govern our society under our constitutional system of checks and balances; second, to teach students how legislatures make written law (statutes) and administrative agencies apply the law, using regulations and adjudications; and third, to introduce students to the tools and doctrines courts use to understand the meaning of statutes (statutory interpretation).
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2020 - CONTRACTS

Minimum Credits: 4
Maximum Credits: 4
What promises are legally enforceable? Why does the law enforce those promises? What does it mean to enforce a promise? This course explores those questions, using the basic concepts, principles, and doctrines of contract law, sometimes called "the law of broken promises." Specific topics include the requirements for formation of a contract (such as offer and acceptance), justifications for enforcing promises (such as consideration or detrimental reliance), justifications for denying or limiting enforcement (such as unconscionability or mistake), interpretation of contract terms, and remedies for breach of contract.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2021 - AMERICAN LEGAL SYSTEM

Minimum Credits: 3
Maximum Credits: 3
This course prepares you for success in all courses in the MSL program by providing an overview of key areas of law you will study in depth in later MSL courses and by helping you to begin to "think like a lawyer." You will gain experience reading and analyzing judicial decisions ("case law") and written laws ("statutes" and "regulations"). Equipped with this new skill, you will begin to understand how to use the law to predict answers to legal questions. You will practice writing basic legal documents, such as a case brief and a legal memorandum, and will participate in online discussions and other activities with classmates and the course facilitator as a tool to cement the knowledge you gain in the course. The course will also include a sampling of legal readings and documents.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2022 - CONTRACTS

Minimum Credits: 2
Maximum Credits: 2
What promises are legally enforceable? Why does the law enforce those promises? What does it mean to enforce a promise? This course explores those questions, using the basic concepts and principles of contract law, sometimes called "the law of broken promises." Specific topics include the requirements for formation of a contract (such as offer and acceptance), justifications for enforcing promises (such as consideration or detrimental reliance), justifications for denying or limiting enforcement (such as unconscionability or mistake), interpretation of contract terms, and remedies for breach of contract. Students will complete written exercises that reinforce essential aspects of contract law and drafting.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2024 - PROPERTY

Minimum Credits: 4
Maximum Credits: 4
Property law, broadly defined, governs relationships among people with respect to "things." These "things" include land ("real property"), tangible objects such as a casebook ("personal property"), and intangibles such as a publisher's right to prevent others from reproducing the original content in a book ("intellectual property"). The property course examines how property rights may be limited, in situations where more than one person has rights to the same piece of property, and in situations where one owner's rights must be balanced against the

rights of the owner of a separate piece of property. Topics covered in the property course may include: modes of acquisition of property (e.g., Capture, find, creation), present possessory estates and future interests, co-ownership of property, marital property, landlord-tenant law, land sales, title recording systems, easements, restrictive covenants, nuisance, public land use regulation (including zoning, eminent domain, and the issue of regulatory takings), and global property issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2028 - TORTS

Minimum Credits: 4
Maximum Credits: 4
This course explores the methods and policies for allocating losses from harm to one's person, property, relations, and economic and other interests. The course covers the substantive principles of tort claims and their defenses. The course examines the three main theories of tort liability: intent, negligence, and strict liability and analyzes the theoretical and practical aspects of tort liability.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2030 - AMERICAN LEGAL SYSTEM

Minimum Credits: 2
Maximum Credits: 2
This course prepares you for success in all courses in the MSL program by providing an overview of key areas of law you will study in depth in later MSL courses and by helping you to begin to "think like a lawyer." You will gain experience reading and analyzing judicial decisions ("case law") and written laws ("statutes" and "regulations"). Equipped with this new skill, you will begin to understand how to use the law to predict answers to legal questions. You will practice writing basic legal documents, such as a case brief and a legal memorandum, and will participate in online discussions and other activities with classmates and the course facilitator as a tool to cement the knowledge you gain in the course. The course will also include a sampling of legal readings and documents.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2032 - LEGISLATION AND REGULATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2033 - CIVIL PROCEDURE

Minimum Credits: 4
Maximum Credits: 4
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (PLAW)

LAW 2034 - SPORTS, ENTERTAINMENT AND ART INTELLECTUAL PROPERTY LAW

Minimum Credits: 3
Maximum Credits: 3
Topics covered will include: Copyright Law, including protection for written, video, and audio works. Trademark Law, including protections for names and logos. Patent Law, including protection of Sports, Entertainment and Art Technologies. Trade Secret Law. Right of Privacy Law
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2035 - ORGANIZATIONS, FINANCE & DISTRIBUTION LAW IN SEAL

Minimum Credits: 3
Maximum Credits: 3
Topics covered will include: Legal Entities (For-Profit, Non-Profit, Government, and Social Ent Finance Law, including Contract and Commercial Law Distribution Law, including First Amendment, Contract and Mass Media Regulation Law
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2036 - SPECIAL TOPICS IN SEAL

Minimum Credits: 3
Maximum Credits: 3
In this Independent Study course, students will submit a proposal to research and write a paper on a specific Sports, Entertainment and Art Law topic. Faculty will review, approve (and, if necessary, revise) the topic, and suggest relevant resources and experts to consult. Faculty will supervise the student as they research and write a research paper of at least 20-pages in length. Students must complete at least two drafts of their papers.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis

LAW 2038 - ENERGY LAW AND REGULATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (PLAW)
Course Attributes: MCSI - Sustainability Related

LAW 2039 - MEDIA LAW

Minimum Credits: 2
Maximum Credits: 2
The last two years have seen the revelation of "deep throat", the most famous confidential source of all time, juxtaposed with the spectacle of reporters going to jail for refusing to divulge confidential sources. Representing a media client today requires an understanding of the constitutional and statutory issues surrounding the gathering of news and protection of confidential sources. Although the confidential source issue is the hottest issue today, representing a media client involves much more. This course is designed to provide an overview of both the legal framework and the 'real world' considerations related to libel, invasion of privacy, access to courtrooms and judicial records, access to public records, protection of confidential sources, pre-publication review, and responding to subpoenas.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2043 - INTERNATIONAL COMMERCIAL ARBITRATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2046 - CRIMINAL LAW

Minimum Credits: 3
Maximum Credits: 3
Traditional and contemporary doctrines of substantive criminal law are analyzed, with focus on such issues as: theories of punishment, the formal elements of criminal culpability, the theory and degrees of homicide, criminal causation, inchoate crimes, accessorial and vicarious liability, conspiracy, and defenses of excuse and justification.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2047 - CRIMINAL PROCEDURE

Minimum Credits: 3
Maximum Credits: 3
The subject matter is supreme court decisional law and policy issues relating to the application and scope of the fourth, fifth, sixth, and fourteenth amendments to the United States constitution. Topics typically covered include: incorporation theory, right to counsel and related entitlements, the exclusionary rule, pretrial identification procedures, search and seizure law, and interrogation law. Students should gain both knowledge relating to constitutional law, which governs the permissible perimeters of police conduct and defendants' rights, and an informal sense of how the criminal justice system actually operates.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2050 - PRIVATE LAW: CONTRACTS

Minimum Credits: 1
Maximum Credits: 1
What promises are legally enforceable? Why does the law enforce those promises? What does it mean to enforce a promise? This course explores those questions, using the basic concepts and principles of contract law, sometimes called "the law of broken promises." Specific topics include the requirements for formation of a contract (such as offer and acceptance), justifications for enforcing promises (such as consideration or detrimental reliance), justifications for denying or limiting enforcement (such as unconscionability or mistake), interpretation of contract terms, and remedies for breach of contract. Students will complete written exercises that reinforce essential aspects of contract law and drafting.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2051 - PRIVATE LAW: TORTS

Minimum Credits: 1
Maximum Credits: 1
This course explores the field of private wrongs, which form the majority of lawsuits filed in U.S. courts. You will study the methods and policies for allocating responsibility and compensating losses when a person harms another person, their property, or other interests under civil (as opposed to criminal) law. The course examines the three main theories of tort liability - intentional, negligent, and strict liability - and surveys key categories of tort claims that MSL students are likely to come across in professional and personal pursuits. You will complete a variety of research and writing exercises aimed at cementing a foundational knowledge of tort law.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2052 - PRIVATE LAW III:PROPERTY

Minimum Credits: 1
Maximum Credits: 1
Property law governs relationships among people with respect to "things." These "things" include real property, personal property, and intellectual property. The course examines how real property rights may be limited in certain situations, and how the law balances the rights of a property owner against the rights of others. You will learn how a person or entity acquires property and the key attributes of property ownership; you will also study the law of leases (landlord-tenant law), land sales, easements and private covenants, public land use regulation including zoning, and limits on government authority to "take" private property for public use.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2053 - PUBLIC LAW I: CONSTITUTIONAL LAW

Minimum Credits: 1
Maximum Credits: 1
This course is an introduction to American constitutional law, with an emphasis on U.S. Supreme Court decisions interpreting and applying the U.S. Constitution. The course explores various methods of interpreting the Constitution and the doctrines that guide judges' application of its provisions. You will explore such topics as the role of the judiciary in reviewing acts of the political branches of government; the separation of powers and relations among the three branches of the federal government; the powers of the national government and how the concept of federalism limits the powers of Congress and the states; and constitutional protection of the rights of individuals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2054 - PUBLIC LAW II: CRIMINAL LAW

Minimum Credits: 1
Maximum Credits: 1
This course introduces MSL students to the fascinating area of criminal law. The course analyzes doctrines of substantive criminal law, both traditional and current. It focuses on such issues as theories of punishment, the formal elements of various crimes, the theory of homicide and the different degrees of that crime, criminal causation, liability as an accessory to a crime, conspiracy, and defenses to crimes including excuse and justification. The course also covers white collar crimes, which are crimes relating to financial fraud in business or government transactions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2055 - PUBLIC LAW III: LEGISLATION & REGULATION

Minimum Credits: 1
Maximum Credits: 1
This course has three main goals: first, to offer MSL students an overall sense of how the legislative, administrative, and judicial arms of government interrelate to govern our society under our constitutional system of checks and balances; second, to teach students how legislatures make written law (statutes) and administrative agencies apply the law, using regulations and adjudications; and third, to introduce students to the tools and doctrines courts use to understand the meaning of statutes (statutory interpretation).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2056 - BUSINESS & TAX LAW

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the laws governing corporations and other business enterprises, in particular how corporations and other business enterprises are formed, what structures a business enterprise may take and how those structures differ, how business enterprises govern themselves, how they raise capital, and what fiduciary duties are owed by corporate directors and officers. The Tax Law portion of this course will introduce the basic concepts of the Internal Revenue Code relating to individuals and business enterprises, as interpreted by the Internal Revenue Service and the courts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2057 - COMMERCIAL & TECHNOLOGY LAW

Minimum Credits: 2
Maximum Credits: 2
The Commercial Law portion of this course explores the primary U.S. legislation governing agreements to transfer an interest in goods -- Article 2 of the Uniform Commercial Code. Subjects covered include what transfers Article 2 applies to, how contracts are formed, warranties, acceptance, rejection and revocation of acceptance of goods, risk of loss, excuse for failure to perform, and remedies for breach. The Tech Law portion of this course focuses on intellectual property, which, in the Information Age, has taken on even greater significance. Intellectual Property (or ¿IP¿) law is designed to encourage the production of certain forms of information by granting property rights to the producers, enabling them to realize the value of the information they produce. In this course, we survey state intellectual property law (e.g., unfair competition and trade secrets) as well as federal intellectual property law, including trademark, patent and copyright. We examine some of the ramifications of recent technological developments on intellectual property law and some of the problems of international protection of intellectual property.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2061 - LEGAL ASPECTS OF HEALTHCARE COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2062 - INTRODUCTION TO LEGAL SYSTEM FOR HEALTHCARE AND COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2070 - INTRODUCTION TO THE LEGAL SYSTEM FOR HUMAN RESOURCES; HIRING AND FIRING

Minimum Credits: 3
Maximum Credits: 3
This course will begin by explaining primary sources of law and exploring the judicial process, which will include an overview of state and federal court systems, state and federal administrative agencies, jurisdiction, class actions, the civil litigation process, and alternative dispute resolution. It will next look at job classification: whether a worker is an employee, an independent contractor or a student intern. Next this course will review job selection and hiring issues, such as resume fraud, background checks, questions considered inappropriate to job seekers, employee contracts, non-competition and arbitration agreements, protecting trade secrets, job references, and vicarious liability. Finally, this course will cover selected legal disputes surrounding job termination: claims of wrongful discharge and violation of whistleblower laws.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2071 - WAGES, HOURS AND BENEFITS

Minimum Credits: 3
Maximum Credits: 3
This course will begin with an examination of issues presented by the Fair Labor Standards Act: minimum wage, overtime, off-the-clock work, and child labor. It will next look at human resource recordkeeping functions such as personnel file maintenance, medical file maintenance, performance evaluations and disciplinary actions. Finally, this course will cover selected employee benefits and income maintenance issues, such as health insurance, pensions, disability benefits, unemployment compensation, family and medical leave, and plant closing/mass layoff notification.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2072 - WORKING CONDITIONS

Minimum Credits: 3
Maximum Credits: 3
This course will begin with the topic of health and safety at work, including employer obligations under the federal Occupational Safety and Health Act and state workers compensation laws. It will next look at human resource challenges posed by employee handbooks and employer codes of conduct. This course will next cover employee privacy issues, such as workplace appearance and grooming, "love contracts," privacy off the job, employee monitoring, social media and politics in the workplace, and drug testing. Finally, this course will explore selected labor-management relations issues, including situations where employees (union and non-union) engage in concerted activity for their mutual aid and protection.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2073 - ANTI-DISCRIMINATION LAW

Minimum Credits: 3
Maximum Credits: 3
This course will cover federal, state and local anti-discrimination laws and will begin with identification of protected classes, including race, color, sex, religion, national origin, age, and disability. It will next look at employment discrimination enforcement mechanisms, legal defenses, and legal remedies. Finally, it will look at "types" of discrimination, including disparate treatment, disparate impact, harassment, and retaliation claims.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2074 - SELECTED TOPICS IN HUMAN RESOURCES LAW

Minimum Credits: 3
Maximum Credits: 3
In this course students choose a number of short elective courses in their areas of interest or choose electives in areas for study in greater depth.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2076 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 4
Maximum Credits: 4
Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethical standards.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2082 - CLIMATE CHANGE AND THE LAW

Minimum Credits: 2
Maximum Credits: 2
This course examines the problems of climate change and how law and policy and corporate America are responding to them. The course begins by describing what is encompassed under the current "climate change" debate; considering what science can tell us about the climate change issue, including the uncertainties in that science and the significance and role of descent from the mainstream view of the science. It then considers, given the current state of the science, how we should assess the actions that should be taken to respond to this problem. That assessment should take account mitigation vs. Adaptation. The course also considers the legal responses to the issue of climate change. This course will discuss the united nations framework convention on climate change (UNFCCC), the KYOTO protocol, and the likely future of both. This course will discuss the domestic federal legislation with regard to GHGS as well as certain regional initiatives and voluntary commercial GHG reduction schemes. This part of the course will be examining the "boomlet" in global warming litigation in federal and state courts looking at the administrative and tort actions pending in U.S. Courts. Finally, the course will address sustainability issues for business, including green building, carbon neutral strategies, certain esoteric accounting issues, some carbon trading issues. Lectures will include voluntary and NGO-driven business initiatives (proactive approaches) as well as certain secondary effects caused by climate change that affect businesses.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)
Course Attributes: MCSI - Sustainability Related

LAW 2089 - PUBLIC HEALTH LAW

Minimum Credits: 3
Maximum Credits: 3
Public health law touches the lives and livelihoods of every person. Understanding the intent, basic structure, and methods for employing the local, state, and federal laws governing public health activities will facilitate legal practice in a variety of disciplines, including: municipal, healthcare, environmental, and judicial practice. This is a survey course, intended to introduce students to the most commonly encountered national and world public health law issues. Specific topics include: an overview of the epidemiologic principles underlying public health law; police powers; balancing public and private interests at stake; privacy and confidentiality of public health information, emergency preparedness; search, inspection, embargo and condemnation of private property; abatement of nuisances and dangerous conditions; and the major federal statutes affecting public health. In addition, material concerning world public health issues will be presented to help students understand the community health benefit from comprehensive public health legislation. Finally, ongoing local public health law interventions will be analyzed using the basic principles introduced early in the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2090 - CONSTITUTIONAL LAW: FREEDOM OF RELIGION

Minimum Credits: 2
Maximum Credits: 2
This course will examine the first amendment's establishment and free exercise clauses, including the history and purpose of each, the applicable doctrinal tests, and how the supreme court's theory regarding the clauses has changed over time. Classroom discussion will focus on the specific application of these tests, the limitations of each, and whether the tests fulfill the purposes of the religion clauses. Finally, the course will explore how the requirements of the establishment and free exercise clauses can be reconciled and whether any of the current tests or theories can provide a workable solution and balance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2093 - THE LAW OF PROFESSIONAL SPORTS

Minimum Credits: 2
Maximum Credits: 2
Focusing on the 4 major professional sports leagues, this course will examine how the common law, state and federal statutes, and even certain constitutional doctrines have been applied to professional sports franchises, its players and agents, and its fans. The topics for discussion will include: the role and power of the commissioner; the importance of collective bargaining agreements, including uniform player contracts, in the development of a body of law governing the relationship between a player and his club; the current state of antitrust law in pro sports; the agent-player relationship; contract negotiations, including the salary arbitration process; the variety of intellectual property issues applicable to leagues, it teams and its players; the rights (or lack thereof) of pro sports fans, including the application of tort law principles to fan injuries; the attempts by pro-sports leagues and teams to control the off-field behavior of its players, and the approaches by the various leagues to regulate performance enhancing drugs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2099 - OIL AND GAS LAW

Minimum Credits: 2
Maximum Credits: 2
The development of oil and gas began in western Pennsylvania in the 1800s and Pennsylvania was at the forefront of oil and gas law from the beginning. After a long period of dormancy, Pennsylvania is again a leader in the production of oil and gas. With that resurgence, Pennsylvania is again a center of oil and gas law. This course will cover the basic legal principles, including the ownership of oil and gas interests, conveyancing, royalty disputes, operating agreements (and other operations-related contracts), pooling and hydraulic fracturing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2101 - CONSTITUTIONAL LAW

Minimum Credits: 4
Maximum Credits: 4
An introduction to American constitutional law, with an emphasis on U.S. Supreme court decisions. The course will explore various methodologies of constitutional interpretation and modes of constitutional analysis. Topics covered include the role of the judiciary in reviewing acts of the political branches of government; the separation of powers and relations among the three branches of the federal government; the powers of the national government and federalism-based limits on congress and the states; and individual constitutional rights.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2103 - EVIDENCE

Minimum Credits: 3
Maximum Credits: 3
This course is an introductory course on the rules of evidence and will focus on the federal rules of evidence. We will cover hearsay and its exceptions, relevance, the use of character evidence, cross-examination and impeachment, among other subjects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2105 - FEDERAL INCOME TAX

Minimum Credits: 4
Maximum Credits: 4
This course will introduce the basic concepts found in the internal revenue code, as interpreted by the internal revenue service and the courts. We will explore the concept of "income," and specifically consider the difference between ordinary income and capital gain, the timing of income inclusion, and the determination of a taxpayer's basis in property (which relates to the calculation of income). We will also explore exclusions and deductions that may reduce a taxpayer's income. This course has two primary goals: first, to give the students a basic familiarity with the internal revenue code so that they will be aware of tax issues that may arise in their practice, and second, to prepare students who have (or acquire) a deeper interest in tax for more advanced courses in taxation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2110 - ESTATES AND TRUSTS

Minimum Credits: 3
Maximum Credits: 3
This course provides a survey of the gratuitous, post-mortem transfer of wealth, including the substantive law of wills and trusts. Topics in estate law include probate and non-probate property; intestacy; bars to succession; constructive trusts; mental capacity; disclaimers; will formalities; holographic wills; revocation; integration; republication; revival; incorporation by reference; acts of independent significance; payable on death provisions; and predeceased beneficiaries. Topics in trust law include formation; parties; beneficiaries; resulting trusts; constructive trusts; discretionary trusts; trust protectors; self-settled asset protection trusts; and powers of appointment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2112 - BUSINESS ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
This elective course surveys the law of modern business organizations, including corporations, limited liability companies, and partnerships. The course covers topics such as business planning, corporate governance, fiduciary duties, shareholder liability and rights, as well as transactions in shares. The course also provides exposure to a variety of subjects, including agency, corporate finance, corporate taxation, mergers and acquisitions, and federal securities laws. No exposure to accounting, economics, or finance is necessary or presumed. Due to overlapping subjects, students are not permitted to take this course if they already have taken agency & partnership.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2126 - CORPORATE FINANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 2112; PROG: School of Law (PLAW)

LAW 2135 - COMMERCIALIZING NEW TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
The key challenge addressed in this joint project course between the Katz business school and the law school is how to commercialize new technologies. Commercialization is the process of transforming an invention (i.e. a new technique or artifact that performs a useful function) into an innovation (i.e. a product or service that creates value in a specific use). Whether a new technology originates in a University, in an established company, or with an individual inventor, several issues must be addressed in order to determine whether it is worth investing in further, and to decide how the technology can be commercialized for maximum long-term value. We will focus on four types of analyses as input to a commercialization strategy: (i) technology analysis, (ii) market analysis, (iii) competitive assessment, and (iii) business model evaluation. For each, you will be provided with one or two practical articles, which outline an analytical tool or approach, and we will discuss their application to one of the cases. Although we'll walk through these steps in the order listed, they will need to be conducted iteratively (e.g. as you learn more about market opportunities you may wish to revisit your initial assessment of the technology's core elements). Throughout the course, law students will have the opportunity to assist the team in assessing legal matters that impact commercialization (from intellectual property matters, to regulatory landscape impacts, to alliance considerations) while also gaining an understanding of key business goals, strategies and tactics. Innovation Practice Institute in order to receive approval to participate. Many factors will be considered in making the decision on which students will be approved for participation, including but not limited to: Life experience Participation in related courses in law school (e.g., Business Organizations, IP-related courses), other graduate studies, or undergraduate studies, JD/MBA Program candidacy, Previous employment experience in relevant fields
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2142 - LEGAL WRITING FOR THE TRANSACTIONAL LAWYER

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2146 - LANDLORD TENANT LAW

Minimum Credits: 3
Maximum Credits: 3
This course will examine issues relating primarily to the relationship between residential landlords and tenants, including the creation of the tenancy, the rights and duties of the parties, interpretation and application of critical lease provisions, and the framework for prosecuting and defending various types of eviction proceedings based upon a violation of law or breach of lease. Other topics may include discrimination in rental housing, rent regulation, public housing and housing-related public policy initiatives. There will be discussion and analysis of federal, state and local statutory authority and recent case law developments. Students will also have an opportunity to hear from lawyers and judges to get their "real-world" perspective on landlord-tenant practice. Students will be assessed through class participation, a mid-term exam, and a final exam.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2148 - THE LAWS OF INTIMACY

Minimum Credits: 2
Maximum Credits: 2
So much throughout the history of our nation, federal, state and local governments have attempted in various ways to regulate our society's most intimate relationships and decisions. Challenges to laws regulating marriage, sexual conduct, reproduction, health and other very personal decisions permeate our country's jurisprudence. These "laws of intimacy," provide a historical window through which one can view the evolution of some of America's greatest and most enduring societal and civil rights conflicts. This course will provide students with an overview of the history underlying various "laws of intimacy" and the legal principles that have come to shape the debates concerning these issues. Students will apply these legal principles in their own analyses of continued efforts to regulate the most personal of human behaviors and decision-making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2149 - LAW OF ARMED CONFLICT

Minimum Credits: 2
Maximum Credits: 2
The Law of Armed Conflict (LOAC), also known as International Humanitarian Law (IHL), is an area of public international law. It is responsible for regulating the conduct of armed hostilities, and balances the desire of states to prevent unnecessary suffering and destruction on one hand with the need to permit the effective waging of battle on the other. LOAC makes special provision for the protection of civilians, prisoners of war, the wounded, sick, and shipwrecked. LOAC applies to international armed conflicts (conflicts between states) and to non-international armed conflicts (conflicts between states and certain non-state groups). This course will explore: how conflicts are characterized (as IACs/NIACs or purely "domestic"actions); the main rules underlying the conduct of hostilities; and how

those rules are enforced. Real-world examples and case studies will be used to elucidate theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2151 - HUMAN DIGNITY RIGHTS UNDER LAW

Minimum Credits: 1
Maximum Credits: 1
This class is an introduction to the substantive law of dignity rights, a new and important emerging field of law in the U.S. and throughout the world. Dignity is the root idea that every person, everywhere has human dignity and the human right to have their dignity respected and protected under law. Dignity is a foundational value and a legal right in international law (e.g. as reflected by the 1948 Universal Declaration of Human Rights), regional law (e.g., the American Declaration of Human Rights), in nearly 160 domestic constitutions throughout the world, and in thousands of juridical opinions spanning the globe. Dignity is also an emerging constitutional value in the United States, reflected in jurisprudence regarding equality, same sex marriage, reproductive rights, capital punishment, substantive and procedural due process, and climate crisis. Moreover, in August 2019 the 400,000-member American Bar Association adopted the advancement of human dignity as a core function and ingredient of the rule of law in the U.S. and around the globe. This course would be a rare opportunity to learn more about this important new area of law.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2152 - NEGOTIATION SKILLS (BUSINESS)

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide students with an understanding of current negotiation theory and practice. Students will study negotiation theories, research and techniques. As a result of taking this course, students will have an understanding of how to negotiate effectively in transactions, as managers, and to build effective teams. The materials for this course will consist of readings, negotiation scenarios, and real-life examples. Students will engage in skill-building exercises, actual negotiations, classroom and online discussions, individual presentations, self-reflection, self-assessment, giving and receiving feedback, and close reading of assigned texts and other materials. Students will have an opportunity to explore negotiation theory, practice different styles and techniques, and develop their own strategic approaches to negotiations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2153 - GENDER LAW

Minimum Credits: 3
Maximum Credits: 3
This course will study various perspectives on theory and doctrine relating to gender in a number of different substantive areas of law. The course objectives are to: (1) integrate theory and practice in the study of law; (2) better understand how law both reflects and shapes understandings of gender in society; and (3) develop students' writing and analytical skills in addressing practical legal problems in areas relevant to gender and the law. The course is organized around several theoretical models of gender and feminism rather than by traditional subject matter categories. Within this framework, we will examine a number of different subject matter areas of law, including employment, education, athletics, work/family conflicts, the legal profession, sexual harassment, domestic violence, and the regulation of gender identity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2170 - ELECTION LAW

Minimum Credits: 3
Maximum Credits: 3
Election law is a hot topic in the U.S. today. Opinions about what our federal, state and local election laws require -- and should require -- are sharply divided. This course introduces key issues in U.S. election law in historical, political and (to a limited extent) international contexts. Topics include voting qualifications and limits on voting (e.g., residency requirements, poll taxes and age qualifications), how race, gender and property have shaped voting rights and participation, the highly decentralized and diverse structures of U.S. election administration, how concerns and claims of fraud shape election law, districting and the concept of vote dilution, partisan gerrymandering, and limits on campaign spending and speech. We will look at some of the dramatic legal conflicts that emerged around the 2020 presidential election over election structures like voting by mail, extended voting time periods, and ballot counting procedures, and over the power of state legislatures, state courts and federal courts to shape voting structures and ratify or undermine election results. And we will consider how current concerns about election integrity and restricted voting access at once raise new legal issues and connect with longstanding legal and political schisms. This is an introductory course that surveys a wide range of election law issues and structures. We will do one in-depth case study, however, of laws that ban voting based on criminal conviction. Felony voting bans highlight the sharp differences in voting rights among different states, offer a telling example of the way U.S. voting qualifications interact with racial inequality, and reveal how election law on the books does not entirely define election administration or the bounds of political participation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2198 - ANIMAL LAW

Minimum Credits: 2
Maximum Credits: 2
This course will examine the rapidly-growing and diverse field of animal law. Topics include the legal status of various non-human animal species, animals as property, animals in agriculture and food systems, animals in entertainment, animal protection laws, wildlife and endangered species, service animals, veterinary malpractice, and more. Applicable legal principles involve administrative law, contracts, torts, constitutional law, and civil and criminal procedure. Recent developments and current events in animal law will be discussed, including efforts to create and reform animal laws and the challenges faced when litigating and legislating on behalf of animals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

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Maximum Credits: 2
This course will examine the rapidly-growing and diverse field of animal law. Topics include the legal status of various non-human animal species, animals as property, animals in agriculture and food systems, animals in entertainment, animal protection laws, wildlife and endangered species, service animals, veterinary malpractice, and more. Applicable legal principles involve administrative law, contracts, torts, constitutional law, and civil and criminal procedure. Recent developments and current events in animal law will be discussed, including efforts to create and reform animal laws and the challenges faced when litigating and legislating on behalf of animals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

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Minimum Credits: 2
Maximum Credits: 2
This course will examine the rapidly-growing and diverse field of animal law. Topics include the legal status of various non-human animal species, animals as property, animals in agriculture and food systems, animals in entertainment, animal protection laws, wildlife and endangered species, service animals, veterinary malpractice, and more. Applicable legal principles involve administrative law, contracts,

torts, constitutional law, and civil and criminal procedure. Recent developments and current events in animal law will be discussed, including efforts to create and reform animal laws and the challenges faced when litigating and legislating on behalf of animals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2198 - ANIMAL LAW

Minimum Credits: 2
Maximum Credits: 2
This course will examine the rapidly-growing and diverse field of animal law. Topics include the legal status of various non-human animal species, animals as property, animals in agriculture and food systems, animals in entertainment, animal protection laws, wildlife and endangered species, service animals, veterinary malpractice, and more. Applicable legal principles involve administrative law, contracts, torts, constitutional law, and civil and criminal procedure. Recent developments and current events in animal law will be discussed, including efforts to create and reform animal laws and the challenges faced when litigating and legislating on behalf of animals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2200 - INTRODUCTION TO ACCOUNTING FOR LAWYERS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2201 - ADMINISTRATIVE LAW

Minimum Credits: 3
Maximum Credits: 3
It is next to impossible to practice law today without dealing with administrative agencies, federal or state, or the law they create. Indeed, more cases are adjudicated in administrative bodies than in the courts. The substantive law that is created and implemented by agencies is the subject matter of individual courses such as environmental law, securities regulation, taxation, and banking. It is the procedural/structural law that governs the creation and implementation of substantive law by agencies that is the focus of administrative law. We will discuss the different types of functions undertaken by agencies, for example, rulemaking and adjudication in all its forms and how those disparate functions determine the appropriate structure of decision-making. At the federal level, where we will focus our attention, the procedures that apply originate in a variety of sources, including the United States constitution, the administrative procedure act and other statutes, and agency rules. There is often a complex interplay among these sources of law, which will be one of the topics we will explore. Another is the relationship of agencies to the chief executive and the legislature, an area that implicates important constitutional doctrines, statutes, and executive orders. Finally, we will spend considerable time on the availability, timing, and scope of judicial review of agency action, including the doctrines of standing, ripeness, exhaustion of administrative remedies, and judicial deference to agency findings of fact, interpretations of law, and exercises of discretionary power.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2204 - COLONIALISM & INTERNATIONAL LAW

Minimum Credits: 3
Maximum Credits: 3

This seminar begins by exploring justifications for colonialism in international law. The course then turns to modern international law - students will be able to identify and analyze legacies of colonialism, the development of a racialized hierarchy of states, and the use of international law to produce, reproduce, and justify those hierarchies. Students will work on a major research paper throughout the course, and at the end of the semester will give a presentation on their research for the class.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 2207 - ANTITRUST

Minimum Credits: 3
Maximum Credits: 3
This survey course will focus on federal antitrust law, including the Sherman and clayton acts and cases construing those statutes. We will examine the legal and economic analyses of three major categories of anticompetitive conduct: agreements among competitors, monopolization, and horizontal mergers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2210 - PATENT LAW

Minimum Credits: 2
Maximum Credits: 2
For over two hundred years the united states patent system has stimulated innovation by conveying time-limited exclusionary rights to inventors who adequately disclose their novel and nonobvious inventions to the public. Throughout this time, technological advancements in various industries have repeatedly confronted the patent system with fascinating policy and doctrinal challenges. In a constant effort to keep up with the pace of innovation and ensure that the patent system fulfills its constitutional purpose to 'promote the progress of . . . Useful arts,' patent case law has become one of the most rapidly evolving and adapting areas of American law. Through study of judicial decisions and statutory provisions, this course will examine the substantive legal doctrine and policy underlying two primary aspects of united states patent law: (1) the requirements for obtaining a patent; and (2) the means by which an issued patent is enforced (and its validity challenged). Specific topics include patentable subject matter (including computer-implemented inventions and biotechnology), novelty, no obviousness, utility, loss of right, disclosure requirements, patent claim interpretation, literal infringement, the doctrine of equivalents, prosecution history estoppel, defenses to patent infringement resulting in invalidity and/or unenforceability, injunctive relief, damages, and the unique role of the united states court of appeals for the federal circuit in shaping patent law.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2212 - BUSINESS PLANNING, ENTREPRENEURSHIP AND TECHNOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will address key legal and business issues faced by entrepreneurs when establishing a commercial enterprise. Specifically it will address the protection and development of ideas, the commercialization of technology, and the legal and business aspects involved in forming, funding, operating, and managing the emerging business enterprise. The course will be taught from a business planning perspective. Through participation in the course students will be exposed to advanced business law concepts applicable to emerging companies in the business, technology, and medical fields.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2213 - CONFLICT OF LAWS

Minimum Credits: 3
Maximum Credits: 3
Disputes between parties from different states or countries and disputes having contacts with multiple jurisdictions raise a host of challenging legal questions, including: (1) which jurisdiction's law will govern the dispute; (2) whether and in what circumstances a judgment rendered in one state or country will be recognized and enforced in other jurisdictions; and (3) how courts should make these determinations. State laws, the federal constitution, and international and foreign law all play a role in deciding these issues, which can have a profound impact on the ultimate resolution of the controversy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2216 - EMPLOYMENT DISCRIMINATION

Minimum Credits: 3
Maximum Credits: 3
This course will examine federal statutory law as it applies to employment discrimination, with an emphasis on discrimination based on race, sex, color, ethnicity, national origin, religion and age. The most prominent statutes in this area are title vii of the civil rights act of 1964, the age discrimination in employment act, and an older civil rights statute from the reconstruction era, 42 U.S.C. 1981. The course will explore the substantive meanings of "iscrimination" under these acts, the models of proof for establishing a claim, the theoretical underpinnings of the statutes, and some of the procedural and remedial issues relevant to employment discrimination law.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (PLAW)

LAW 2219 - FAMILY LAW

Minimum Credits: 3
Maximum Credits: 3
A study of the relationship of the law to the family. Topics include: the legal definition of marriage, of family; the rights, powers, duties and obligations among family members; the extent and means of state involvement in the family's conduct of its own affairs; dissolution of the family, and the continuing obligations among family members thereafter; problems of jurisdiction and choice of law.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (PLAW)

LAW 2221 - JURISPRUDENCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 2225 - INTERNATIONAL BUSINESS TRANSACTION

Minimum Credits: 3
Maximum Credits: 3
This course analyzes basic international business transactions and the effects of U.S. Law, specific foreign law, and treaties on the conduct of the parties involved. The course covers issues of commercial law, regulation of cross-border transactions, dispute resolution, tax considerations, and antitrust law. Although a basic understanding of each of the areas of the law in the domestic context is helpful, there are no course prerequisites. Students are expected to develop an understanding of the U.S. Laws applicable to private international transactions

and an awareness of the risks inherent in doing business in or with other countries and their nationals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)
Course Attributes: Russian & East European Studies, West European Studies

LAW 2226 - INTERNATIONAL LAW

Minimum Credits: 3
Maximum Credits: 3
This course explores how international law regulates, or attempts to regulate, relations between states, and between states and individuals. It therefore examines both classical and contemporary topics such as the sources of international law, rights and responsibilities of states, jurisdiction, the incorporation of international law into domestic law, individuals as bearers of rights and obligations at the international level (in particular human rights law and humanitarian law), the law of treaties, the law on the use of force and the role of the united nations and the international court of justice in the peaceful settlement of international disputes. Several specific topics will be examined to illustrate the increasing impact of international law on domestic legal practice, and the influence of the united states on the development of modern international law.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)
Course Attributes: West European Studies

LAW 2232 - LAW AND LEGAL PROCESS IN LATIN AMERICA

Minimum Credits: 2
Maximum Credits: 2
This is a two-credit introduction to the legal tradition, juridical institutions, and legal processes of the countries of Latin America. The first several weeks of the course will be devoted to the Roman origin of the Civil Law tradition (of which, of course, the countries of Latin America are part), the development of that tradition in Medieval Europe (with special attention to Spain), the growth of legal and governmental institutions in Spain's American colonies, and the influence of the U.S. and the French Revolutions and of German Legal Science on the newly-independent countries of Latin America and on the present-day legal systems of those countries. As the course proceeds, the students will be introduced to procedural devices created in Brazil, Mexico, and Argentina to adjust portions of those countries' Civil Law systems to the selective introduction of Anglo-American constitutional concepts. Finally, some time will be allocated for study and discussion of relevant special interests of students enrolled in the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2240 - PENNSYLVANIA PRACTICE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2242 - PATENT LAW PRACTICE

Minimum Credits: 2
Maximum Credits: 2
A course designed for students with a special interest in patent law, and for those students preparing to take the patent bar examination.

Students are taught claim drafting, rules of practice and procedure followed by the United States patent and trademark office, how to draft patent documents and how to write a patentability search report.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2246 - SECURITIES REGULATION

Minimum Credits: 3
Maximum Credits: 3
A course designed for students with a special interest in patent law, and for those students preparing to take the patent bar examination. Students are taught claim drafting, rules of practice and procedure followed by the United States patent and trademark office, how to draft patent documents and how to write a patentability search report.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 2112; PROG: School of Law (PLAW)

LAW 2251 - BIOTECHNOLOGY LAW

Minimum Credits: 2
Maximum Credits: 2
Virtually every aspect of our lives is touched by biotechnology, so this class is designed as an introduction to many of the critical issues related to biotech and society. Specific topics include genetically modified organisms (Franken foods), patenting life, vaccination laws, human and animal testing, bioterrorism, biological weapons laws, bio-prospecting, pharmaceutical pricing, FDA laws, as well as scientific (and investor) fraud in biotech. The class also focuses on the policy relationships between law and public health, as well as related underlying economic incentives that can create tension in the life sciences. The class includes a number of guest speakers from industry including biotech licensing professionals and an FDA practice attorney. This class will be useful for anyone planning to practice law related to the life sciences including patent law. The issues are presented in a non-technical manner so the class is accessible to anyone interested in the field. It may be helpful to have exposure to patent law in general but it is not required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2258 - CAPITAL PUNISHMENT: THEORY AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2259 - ESTATE AND GIFT TAX

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2260 - INTELLECTUAL PROPERTY

Minimum Credits: 3
Maximum Credits: 3
In the information age, intellectual property (IP) law has taken on even greater significance. IP law is designed to encourage the production of certain forms of information by granting property rights to the producers, enabling them to appropriate the value of the information they produce. In this course, we survey state intellectual property law (e.g., Unfair competition and trade secrets) as well as federal intellectual property law including trademark, patent and copyright. We examine some of the ramifications of recent technological developments on intellectual property law and some of the problems of international protection of intellectual property.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2265 - LABOR LAW: PRIVATE SECTOR

Minimum Credits: 2
Maximum Credits: 2
This course, after a short review of American labor history, will focus almost exclusively on the national labor relations act, the nation's premier statute dealing with labor management relations in the private sector, and the model for many public sector state laws covering the field. The course deals with the rights of individual employees, employers, and unions with respect to concerted activity, unionization, the establishment of collective bargaining units, elections conducted by the national labor relations board, and the collective bargaining process. The course will also cover strikes, picketing and hand-billing by unions, the current restrictions or limitations on such conduct, and the administration of collective bargaining agreements, grievance processing, and the arbitration of disputes. We will study and critically examine procedural and substantive case law developed by the national labor relations board, and its impact upon labor-management relations in both unionized and non-union environments. The course concludes with a discussion of the future of labor relations. We will discuss more recent tactics employed by unions and management and engage in a debate as to whether and how the current labor laws should be amended. Classes will be a combination of both lecture and dialogue. We also will discuss critical issues with representatives from Pittsburgh's union and business communities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2268 - CONSTITUTIONAL LAW 2: GOVERNMENT POWERS, FEDERALISM AND THE PRESIDENCY IN THE TRUMP ERA

Minimum Credits: 3
Maximum Credits: 3
This upper level constitutional law course advances issues raised by the structural parts of the United States Constitution, as opposed to individual rights. Attention will be given to the relationships of the three federal branches of government, with emphasis on some of the powers and limitations of the executive, legislative and judicial bodies that arise from principles of separation of powers and national checks and balances. The course will also consider federalism and the respective roles of the national and state governments in some detail. These structural aspects of the Constitution will be discussed against the backdrop of the Trump Presidency, including, but not limited to, questions concerning judicial processes of indictment, Presidential pardons, the Emoluments Clause, the 25th Amendment, plenary powers over foreign affairs, the constitutionality of an international wall, congressional impeachment processes, and the legitimacy of sanctuary cities. Students will be expected to discuss the issues in a dispassionate, civil and academic fashion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2272 - BANKRUPTCY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2273 - STATE AND LOCAL TAX

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ or CREQ: LAW 2105

LAW 2275 - INTERNATIONAL AND FOREIGN LEGAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
Finding the law of foreign places, knowing the resources produced by international entities, and searching within the variety of documents that govern our world can qualify you for some of the best jobs in the legal market. In this one credit course you will acquire those skills while completing five short research projects and compiling your own vade mecum for future reference.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2283 - MENTAL HEALTH LAW

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the impact of the legal system on persons with mental health disabilities. Civil proceedings, such as guardianships, commitments and treatment rights will be covered. Civil law areas covered will include mental illness, substance abuse, confidentiality, consent, substitute decision making and the rights of parents and of children in juvenile proceedings, custody determinations and divorces. While the primary focus will be civil law, criminal law topics will include capacity, right to refuse treatment, and insanity as a defense. The role of mental health professionals and mental health courts will be a prominent issue in the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2290 - EMPLOYMENT LAW

Minimum Credits: 3
Maximum Credits: 3
Focuses on the law governing nonunionized workers and work sites, whether in private or public sector, and whether skilled labor or managerial/professional. Topics include: doctrine of employment at-will; wrongful discharge; title vii; equal pay act; pregnancy discrimination act; executive order 11246; hiring; promotion; harassment; comparable worth and discharge; OSHA; and erisa.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2291 - TRANSACTIONAL PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This course will offer an experiential learning opportunity in that all students will observe and perform many "lawyering" tasks normally entrusted to legal counsel who work on complex corporate and financing transactions. These tasks often require execution of instructions from a client or senior lawyer. Some require bilateral bargaining and judicious compromise. Some require collaboration or teamwork. The course will be cast primarily in the setting of a proposed acquisition of a "target company", as a going concern, by a so-called "private equity" investment firm. Students will be exposed to, and will engage by simulated participation in, the legal and practical dynamics by which transactions in this milieu are created, including: Negotiation of terms and bargaining over allocation of risks and uncertainties. Disclosure processes and protocols, for fulfillment of one party's appetite for information and the other's protective needs. Choice of transaction structure. Preparation of contract documents and drafting techniques. Dealing with "stakeholder" needs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 2112

LAW 2295 - EXPERT WITNESS

Minimum Credits: 2
Maximum Credits: 2
In recent years, the use of expert witnesses has proliferated as both civil and criminal litigation have become more complex and technical. In this course, students will learn when expert testimony is needed; where to find appropriate experts; how to work with the expert to develop a theory of the case; and many more issues leading up to the actual trial of the case. Once the case reaches the courtroom, students will learn how to organize and present their own expert's testimony in a clear and concise fashion, and how to pursue the challenging task of "doing battle" with the opposing expert. In the end, students will achieve a greater appreciation for the subtleties of expert testimony, while at the same time acquiring the tools to deal with witnesses who speak in technical and unfamiliar language.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2296 - CORPORATE GOVERNANCE

Minimum Credits: 2
Maximum Credits: 2
This course will examine the internal structures, processes and standards of behavior that are required by law in the governance of corporate organizations, utilizing a series of hypothetical problems. Particular attention will be given to the corporate director's duties of oversight, care and loyalty, to the shareholders' ability to enforce those duties, and to the concept of fiduciary "independence." Some features of the Sarbanes-Oxley act of July 2002 and related rules will also be considered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2297 - WORKERS' COMPENSATION

Minimum Credits: 2
Maximum Credits: 2
This course deals with the law, theory and practice of workers' compensation under state and federal administrative programs, including the Pennsylvania and other state acts; longshore and harbor workers' compensation act (LHWCA); federal employees' compensation act (FECA); and the federal employers' liability act (FELA). The student will study the essential aspects of such laws, including their development and purpose, coverages, the various levels and varieties of benefits provided and how claims are established and enforced. Special emphasis is placed on how such laws affect the rights of individuals to other remedies such as the ability to sue in tort or assert discrimination claims; how compensation programs are implicated in contemporary efforts to reform healthcare coverage and delivery; and

the role workers' compensation plays in occupational safety and health. The student will become familiar with the uniform policy of insurance for compensation coverage and how compensation coverage and other regulatory requirements are policed by governmental authorities. A pervasive theme of the course is the status of workers' compensation as a unique hybrid of administrative law and tort, with the consequent effects of such status on the law, theory and practice of the field.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2301 - FIRST AMENDMENT: FREEDOM OF EXPRESSION

Minimum Credits: 3
Maximum Credits: 3
This course will address the history, theory, case law, and practice of the First Amendment's protection of freedom of expression. We will cover the history and origin of the First Amendment's Speech Clause and the various freedom of expression doctrines developed in the case law, including (but not limited to) prior restraints, vagueness and overbreadth, political speech, symbolic speech, time, place, and manner-restrictions on speech, the distinction between content-based and content-neutral restrictions on speech, and categories of unprotected or 'less-protected' speech. We will not be covering the First Amendment's Religion Clauses because they are covered in other courses. Given time constraints, we also will not be covering the First Amendment's Press, Assembly, or Petitions Clauses in any detail (although we will likely reference them in connection with other freedom of expression doctrines).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2304 - COMMERCIAL TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
This course explores statutes and treaties governing agreements to transfer an interest in goods. The primary area of focus is article 2 of the uniform commercial code, and aspects thereof not covered in the first year contracts course; subjects covered include applicability of article 2, selected contract formation rules; warranties; acceptance, rejection and revocation of acceptance of goods; risk of loss; excuse for failure to perform; and remedies for breach. To a lesser, but significant extent, the course also covers the united nations convention on the international sale of goods (CISG), in force in the United States since 1988.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2307 - EDUCATION LAW

Minimum Credits: 3
Maximum Credits: 3
This course explores the often contentious relationship between federal, state, and local law and policy in the shaping of the American education system. It will examine past and current legal challenges faced by the system in areas such as school desegregation, discrimination on the basis of race, gender, disability, and immigration status, compulsory school attendance, freedom of religion, school financing and resource distribution, school discipline and policing, and federal mandates with high stakes testing. The course will equip students with a deeper understanding of the interconnection between the fundamental social and political principles underlying the education system and the development of education law jurisprudence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2319 - LAWYERS IN AMERICAN CULTURE

Minimum Credits: 3
Maximum Credits: 3
Lawyers like to think of themselves as members of one of the most helpful and important professions in American society. All too often, however, we encounter suspicion, derision or open hostility, not to mention nasty jokes. Public and private criticism of lawyers in the United States has become noticeably more intense in recent decades, but we have rarely attempted to survey its range, explore its roots, assess its legitimacy, or evaluate our own responses to it. This course proposes to do these things by examining characterizations and representations of lawyers in American culture from colonial times to the present day. We will relate changing views of American lawyers and lawyering to shifting social and professional circumstances; we will also explore the impact of those circumstances on fictionalized depictions of lawyers in American plays, novels, films, radio and TV, humor, art and song. We will consider what members of other prominent groups in American society from 17th Puritan clergy to 20th century businessmen have said or alleged about lawyers. We will also discuss how, where and with what effect lawyers have presented, promoted and defended themselves before the American public. We will conclude the course by considering how lawyers might learn from past experience and leverage the opportunities and challenges of 21st century law practice to restore or at least improve their public standing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2324 - INSURANCE LAW

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2328 - COPYRIGHT LAW

Minimum Credits: 3
Maximum Credits: 3
Copyright law deals with legal protection for certain kinds of human "creativity," including creativity expressed in books, music, and computer code. The copyright law course will describe the role that copyright law plays - together with other intellectual property law, other non-IP law, and other non-legal institutions - in positioning that creativity as part of a knowledge ecology and the knowledge economy. For authors and publishers, how does copyright law help them make money based on their creative output? For readers and consumers (and next-generation authors), how does copyright law preserve the power to access and use knowledge? And for law students, how do lawyers participate in doing both things, by representing and counseling clients? The course will describe the constitutional and statutory attributes of copyright law; the rights and remedies that copyright law provides for authors and publishers; constitutional and statutory protection that copyright law provides for the public; and the intersection of American copyright law with other intellectual property law, with state law, and with international law. Students are expected to master the substantive law of copyright, but that mastery is only a preliminary step. The major goal of the course is to teach students how to use the law to advance their clients' interests in creative products. The course does that by requiring students repeatedly to use their professional judgment in a counseling context.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2336 - LAND USE

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to provide students with a basic introduction to the mechanics and legal theories underlying land use controls. The course will strive to go beyond the theoretical by presenting a series of guest speakers (ranging from judges and zoning officials to land use planners, civil and transportation engineers, state environmental officials and developers) who deal with land use issues on a daily basis. Students will also be provided an opportunity to observe zoning board and court proceedings first hand and prepare class

projects and papers based upon these proceedings. The course will emphasize the inter-relationship and conflict with environmental regulations. Class discussions and projects will focus upon recent judicial and legislative developments in land use law.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2339 - LAW OF DISABILITY DISCRIMINATION

Minimum Credits: 2
Maximum Credits: 2
This course will provide in-depth analysis and discussion of the major federal disability discrimination statutes, including the Americans with disabilities act, the individuals with disabilities education act, and section 504 of the rehabilitation act. Readings and class discussions will focus on the application of these laws to issues such as employment, public accommodations, education, architectural barriers, transportation and insurance. The course will explore how disability discrimination statutes interact with other statutes, such as the social security act and the family and medical leave act.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2340 - ENVIRONMENTAL LAW

Minimum Credits: 3
Maximum Credits: 3
This course focuses on domestic environmental law and, in particular, on federal law rather than state law. The diverse and technical nature of modern environmental law is such that, in practice, lawyers often specialize in very narrow areas. Nevertheless, the same or similar moral, scientific, and policy arguments familiar to one area of the law are found in many of the others and similar regulatory approaches have been adopted or proposed for adoption to deal with very different types of environmental hazards. This course will focus its attention on the clean air and water acts, the national environmental policy act, the resource conservation and recovery act, the comprehensive environmental response, compensation, and liability act, and wetland protection, with passing coverage of various federal public land management statutes. We will explore the basic regulatory and non-regulatory approaches currently in place, including market-based systems to achieve better environmental quality, as well as proposals for changes to those approaches. A significant portion of the course will also be devoted to exploring issues presented by government and citizen suit enforcement of environmental laws. While administrative law is obviously relevant to much of environmental law given the fact that it is agencies which make and administer the law involved, the course will offer students an overview of administrative law principles which will be sufficient background for the purposes of this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2355 - NON-PROFIT ORGANIZATIONS

Minimum Credits: 2
Maximum Credits: 2
This class will survey the state and federal laws governing nonprofit tax exempt organizations. The course will examine the formation of nonprofit corporations under Pennsylvania law, principles of corporate management, and options for fundamental organizational change. In addition, the course will analyze the process of qualifying for tax exemption under the Internal Revenue Code and under the laws of Pennsylvania. Issues of private inurement, unrelated business income, charitable giving and fundraising regulations will be discussed. The course will include statutory and regulatory analysis, selected caselaw and case studies based on actual NPO's.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2360 - SECURED TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2386 - FOUNDATIONS OF LEGAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
Foundations of legal research is a one-credit concentrated course that will provide students with foundational legal research skills in case law, statutes and legislative history, administrative materials, use of secondary sources, sherardizing, and will integrate traditional print resources with online, CD-ROMs and internet resources. This course will meet once a week for the semester. The course is offered in three sections and is required for second-year students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2395 - HEALTH LAW AND POLICY

Minimum Credits: 3
Maximum Credits: 3
This is a survey course of fundamental issues, covering a broad range of topics, in health law and policy intended both for students who merely wish to become acquainted with the field, and for those who plan on concentrating in the field. For those planning on concentrating, this course provides a foundation for in-depth courses such as health care business transactions, health care fraud and abuse, health care antitrust, and financing in the healthcare industry. For students not concentrating in health law, it provides an introduction to the multitude of issues with which lawyers working with clients in the health care industry need to be familiar. The course examines the role that law plays in achieving three societal goals: increasing access to health care, controlling health care costs, and assuring quality of health care. Specific topics are the structure of the health care system(including integrated health care delivery systems); regulating quality through licensing, staff privileges, and accreditation; labor and employment issues; the legal obligation to provide treatment, including Emtala); tax exemption and charitable purposes; health care reform; state and federal regulation of health insurance and managed care (including Erisa); federal initiatives to expand private insurance coverage(including HIPAA, cobra and ADA); Medicare/Medicaid eligibility, benefits, and reform efforts; health care fraud and abuse (false claims act, ant kickback statute, stark); and antitrust issues in the health care industry. This course does not examine issues of professional liability, and it does not cover ethical issues in health care (covered in, which is the subject of "bioethics and law").
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2402 - CRIMINAL PROCEDURE 2

Minimum Credits: 3
Maximum Credits: 3
Criminal Procedure II (The Adjudication Process) -addresses all of the major federal constitutional issues that arise during criminal adversarial proceedings in the United States - in both the state and federal court systems. This course will provide a detailed, practical, and realistic understanding of what occurs in a criminal case from the time an accused is arrested until the time of conviction, sentence, and appeal. Procedures in both federal and state courts will be discussed including preliminary issues such as arrest procedure, prosecutorial discretion in determining what charges will be filed, bail concerns, preliminary hearings, and grand jury proceedings. The course will then address pre-trial matters such as discovery, Brady material, and pre-trial motions practice. This section will include but not be limited to joinder and severance, speedy trial, plea bargaining, and pre-trial habeas corpus. The "trial" section of the course will discuss jury issues

including jury selection and a variety of procedural issues that arise at trial including confrontation clause, hearsay, double jeopardy, and Bruton issues. Supreme Court cases, such as Apprendi and Alleyne, will generate an important discussion of not only appropriate language in indictments, but verdicts and verdict slips as well. Time will also be spent on sentencing, both state and federal. We will also briefly cover the appellate and collateral attack post-conviction processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2404 - CYBERSPACE AND THE LAW

Minimum Credits: 3
Maximum Credits: 3
As the internet and the world wide web (www) become more central to the world's commercial, social and cultural life, it makes sense to speak of a new dimension in the ways people communicate and express themselves, conduct business, and organize themselves in pursuit of mutual interests via the global information infrastructure: cyberspace. This course will examine the legal and policy issues arising in connection with cyberspace, including: protecting privacy expectations in internet communications, protecting intellectual property in and fair use of materials published in cyberspace, information torts and jurisdictional issues occasioned by worldwide computer networks, issues of protected speech, defamatory speech, and the treatment of pornography, commercial transactions in cyberspace.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2418 - IMMIGRATION LAW

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2422 - ALTERNATIVE DISPUTE RESOLUTION

Minimum Credits: 3
Maximum Credits: 3
Legal and other disputes are increasingly resolved by dispute resolution processes other than litigation. Given this trend, it is important for law students to be familiar with these alternative processes, such as arbitration and mediation, and the benefits and risks they present. At the same time, these alternative processes require creative and interdisciplinary problem-solving perspectives and skills. This course begins with an overview of problem-solving approaches, and is followed by the study of arbitration, mediation, and hybrid processes. The course emphasizes interactive student discussion and activities, including role-plays, exercises, and presentations that simulate professional activities of lawyers, arbitrators, mediators, and clients. The classes build on each other, so that knowledge that we acquire in the earlier classes will be integrated into our materials, discussion, and activities in later classes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)
Course Attributes: Asian Studies

LAW 2425 - LOW INCOME TAX CLINIC

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2430 - INFORMATION PRIVACY: LAW AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 2460 - REAL ESTATE TRANSACTIONS

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2464 - BIOETHICS AND LAW

Minimum Credits: 3
Maximum Credits: 3
This is an introduction to a variety of issues in biomedical ethics brought about primarily by the innovative techniques and technologies that the biomedical sciences have developed such as artificial reproductive technologies, genetic screening and engineering, and life support systems. The primary focus of our inquiry will be whether these innovations should be regulated by law and if so how. Topics covered include right to refuse medical treatment (including life-sustaining medical treatment), informed consent, physician-assisted suicide; sterilization, abortion, artificial reproduction, surrogacy; genetic counseling, screening, and testing; stem cell research and cloning; organ transplantation; and confidentiality and privacy in health care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2468 - PSYCHOLOGY AND LAW

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2475 - SPANISH FOR LAWYERS

Minimum Credits: 2
Maximum Credits: 2
This is a Spanish language course in a legal context, designed to acquaint students with the rudiments of the Spanish language and with Spanish legal vocabulary sufficient to permit an American attorney to communicate effectively with Spanish-speaking clients. Vocabulary, readings, class discussions and written work will be in a legal context. No prior study of Spanish is required.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)
Course Attributes: West European Studies

LAW 2478 - HIGHER EDUCATION AND THE LAW

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 2481 - INTELLECTUAL PROPERTY LICENSING

Minimum Credits: 2
Maximum Credits: 2
This course will concentrate on contract drafting and the application of intellectual property and contract law to license agreements; licensing provisions and legal issues regarding copyrights, patents, trade secrets, trademarks and computer software will be reviewed as will related antitrust, international and tax law issues; issues related to the internet and university technology transfer will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2491 - ADVANCED LEGAL RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course will build on the material presented in the Foundations of Legal Research course, and will provide students with a broader array of strategies and skills to approach legal research projects. The course is to be broadly divided into three components. The first component focuses on strategic approaches to legal research, how to incorporate the research process into the litigation or transactional problem presented and to more effectively integrate the various legal research tools available into that strategic approach. Cost-effective research strategies, including strategies to effectively manage real-world Lexis and Westlaw costs will also be covered. This component will somewhat overlap with, but significantly expand on material from the Foundations course, and will give students a broader understanding of the research process. The second component of the course recognizes that not all substantive areas of the law utilize the same research resources, strategies and techniques. During this component of the course, students will be exposed to specific topical research areas and spend several weeks looking at the unique resources and research challenges presented by those areas. The third component of the course returns all students to the same material and focuses on non-legal research areas such as medical and scientific research, business and corporate research, investigative research, and financial and marketplace research. The use of experts in these areas as guest lecturers is anticipated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2508 - PERFORMING JUSTICE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Anyone who has set foot in a courtroom knows that what goes on there has as much to do with drama as with rational inquiry. Judges act as if they are finding legal rulings by applying objective rules, while making subjective choices about which rules to apply and how. Witnesses testify as if responding spontaneously to questions that actually have been rehearsed. Lawyers are professionally histrionic paid to play righteous believers in their clients' virtue. This is the decision making process Jeremy Bentham called "theater of justice" and the

American Legal Realists derided as a "ceremonial routine" of "word jugglery," "legal ritual," "magic solving words" and verbal "sleight of hand." In this seminar we will explore some standard critiques of law as performance. Along the way we will consider how the theatrical, ritual, and perhaps even magical aspects of legal process might both detract from and contribute to the production of justice. We will approach these questions through reading and discussing a wide range of texts, including, judicial opinions, law review articles, performance theory, plays, social criticism, and ethnography. There will be at least one "field trip" to see some legal performance live, and we will likely make use of film and video as well.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2585 - EDUCATION JUSTICE AND CIVIL RIGHTS SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to education and civil rights law and policy that are the foundation for civil rights protections in K-12 public education. Students will explore key education and civil rights issues in the following topic areas: school segregation (past and present), the criminalization of students of color, school privatization, and social movements for education justice. Students will emerge from this class with an understanding of historical and current flashpoints in education and civil rights in the United States and the role of lawyers and the law. In addition to analyzing key cases, articles, and social science research, students will explore how law students and lawyers can play a meaningful role through policy, litigation, and advocacy for social change.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2609 - PROFESSIONAL RESPONSIBILITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2623 - CYBER POLICY, CRIME & NATIONAL SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course will explore theoretical and practical aspects of nation-state legal issues concerning cyberspace, with a particular focus on computer-related crime, espionage, war, and international governance. The course will review key legal cases, policy, and legislation. In tandem with a series of expert guest speakers from the field, the course will reflect on the roles of national and international governments, the legal and ethical dimensions of cybersecurity, the relationship between the public and private sectors, and the increasing tensions between privacy and national security. The course will consist of four major components: (1) an assessment of the current cybercrime threat landscape, (2) a review of the relevant national and international legal frameworks, (3) analysis of case studies of significant prosecutions, and (4) assessments of domestic and international policy and security challenges, including gaps in existing frameworks. Students who complete the course will obtain an enhanced understanding of the legal, policy, and security frameworks at the core of these challenging issues for nation-states.
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2626 - LOBBYING AND ADVOCACY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2627 - WICKED PROBLEM INNOVATION

Minimum Credits: 3
Maximum Credits: 3
"Wicked Problem Innovation" is a new, innovative, cross-disciplinary course that brings together graduate students from Pitt Law, the Katz School of Business, and other units across the University of Pittsburgh to engage deeply in a selected acute problem that faces Pittsburgh and the broader world. "Wicked" problems are stubborn, complex societal and business challenges like global climate change, income disparity, inclusive economic growth, and universal healthcare. These problems arise from a variety of causes and affect multiple stakeholder groups, each of which has a different idea of how the problem arises and what can be done to improve it. While it is likely not possible to "solve" these problems in a traditional sense, it is possible to make sustained progress in tackling them. Course participants will research the selected problem from legal, business, historical, and other perspectives, identify and consult with stakeholders, and ultimately design a process to improve progress on the selected problem. During the course, students will learn to work collaboratively with peers and instructors from a variety of disciplines, and will practice a host of practical skills, including interviewing witnesses and clients, negotiating outcomes, and actively problem solving across a range of subject matter areas. Additionally, students will gain substantial and deep contacts in local, state, and potentially national, government, nonprofit, and business communities. Students will come away from the course will critical skills in working collaboratively across subject matter boundaries and experience creating an innovative problem-solving process from the ground up.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2631 - LAW AND ENTREPRENEURSHIP

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (PLAW)

LAW 2640 - DIVERSITY INTERGROUP DIALOGUE

Minimum Credits: 1
Maximum Credits: 1
The Diversity Intergroup Dialogue Workshop is open to all 2L, 3L, LLM, MSL and joint-degree Pitt Law students and brings together those with diverse cultural and social identities in a small group setting, with the goal of engaging students in experiential learning as well as open and constructive dialogue concerning issues of intergroup relations, conflict and community. Students will learn from each other's experiences and examine how race, ethnicity, class, religion, age, disability, sexual orientation, gender identity and expression relate to power and privilege; and will practice constructive approaches to dialogue and the bridging of differences. Students will also consider how attorneys in a pluralistic society can use Intergroup Dialogue skills to better serve clients, advance causes and enhance professional satisfaction. The workshop process is designed to stimulate learning, growth and engagement across the cultural identities identified above to provide students with the affective, behavioral and cognitive acumen that will promote skill-building to navigate effectively in our increasingly pluralistic nation and world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2642 - FEDERAL HATE CRIMES

Minimum Credits: 2
Maximum Credits: 2
This course will focus on federal hate crimes. Students will examine and analyze relevant statues and key cases with a focus on gaining a practical understanding of the elements and application of these statutes. Students will have the opportunity to engage in discussions regarding the larger societal conversations relevant to these cases in order to better understand the various lenses through which prospective jurors may view such cases. Students will also learn about the tailored strategies applicable to investigating and litigating federal hate crimes cases, as many of these strategies are unique to this specific area of law. In addition to exploring various fact patterns through in-class discussion, students will utilize a specific hypothetical case fact pattern throughout the duration of the course that will serve as a basis for exploring the relevant statutes and strategies. As the course progresses, students will investigate the hypothetical case (including through an "investigation workshop"), analyze evidence related to the case, and litigate the case (through a "litigation workshop" and mock trial exercises). Please note that the subject matter of this course will require students to read about, view, listen to, and discuss material that may be disturbing or offensive to some or all students. Such material may include recordings or descriptions of the use of racial slurs and other offensive language, recordings or descriptions of the use of violence targeting victims based on a specific trait (race, ethnicity, gender, sexual orientation, religion, etc.), and other similar material.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2644 - PHILOSOPHY OF CRIME & PUNISHMENT - NATIONAL & INTERNATIONAL PERSPECTIVE

Minimum Credits: 2
Maximum Credits: 2
This class will examine the philosophical and moral justifications for punishment in both American and international criminal justice systems, with a specific focus on the impact that the philosophy of punishment has on the individual and more broadly, on society as a whole. We will examine legal theory and concepts while fostering philosophical contemplation and discussion. There are four main theories of punishment: deterrence, retribution, rehabilitation and incapacitation. Depending on era and country, different views take a different approach and order of importance; this class will examine the four main theories in other countries, as well as our own. We will examine which philosophy of punishment is most effective and why. As we attempt to move toward a more socially conscious view of justice, we must ask a series of "why" and "how" questions: why do we punish those who have violated the law, and how do we decide the proportionality of the punishment in question? What philosophy do other countries use/ what philosophy has shaped our modern view of crime and punishment? Are we becoming more or less moral? Whose standards of morals? Are we becoming a more or less compassionate society? And how do those standards compare to the moral/philosophical views of comparative criminal justice systems in other countries? This class will be taught by lecture and discussion and will require short essays and one longer research paper. The purpose of these essays will be to make a well-reasoned argument supported by the readings, as well as counterpoints.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2653 - INTERNATIONAL HUMAN RIGHTS

Minimum Credits: 3
Maximum Credits: 3
This course will examine the history of the development of international human rights laws, the concepts behind the current status of those laws, and the mechanics present for enforcing those laws in international, regional, and domestic legal systems. The course will include a discussion of the theories behind international human rights law, the different hierarchies of human rights and the differing approaches to applying those hierarchies, and the ability (or lack thereof) to enforce international human rights standards. Students are required to either have already taken international law or to take it in conjunction with international human rights law.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5226; PROG: School of Law (LAWSC)

LAW 2666 - LOBBYING AND ADVOCACY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: PLAW

LAW 2670 - PERSONAL FINANCIAL PLANNING & BUSINESS START-UP PLANNING

Minimum Credits: 1
Maximum Credits: 1
This course deals with the basics of personal financial planning and startup business planning. Students will create personal financial plans based on projected horizons of 1, 3 and 5 years. The primary focus is on near term planning with emphasis on: initial savings, paying off student debt, judicious use of credit, and investing for short and long term goals. Also, students will create a comprehensive business plan for starting a law firm after graduation. This plan's focus should be on business structure, financing, cash management and cost control. Topics such as benefits and insurance should be covered as well. Students will prioritize and codify their plans based on personal, professional and lifestyle objectives projected over each plans stated horizons.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2673 - HEALTH CARE FRAUD, ABUSE, AND COMPLIANCE

Minimum Credits: 2
Maximum Credits: 2
United States health care spending reached $3.6 trillion in 2018, accounting for 17.7% of the gross domestic product. Government officials have been quoted as saying that up to ten percent of this spending is due to fraud, waste, or abuse. In fiscal year 2019, the federal government won or negotiated $2.6 billion in health care fraud and abuse judgments and settlements, as well as additional amounts from administrative cases. As one of the most highly regulated industries in the United States, health care entities are required to comply with numerous statutes and regulations, including those related to fraud and abuse. These laws are increasingly complex, thereby exposing health care entities to liability for non-compliance. Thus, individuals involved in the administration and delivery of health care and lawyers who wish to practice health law must be well-versed in the laws and regulations that govern health care fraud, abuse, and compliance, as well as the strategies health care entities employ to address these concerns. In this course, students will explore the major federal civil, administrative, and criminal laws that have been used to combat health care fraud and abuse. These laws include the False Claims Act, the Anti-Kickback Statute, the Physician Self-Referral Law, and the Civil Monetary Penalties Law. Related compliance strategies and the practical compliance issues faced by health care providers will also be covered, including the seven elements of effective compliance programs, conflicts of interest and governance, repayments and disclosures, privacy and security, and corporate integrity agreements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2676 - PERSONAL FINANCE & BUSINESS FOUNDATIONS

Minimum Credits: 2
Maximum Credits: 2
This course deals with the basics of how to develop and implement a sound personal financial plan and startup business plan. Students will create both a personal plan and a business plan based on projected horizons of 1, 3 and 5 years. The primary focus is on near term planning with emphasis on: initial savings, paying off student debt, judicious use of credit, and investing for short and long term goals. Also,

students will create a comprehensive business plan for starting a law firm after graduation. This plan's focus should be on business structure, financing, cash management and cost control. Topics such as benefits and insurance should be covered as well. Students will prioritize and codify their plans based on personal, professional and lifestyle objectives projected over each plans stated horizons.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2683 - TRANSACTION NEGOTIATION AND DOCUMENT DRAFTING

Minimum Credits: 2
Maximum Credits: 2
This course is designed to strengthen students skills in two areas of fundamental importance to any transactional lawyer negotiation and drafting. Specifically, students will learn how to develop and most effectively deploy their own negotiation style, understand the bargaining process, and then develop what they have learned to draft negotiated agreements with counterparties. The course is experiential, and it will rely largely on simulations and mock exercises to assess student progress in realizing the course objectives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2684 - MEDIATION SKILLS

Minimum Credits: 3
Maximum Credits: 3
Mediation continues to be utilized by parties and the judicial system as a preferred alternative to litigation. This course is designed to train students to become mediators and to meet the minimum standards set by the courts for mediation of cases. Students may use this course to satisfy accepted requirements for a basic 40-hour mediation training program. This course focuses on the structure and goals of the mediation process and on the skills and techniques used to assist parties in overcoming barriers to dispute resolution. This will be achieved through a thorough discussion of the theories and sources of conflict, theories of conflict resolution conciliation processes, mediation, negotiation, and professional ethics. These theories are then tested in simulations, exercises, and role plays to allow the students to develop mediation skills, implement creative options for resolving conflict, and explore the effectuation of the theories and their skills. In addition, it is incumbent on all lawyers to be familiar with the mediation process and become competent in representing clients in mediation. The course also will cover ethical issues for lawyers and mediators, dealing with difficult people, power imbalances, and cultural considerations.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 2686 - LEGAL INSTITUTIONS & THE HOLOCAUST

Minimum Credits: 3
Maximum Credits: 3
The Legal Holocaust in Hitler's Europe and its Aftermath in US Federal Court. This course examines the development of racial laws during WWII in France, Germany, and the British Channel Islands. We will use original documents and actual statutes and cases to understand how what was once legally grotesque became "law" in these places. We will then fast forward a half century, via the Nuremberg war-crimes of 1946, to the time when victims or their heirs began bringing restitution lawsuits in US federal courts, a development that continues to this day, the instructor being one of the plaintiffs' lawyers in a half dozen such cases, including a pending matter in the Seventh Circuit. Thus the course examines historical material as well as complex contemporary questions under US federal law and standards of professional ethics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2690 - BLOCKCHAIN FOR LAWYERS

Minimum Credits: 2
Maximum Credits: 2
The Blockchain course reviews how Blockchain technology is significantly altering the way business is being conducted generally and in specific fields like finance, healthcare and data privacy, to only name a few. Those changes, in turn, will bring many new legal challenges that our laws and courts , regulatory agencies and other institutions must address. This course will consider some of the legal opportunities and challenges facing existing and new applications of the blockchain technology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2693 - CRIMINAL POLICE MISCONDUCT

Minimum Credits: 2
Maximum Credits: 2
This course will address federal criminal police misconduct with a specific focus on the use of excessive force by police. Students will examine and analyze relevant statues and key cases with a focus on gaining a practical understanding of the elements and application of these statutes. Students will have the opportunity to engage in discussions regarding the larger societal conversations relevant to these cases in order to better understand the various lenses through which prospective jurors may view such cases. Students will also learn about the tailored strategies applicable to investigating and litigating police misconduct cases, as many of these strategies are unique to this specific area of law. In addition to exploring various fact patterns through in-class discussion, students will utilize a specific hypothetical case fact pattern throughout the duration of the course that will serve as a basis for exploring the relevant statutes and strategies. As the course progresses, students will investigate the hypothetical case (including through an "investigation workshop"), analyze evidence related to the case, and litigate the case (through a "litigation workshop" and mock trial exercises). Please note that the subject matter of this course will require students to read about, view, listen to, and discuss material that may be disturbing or offensive to some or all students. Such material may include videos of police shootings, recordings or descriptions of the use of offensive language, and other similar material
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2694 - TRADEMARK LAW

Minimum Credits: 3
Maximum Credits: 3
Trademark law concerns common law and statutory bases for obtaining and enforcing legal protection for commercial symbols, including logos, slogans, and other potentially distinctive product and service identifiers. The trademark law course will describe the role that trademark law plays - together with other intellectual property law, other non-IP law, and other non-legal institutions - in positioning that commercial "speech" as part of commercial markets generally. For producers of goods and services, how does trademark law help them make money? For competitors, for purchasers of goods and services, and for citizens generally, how does trademark law preserve the power to access and use information about the commercial sphere - and to extend that information into other "free speech" contexts? And for law students, how do lawyers participate in doing both things, by representing and counseling clients? The course will cover the constitutional, statutory, and common law attributes of trademark law; the rights and remedies that trademark law provides for producers; the protection that trademark law provides for competitors and consumers; and the intersection of American trademark law with other forms of intellectual property protection, with the first amendment, and with international law. Students are expected to master the substantive law of trademark, but that mastery is only a preliminary step. The major goal of the course is to teach students how to use the law to advance their clients' interests in commercial symbols. The course does that by requiring students repeatedly to use their professional judgment in a counseling context.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2695 - TRADEMARK LAW PRACTICE

Minimum Credits: 2
Maximum Credits: 2
A course to delve into trademark and unfair competition practice before the USPTO, trademark trial and appeal board and in state and federal courts. The course will advance practice oriented trademark issues including: the identification, protection and enforcement of trademark rights; the relief that can be acquired through enforcement of those rights; the role of lawyer as counselor in adopting trademarks as part of the branding process; avoiding infringement of others' trademarks; and the assignment and licensing of trademarks. The course will probe these same concepts in other jurisdictions, as well.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2696 - MILITARY LAW

Minimum Credits: 3
Maximum Credits: 3
The United States Military has become a unique training ground for lawyers in the modern era. Military lawyers or "JAG's" operate worldwide in almost every discipline of law in almost every country on the planet. This course will instruct upon the fundamentals and foundations of the military justice system including its origin and evolution, Special and General Courts?Martial, Administrative Separation procedures, unique evidentiary considerations, the Uniform Code of Military Justice and the Law of Armed Conflict. This course will also discuss the role and relationship between military lawyers and their commanding officers and the many ethical considerations surrounding military decision?making processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2701 - HEALTH CARE FRAUD AND ABUSE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
United States health care spending reached $3.2 trillion in 2015, accounting for 17.8% of the gross domestic product. Government officials have been quoted as saying that up to 10 percent of the money the United States spends on healthcare is due to fraud, waste, or abusive practices. If true, that now amounts to over $3 billion per year. In Fiscal Year 2016, the federal government won or negotiated over $2.5 billion in health care fraud judgments and settlements, as well as additional amounts from administrative cases. Thus, health care fraud is a major priority of both federal and state agencies and lawyers who wish to practice health law would be wise to understand the laws that govern health care fraud and abuse. This course focuses on the major civil, administrative and criminal laws that have been used to combat health care fraud and abuse, broadly defined as actions by health care providers (e.g., hospitals, physicians and physician practices, nursing homes, medical device and pharmaceutical manufacturers, home health agencies, clinical laboratories, and rehabilitation facilities) that are inconsistent with accepted business and medical practices. These laws include the federal civil False Claims Act, the federal Anti-Kickback Statute, the Stark Law, and the Civil Monetary Penalties Law. While the class focuses on federal law, health care fraud and abuse laws at the state level will also be discussed. Related compliance strategies and the practical compliance issues faced by healthcare providers will also be covered.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2706 - CRIMINAL RECORDS AND EXPUNGEMENT SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2718 - TECHNOLOGY AND EMPLOYMENT LAW

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 2719 - APPLIED LEGAL DATA ANALYTICS & AI

Minimum Credits: 3
Maximum Credits: 3
Technological advances are affecting the legal profession. While it is hard to predict the changes that machine learning and natural language processing will bring, legal professionals certainly will need to understand the new techniques and how to use and evaluate them. This course, co-taught by instructors from the University of Pittsburgh School of Law and Intelligent Systems Program, provides a hands-on practical introduction to the fields of artificial intelligence, machine learning and natural language processing as they are being applied to support the work of legal professionals, researchers, and administrators. Researchers in the field of Artificial Intelligence and Law (AI&Law) have been applying recent advances in natural language processing and machine learning to extract semantic information from legal documents and to use it to solve legal problems. Meanwhile, the commercial LegalTech sector is thriving. Companies and startups have been tapping into the legal industry's need to make large-scale document analysis tasks more efficient, and to use predictive analytics for better decision making. This course will help law students gain literacy with these technologies and learn how to apply them to the kinds of legal problems they have studied or will encounter in practice. This course not only teaches law students about the new tools, but enables students to gain practical experience using them under close mentorship and in project-based collaboration with students from computer science backgrounds who want to learn about the law. Lecture sessions will alternate with working sessions where instructors assist groups with projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2720 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 0
Maximum Credits: 0
Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethical standards.
Academic Career: Graduate
Course Component: Clinical
Grade Component: No Grade Required
Course Requirements: School of Law (PLAW)

LAW 2721 - FDA LAW AND POLICY

Minimum Credits: 3
Maximum Credits: 3
The Food & Drug Administration is charged with enforcing the laws and regulations surrounding the development, sale, and marketing of medical products, like drugs, devices, biologics, and supplements.These laws and regulations dramatically impact medical innovation,

access to medical technologies, and consumer safety. The goals of this course are twofold: (1) to provide students with a doctrinal understanding of selected topics in FDA law; and (2) to critically examine these laws and regulations to see whether they strike the right balance between competing values.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2722 - TECHNOLOGY, RACE AND THE LAW

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine the myriad social and legal issues that lie at the intersection of technology, race, and the law. Informed by the nascent field of critical race and technology studies, this seminar seeks to understand the impact that technology has had on our understandings of racial difference while exploring the manner in which science and technology can perpetuate racism and disparate social outcomes. This course will address the racialized aspects of cutting-edge issues such as predictive analytics, artificial intelligence, algorithmic bias, biotechnology and race-based health research, population and ancestry genetics, surveillance technologies, digital databases, and social media platforms.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 2731 - CURRENT ISSUES IN HEALTH LAW

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to increase the awareness of students in the health law certificate program to the rapidly changing health care industry and the equally rapidly changing field of health law. It is difficult, if not impossible, to understand the law reguLating the health care industry without understanding the industry itself. Another purpose of the course is to expose students to a more in-depth treatment of selected topics than they can obtain in the basic survey course in health law and policy. The course also exposes students to topics that are not covered in the basic course, providing a broader view of the field of health law, which helps in the selection of other course offerings and of a topic for the faculty supervised writing requirement. In addition, the course introduces students to the variety of settings in which lawyers are involved in health law and the range of kinds of clients they represent. Classes will be taught by leading experts in the fields of health management and health law practicing in Pittsburgh and elsewhere.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2747 - LAW OF MENTAL HEALTH SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the laws and issues that affect individuals with mental illness, many of whom find themselves in the criminal or civil justice systems. Emphasis will be on the issues surrounding civil commitment and the emerging use of treatment courts on the criminal side. This will require a review of Pennsylvania's Mental Health Procedures Act and other state and federal statutes, cases, and regulations. Students will be permitted to attend a session of mental health court.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 2749 - GENDER AT WORK

Minimum Credits: 3
Maximum Credits: 3

Sexual harassment and gender disparities continue, but are we paying enough attention? The me-too movement and highly publicized downfalls of celebrities like Harvey Weinstein and Bill Cosby have brought cases of sexual assault and harassment into daily conversation. But does the law really assure women a level playing field and freedom from bias in their education and work? This course will explore these complicated topics, drawing on introductory legal reasoning and interdisciplinary perspectives. Class will be based on small group discussion in a supportive environment and students will investigate a topic of their choice through a research essay and presentation. No prerequisites or familiarity with the law required. Students from all majors welcome.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2754 - TECHNOLOGY, LAW AND LEADERSHIP

Minimum Credits: 3
Maximum Credits: 3
The theme of this seminar is change. Technologies are changing in ways that we often do not even see. The character of law, legal institutions, and law practice is changing rapidly and dramatically. As humans, our capabilities and futures are changing. How do we identify and assess the virtues and drawbacks of all of this? As lawyers and as professionals in other fields, what - if anything - can and should we do about it? The seminar approaches those questions by diving into deep critical examinations of how technological change is generating and reflecting new ideas about what law is and what law does, at both global and local scales. The payoff is greater than learning about contemporary technology law. The payoff is an introduction to leadership competencies and capabilities that help new lawyers and other professionals thrive in this new world.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 2755 - RACIAL HARASSMENT IN THE WORKPLACE

Minimum Credits: 3
Maximum Credits: 3
This seminar explores racial harassment in the workplace, including how frequently it occurs and its different forms. We discuss the legal framework and dispute-resolution processes for racial harassment, including their current shortcomings and ideas for more effectively remedying racial harassment. We also draw from sexual harassment research and law -- and consider how society and the justice system treat sexual harassment and racial harassment similarly and differently. In consultation with the professor, students will select a topic on racial harassment, sexual harassment, or another form of harassment to research and present in a power-point presentation and paper. In addition to the professor's feedback on their research and writing, Professor Wysor of the Law School Writing Center will also provide feedback.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 2760 - HEALTH JUSTICE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Although the United States likes to pride itself on having the most advanced medical care in the world, its residents' experiences diverge widely with respect to the care they receive, as well as their health status and outcomes. Health disparities based on race have received the most attention, but disparities also exist with respect to ethnicity, gender, disability status, and sexual minority status, among others. Nowhere have those disparities been more glaring than in the context of the COVID-19 pandemic, which has disproportionately affected communities of color and people with disabilities. Significant health disparities call into question both the justice and the quality of the U.S. health care system. What role does or could the law play in addressing these inequities? Conversely, how has the law contributed to them? This seminar provides students with an opportunity to explore in depth topics relating to the law's responses (and potential responses) to health inequality. While the seminar's central concern is with the law, readings and discussions will explore and integrate evidence and knowledge from multiple professional and academic disciplines. Topics covered might include, simply by way of example, health equity issues associated with Medicaid policy decisions; the ACA's contraceptive coverage mandate, gender equality, and religious liberty;

disparities in insurance coverage and access to care for persons with mental illness; and health care providers' obligations to provide accommodations to disabled patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 2799 - RACE AND AMERICAN LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar addresses the racial and legal history of major racial groups in the U.S., including African Americans, Native Americans, Asian Americans, Latinos and Whites. In addition to these histories, the seminar includes the following topics: competing definitions of race and racism; the legal system's contribution to the construction of race; race, voting, and participation in democracy; developing notions of equality; segregation and education; race, marriage, and family; race and crime; and responses to racism.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2805 - PERSUASIVE NARRATIVE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2811 - HEALTH CARE BUSINESS TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
This course will expose students to a variety of commercial transactions prevalent in the health care industry. The course will focus initially on health care as a regulated commercial enterprise. After studying the case law, statutes and regulations applicable to health care providers, students will begin an in-depth study of negotiated health care transactions. This study will begin with an examination of the fundamental elements of the acquisition process and an analysis of the tax, antitrust, regulatory and successor liability considerations generally addressed in health care combinations. Students will then be exposed to the various stages of the negotiated acquisition process: due diligence; preliminary negotiations and agreements; transaction structure; final negotiations; definitive agreements; and post-closing relationships. We will also explore the financing mechanisms required to support healthcare entities. The course will examine sources of funding, enterprise valuation, healthcare cost controls, capital structure, traditional debt financing, tax exempt bond financing, securities filings, and insolvency. By the end of the course, the students will have acquired an understanding of the complexities of health care financing and will be familiar with the health care acquisition process from its inception to conclusion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2814 - U.S. LEGAL SYSTEM

Minimum Credits: 3
Maximum Credits: 3
This course will begin to help MSL students to "think like lawyers." Students will gain experience in reading and analyzing cases and statutes in order to begin to understand how to use the law to predict answers to legal questions. The course will also include a sampling of legal readings and guest lectures in the various areas of substantive law.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2817 - CORPORATE TAXATION

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the specific rules of subchapter c related to the taxation of corporations and shareholders. Using a "cradle to grave" approach, the course proceeds through a study of the tax consequences upon formation (birth of the corporation, including incorporation of going concerns), operation (life of the corporation, including distributions of cash or property, stock dividends, and redemption's), mergers and acquisitions (marriage and corporate offspring), and complete liquidation (death, including liquidation of a controlled subsidiary).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2821 - US LEGAL SYSTEM EXTENSION

Minimum Credits: 0
Maximum Credits: 0
This in-person course supplements the online American Legal System course for students who are in the in-person MSL degree program but who are taking the online American Legal System course when U.S. Legal System is not being offered. It is only open to those students.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2839 - LAW, ENTERTAINMENT AND SOCIAL ENTERPRISE PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law

LAW 2847 - GENDER AND LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course will examine how gender influences legal doctrine and how legal doctrine in a number of specific areas of law affects women and shapes societal understandings of gender. The objectives of the course are twofold: (1) to explore how an understanding of gender and feminist legal theory can enrich the study of law; and (2) to learn specific areas of legal doctrine that are particularly relevant to women and societal understandings of gender. The course will cover a number of areas related to issues of gender equality, such as employment, education, family and domestic responsibilities, sexual harassment, and domestic violence. Various feminist legal theories will provide a framework for studying these areas of law.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2860 - ANCIENT LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar will introduce students to the very beginnings of Western legal history. Through a comparative examination of the legal systems and practices of ancient Mesopotamia (including Hammurabi's Babylon, c. 1700 B.C.), Ancient Egypt, ancient Israel, ancient Anatolia (the Hittite empire, c. 1500 B.C.), Ancient Greece and ancient Rome, we will investigate the historical origins of "law" as an idea. We will see how each of these societies created law in the image of its own beliefs and needs. We will look at what differentiated the resulting legal systems, and what united them. We will examine not merely the ancient "law in the books" (the formal written codes that have received so much historical and philological attention over the years) but also the ancient "law in action" (the performances, rituals and ceremonies that created legal rights and duties in all these proto-literate societies). We will look at some of the earliest surviving trial records. Throughout the seminar, emphasis will be placed on developing a broad interdisciplinary perspective on the ancient legal cultures examined; readings will be drawn not only from the fields of law and history, but also from religion, anthropology, archaeology, literature and communication studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2862 - FOUNDATIONS OF INTELLECTUAL PROPERTY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 2209 or LAW 2260 or LAW 2328 or LAW 2694

LAW 2871 - INTERNATIONAL CRIMINAL LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar is an introductory survey of the substantive and procedural aspects of international criminal law, a new and evolving area of law that has gained in prominence in the past decade. The course starts with an overview of fundamentals, focusing on the notion of international crimes and their historical evolution, as well as the general features and sources of international criminal law. The second part of the seminar analyzes the substantive law, especially the definitions and subjective and objective elements of genocide, crimes against humanity and war crimes. The discussion will take place within the context of a comparative evaluation of the main international judicial mechanisms developed after World War II to prosecute these crimes. Particular attention is paid to the International Military Tribunal at Nuremberg, the ad hoc United Nations International Criminal Tribunals for the former Yugoslavia and Rwanda, the Special Court for Sierra Leone and the permanent International Criminal Court. In the final part, we examine the fair trial rights and the limited defenses and immunities available to alleged perpetrators of international crimes. A key question students will be expected to engage throughout is whether, and if so to what extent, individual criminal prosecution is a legitimate and effective tool to address mass human rights violations during or after conflict.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

LAW 2877 - PUBLIC POLICY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar will explore the processes of federal law-making and public policy development through examination of a series of selected topics concerning lobbying, the legislative process, judicial challenges to new laws, and administrative rule-making and enforcement. A primary purpose of the seminar is to enrich students' understanding of law-making and policy development by focusing on a series of case studies concerning particular laws and policies and introducing information about the relevant political dynamics, bureaucratic systems, and other real-world factors. Thus, in addition to studying written materials, students will talk with Washington-based attorneys and others who are experts in the relevant fields. The selected topics will vary from year to year.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2889 - LEGAL ANALYSIS & WRITING II

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2902 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 1
Completion of a paper of publishable quality under the direction and supervision of a full-time faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2903 - INDEPENDENT STUDY

Minimum Credits: 2
Maximum Credits: 2
Completion of a paper of publishable quality under the direction and supervision of a full-time faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2909 - HOW LAW BEGAN

Minimum Credits: 3
Maximum Credits: 3
How did law develop in early societies? Why did it develop? As an embodiment of human values and a fundamental form of human expression, how did early law reflect and shape custom, religion, government and the very concept of civilization itself? We'll explore these questions and more through an examination of law's rise in a wide range of ancient cultures broadly clustered around the Mediterranean basin, beginning with Mesopotamia a thousand years before Babylon and extending three millennia to the eastern Roman Empire in the 6th century CE. In between, we'll encounter Egyptian viziers presiding in pharaonic courts, Hittite kings making international treaties with their neighbors, Hebrew law-givers leading their people to justice in the promised land, Greek logographers writing speeches for delivery to Athenian juries, and Roman advocates arguing cases before judges sitting in the city forum. We'll meet Hammurabi, Ramesses, Moses, Demosthenes, Cicero and Justinian. We'll find early law written on clay and set in stone; we'll read it in text, touch it in ancient coins displaying legal symbols and look at it literally in the round as its monuments stand in modern museums. We'll search for law in early Assyria, Phoenicia and Persia, and following in the footsteps of Alexander the Great we'll even reach towards the ancient legal cultures of India and China to gain a comparative perspective on law's earliest meanings and manifestations in civilized society. At the end of our journey, we may discover that far from being somehow primitive or undeveloped, early law and the people who made it have much to teach us today, not just about what they were, but about what we could be.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2910 - LAWYERS IN AMERICAN SOCIETY

Minimum Credits: 3
Maximum Credits: 3
This course examines the role of American lawyers as nation-builders from colonization to the present day. It explores not only how lawyers crafted the domestic legal and constitutional structure, but also how they shaped American settlement, politics, business, letters, education, rhetoric, race relations, immigration, communication, diplomacy, war-waging and peace-making over more than four centuries, allowing lawyers (not businessmen, not doctors, not professors, not clergy, not engineers) to largely define what it means to be an American. It considers how ordinary citizens and members of other professional groups have reacted to lawyers in their many social capacities, and it assesses how embracing and occasionally rejecting their self-appointed status as "essential Americans" has affected lawyers themselves. It concludes with an investigation of where lawyers stand in today's divided and disoriented America, assessing whether they have succeeded or failed in their larger ambitions to build and to lead, and how they might better serve their country and themselves in uncertain times. Although this course may be of particular interest to Honors College students contemplating a legal career, it is pointedly designed to engage students in history, political science, sociology and the general humanities who would like to develop a deeper understanding of the role and power of the legal profession and the dynamics of American society as a whole.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2911 - FIRST AMENDMENT

Minimum Credits: 3
Maximum Credits: 3
The First Amendment Law course will focus on the history, development, evolution and theory concerning fundamental freedoms protected by the First Amendment: speech, press, assembly and religion. We will explore the various doctrinal approaches employed by courts to resolve cases presenting First Amendment issues and place them in the historical/political contexts within which various doctrines dominated case outcomes. The class will discuss the role of courts in resolving highly divisive political and societal issues. We will engage in dynamic discussions of a broad range of First Amendment issues including, but not limited, to subversive speech, symbolic speech, hate speech, permissible regulation of speech, religion in schools, religion in the public square, limits on free exercise of religion, accommodation of religion and legislative responses to First Amendment court decisions. Whereas the primary focus of assigned readings will be on case law and the reasoning of the judges who participated in the decision-making process, students in this class will be encouraged to identify, explore and discuss additional factors that may impact judicial decision making. These additional factors include, but are not limited to, current events, political forces and judges' backgrounds. Students will also be invited to identify and discuss unintended consequences of court opinions read for class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)
Course Attributes: David C. Frederick Honors College Course

LAW 2912 - ASIAN-AMERICANS IN LAW & SOCIETY

Minimum Credits: 3
Maximum Credits: 3
Asian-Americans are an under-studied minority. This course explores current issues on Asian- Americans in the workplace and in society, including the increasing recognition of profiling, harassment, and discrimination. The course begins with an interdisciplinary overview of the history of Asian-Americans, their current status in the workplace, Asian-American harassment as addressed in the law, and the myriad roles of Asian-Americans in society. Students will then select a topic to further research and to present in a power-point presentation and a paper or photo-essay.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2919 - SJD DISSERTATION RESEARCH

Minimum Credits: 9
Maximum Credits: 9
The JSD candidate will work closely with his/her faculty adviser to produce a dissertation overview, which will provide a complete projection of the body of the dissertation. The jest candidate will work with his/her faculty adviser to select a dissertation committee and must publicly defend the dissertation overview before the entire dissertationcommittee.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2921 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 2924 - HERBST SCHOLAR FUNDAMENTALS

Minimum Credits: 3
Maximum Credits: 3
This semester-long course is designed to introduce students to skills necessary to succeed in law school and to successfully complete the JD Next law school entrance examination. Open to selected undergraduates and recent graduates, the course will introduce concepts like the structure and language of the judicial system, briefing cases, preparing for Socratic dialogue, and writing law school examinations. The class will also explore issues acutely felt by first-generation students such as financing a law school education, drafting personal statements for law school applications, professional networking, and balancing law school with personal life. Students will be paired with current law students as mentors. Enrollment limited to the Herbst Scholar Program participants.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2931 - HEALTH JUSTICE

Minimum Credits: 3
Maximum Credits: 3
Although the United States likes to pride itself on having the most advanced medical care in the world, our citizens' experiences diverge widely with respect to the care they receive, as well as their health status and outcomes. Health disparities based on race have received the most attention, but disparities also exist with respect to ethnicity, gender, disability status, and sexual minority status, among others. Significant health disparities call into question both the justice and the quality of the U.S. health care system, a challenge that has become all too apparent during the COVID-19 pandemic. This course will examine evidence of and explanations for health disparities along several axes, focusing primarily on race/ethnicity, but also including gender, disability status, and sexual minority status. After reflecting on how theories of justice respecting health and health care apply to disparities, the course will turn its attention to the roles that medicine, public health, and law can play in responding to disparities. The course is intended for a broad range of students. While it may be of particular interest to those contemplating a career in law, medicine, public health, or other health sciences, it is designed to engage students in history, sociology, philosophy, Africana studies, gender and sexuality studies, and general humanities who would like to develop a deeper understanding of why health disparities in the U.S. are so persistent and pervasive and of efforts to advance health justice.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: MIN CUM GPA: 3.25

LAW 2967 - MSL EXTERNSHIP

Minimum Credits: 2
Maximum Credits: 2
This offering is for MSL students only. Enrollment in this course requires special permission. MSL students may earn 1 or 2 credits through experiential learning under the supervision of a Pitt Law faculty member or a member of the bar employed by government agencies, not-for-profits, or federal, state and county judges. The type of work varies with each assignment but may include legal research and drafting memoranda and legal documents. Credit is based upon the number of hours worked. Each credit requires 54 hours of work. The exact terms of the work assignment are negotiated between the student and the supervising attorney and must be approved by the MSL Program Director.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2968 - EFFECTIVE COMPLIANCE PROGRAM DEVELOPMENT AND SKILLS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2969 - PROFESSIONAL JUDGEMENT AND ETHICS, THE CANVAS OF COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2970 - SELECT APPLICATIONS IN COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2972 - MSL EXTERNSHIP

Minimum Credits: 4
Maximum Credits: 4
This offering is for MSL students only. Enrollment in this course requires special permission. MSL students may earn credits through experiential learning under the supervision of a Pitt Law faculty member or a member of the bar employed by government agencies, not-for-profits, or federal, state and county judges. The type of work varies with each assignment but may include legal research and drafting memoranda and legal documents. Credit is based upon the number of hours worked. Each credit requires 54 hours of work. The exact terms of the work assignment are negotiated between the student and the supervising attorney and must be approved by the MSL Program

Director.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2976 - MSL EXTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
This offering is for MSL students only. Enrollment in this course requires special permission. MSL students may earn 1 or 2 credits through experiential learning under the supervision of a Pitt Law faculty member or a member of the bar employed by government agencies, not-for-profits, or federal, state and county judges. The type of work varies with each assignment but may include legal research and drafting memoranda and legal documents. Credit is based upon the number of hours worked. Each credit requires 54 hours of work. The exact terms of the work assignment are negotiated between the student and the supervising attorney and must be approved by the MSL Program Director.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2986 - INTERNATIONAL ARBITRATION SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2990 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

Less Commonly Taught Languages

LCTL 0102 - FOREIGN LANGUAGE 2

Minimum Credits: 4
Maximum Credits: 4
This course will help students learn to understand, and to express themselves creatively in both spoken and written **Language**. They will acquire basic knowledge of everyday **Language** and of the country and culture of **Country**. We will focus on building communicative competence and conversational proficiency, while simultaneously building a solid foundation in **Language** grammar, writing, listening and reading comprehension skills. Students will be expected to memorize vocabulary and utilize it in both speech and writing.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: LCTL 0101; MIN GRADE 'C'

LCTL 1901 - LANGUAGE INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Undergraduate
Course Component: Independent Study
Grade Component: LG/SNC Elective Basis

LCTL 2909 - TOPICS IN LANGUAGE STUDY

Minimum Credits: 3
Maximum Credits: 3
This course will be a topics course, meaning that the specific content of the course will change each time the course is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Library & Information Science

LIS 2020 - LIFECYCLES OF DATA AND INFORMATION

Minimum Credits: 3
Maximum Credits: 3
Using lifecycles of data and information as a grounding device for exploring the stages of data / information creation, description, storage, processing, management, preservation, sharing and reuse. Different lifecycle conceptualizations and a range of broad types of data and information from contexts including government data, corporate data, research data, social media data, archival records and citizen / personal data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2021 - IDENTIFYING INFORMATION NEEDS OF KNOWLEDGE ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
Student teams focus on inquiry, through experiential learning, by identifying the information needs of the knowledge organization with which the team has been matched. Students are immersed in observing organizational behavior, collaborating in teams, and practicing soft skills necessary for communication and presentation. Team members gather information about the mission and culture of the organization by observing and listening to understand the context of the needs and challenges of the organization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Enrollment blocked if the student has successfully completed (min B grade) LIS 2024

LIS 2022 - IMPLEMENTING SOLUTIONS FOR KNOWLEDGE ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
Building on skills students have developed in the pre-requisite course, student teams propose, develop, and implement prototypes of solutions to the information challenges of their knowledge organizations, focusing on implementing a viable product via rapid prototyping, tight feedback loops, and iterative development.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: LIS 2021

LIS 2024 - DESIGN METHODS FOR INFORMATION PROFESSIONALS

Minimum Credits: 3
Maximum Credits: 3
Student teams focus on how information professionals can use design methods to plan and devise solutions to information challenges in knowledge organizations. Students will learn the steps in the design methods process to identify the information needs of a knowledge organization by studying its mission and organizational culture; research possible solutions; test, propose, and implement solutions through the analysis of case studies; and participate in team construction and project management, as well as practice soft skills necessary for communication and presentation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: ANTIREQ: Enrollment blocked if the student has successfully completed (min B grade) LIS 2021 and LIS 2022

LIS 2030 - DATA AND INFORMATION IN SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Introduction to the concepts and technologies around data, code, metadata, and databases. Basic data types and file formats, code to manipulate data, the generation of metadata about data, and modeling databases to persistently store and structure data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2040 - THE INFORMATION PROFESSIONAL IN THE COMMUNITY

Minimum Credits: 3
Maximum Credits: 3
This course will provide the context as well as a forum for students to discuss, understand and critique value systems, ethical frameworks and power structures embedded in information technologies, policies, systems and institutions. Emphasizing the importance of design, evaluation and engagement with communities through institutions and technologies ranging from public library systems to start ups, this course foregrounds the role of information professionals as active community members as well as the impact of the information professions on society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2140 - CRITICAL LIBRARIANSHIP AND INFORMATION PROFESSIONALS

Minimum Credits: 3
Maximum Credits: 3
Critical librarianship refers to the movement within libraries to reflect upon the libraries' role in hegemonic structures, and to empower community members to disrupt these systems. Critical librarianship is concerned with issues of social justice, intersectionality, privilege, power, and systems of oppression. It is influenced by critical race theory (CRT), queer theory, disability theory, intersectional feminist theory, and critical pedagogy, among others. In this course, we will explore how critical librarianship can allow us to interrogate the systems and structures of the library in order to seek justice in our communities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2184 - INTELLECTUAL PROPERTY AND "OPEN" MOVEMENTS

Minimum Credits: 3
Maximum Credits: 3
Concepts, legislation, and case law about censorship, freedom of access to information, privacy, copyright, professional liability, and other issues. Legal implications and safeguards.Origins, development, evolution, and pivotal role of copyright, fair use, and related issues within 21st century information, legal, policy, and economic framework. Key and emerging issues such as public domain, orphan works, section 108 exceptions for libraries and archives, licensing, recent statutory legislation and case law, and international copyright. Alternative protection schema, such as open access and creative commons.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2188 - OPEN GOVERNMENT DATA AND INFORMATION: CONCEPTS, STANDARDS, AND IMPACT

Minimum Credits: 3
Maximum Credits: 3
This course introduces participants to "open data," a term that is assigned to data that are free to access and use, that are available in machine-readable formats, that can be reused for any purpose, and that can be modified and shared by others. Globally, we see conversations about open data in research, with growing expectations and requirements to share research data, and in government, with policies and initiatives to expand public access to datasets. This course will focus on this second category of open data: data produced and shared by government and civic organizations. This course will overview the historical precedents to the open data movement, survey current policies at different levels of government, and examine key concepts in the open data movement. While we will focus on drivers and initiatives in the United States, we will look at case studies that will provide us with a broader understanding of what is happening worldwide. The focus of this course will be the core information skills and principles that underpin the success of open data initiatives and the mechanisms and standards in which governments at all levels in the United States are employing to publish data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2194 - ETHICS OF DATA, INFORMATION AND EMERGING TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
Intersection of data, information, existing technologies and disruptive emerging technologies within the contexts of law, ethics, and policy in the digital and AI ages.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

LIS 2220 - ARCHIVES AND RECORDS MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Introduction to the essentials of records management in diverse organizational settings and in society. Organizational theory and how this relates to the history and development of record-keeping systems, electronic-records management and the advent of new technologies, and the place of records management in the information professions. Theoretical principles, methodologies, and practical administration of archives, records, and other information sources from print to oral contributing to the management of evidence and information necessary for organizations and society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2222 - ARCHIVAL APPRAISAL, DESCRIPTION, AND ACCESS

Minimum Credits: 3
Maximum Credits: 3
This course is organized in three parts and will provide students with an introduction to the critical archival responsibilities of archival appraisal, description, and access. In the first section of the course, we will engage with archival appraisal. The archivist's process in determining continuing value affects all other archival functions and impacts individual, organizational, and societal memory. Because of its significance for both archival work and society, appraisal has been the function most debated and subjected to experiments with new methodologies and theoretical models. This course will survey these models and, through an experiential project, delve deeply into one model in particular: documentation strategy. 1 Representing archival materials and providing access to them are core functions of the archival profession. Archivists do this with access systems that incorporate descriptive standards, data structures, controlled vocabularies, and increasingly, digital tools. The ways in which archives are described and represented influence the ways that users, such as historians, lawyers, and policymakers access, engage with, and understand the historical record. In the second section of this course, students will engage with archival descriptive standard and archival management systems, as well as debates and theories in the representation of information. Finally, we'll consider strategies for raising the level of access for an archival collection, paying particular attention to the creation of digital exhibits.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: LIS 2220

LIS 2231 - COMMUNITY ARCHIVES

Minimum Credits: 3
Maximum Credits: 3
Communities of all kinds create records, but not all communities have traditionally been represented in institutional archives, nor included in the process of establishing and maintaining archival collections that document their experiences. This course will draw from archival scholarship and recent case studies to introduce students to a range of models, including grassroots community archives, community-created archives that have been acquired by formal archival institutions, and partnerships between communities and archivists. Throughout this semester, we will engage with a range of topics relevant to community archives, including participatory and post-custodial archives, outreach and advocacy, grant writing and fundraising, and community-based, collaborative research methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2322 - RESOURCES AND SERVICES FOR CHILDREN

Minimum Credits: 3
Maximum Credits: 3
Critical evaluation of contemporary materials for use in a diverse society coupled with strategies to encourage the use of those materials by children (birth to age 14), their caregivers, and those who work with children. Survey of literature resources, services and programming that will encourage use. Books, discussions, and programming focus on equality, diversity, and inclusion within the framework suggested by ALSC.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Sciences or Sch Computing and Information

LIS 2323 - RESOURCES AND SERVICES FOR YOUNG ADULTS

Minimum Credits: 3
Maximum Credits: 3
Critical assessment of resources (contemporary books, periodicals, video/film, games, and other digital formats, social media, web sites, tools, and apps) of interest and importance to young adults. Services and programming to encourage young adults and those who work with young adults to use these resources as both creators and consumers. Intellectual freedom issues and handling challenges to intellectual freedom.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2325 - CURRICULUM RESOURCE AND SERVICE/SCHOOL LIBRARY

Minimum Credits: 3
Maximum Credits: 3
Integration of library media center collections and services into the curriculum. The teaching roles of the school library media specialist.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2326 - STORYTELLING AND PROGRAMMING FOR YOUNG PEOPLE

Minimum Credits: 3
Maximum Credits: 3
Storytelling in library and education settings, including history, sources and selection, ethics, development of stories for telling, and performance techniques. Also includes planning, implementing, and evaluating storytime and children's programming.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2329 - LITERACIES AND LIBRARIES

Minimum Credits: 3
Maximum Credits: 3
This course explores roles for librarians and libraries in supporting patronsa evolving literacies, including but not limited to traditional literacy and information literacy. Students will demonstrate knowledge of strategies and rationale for planning and delivering library-based literacy instruction, services, and programming for children, teens, adults, and families.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2332 - RESOURCES AND SERVICES FOR ADULTS

Minimum Credits: 3
Maximum Credits: 3
Survey of materials in a variety of formats of interest to and importance for adults, with an emphasis on popular resources, utilization of resources and program development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2407 - METADATA

Minimum Credits: 3
Maximum Credits: 3
Principles and application of metadata for networked information resource organization, representation, retrieval, and interoperability using a variety of schemes and tools.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2500 - REFERENCE SOURCES AND SERVICES

Minimum Credits: 3
Maximum Credits: 3
Survey and application of tools (paper and electronic) needed to respond to questions in the changing reference environment. Discussion of philosophies and theories underlying the practice of general reference. Introduction to subject reference tools and services.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2585 - HEALTH CONSUMER RESOURCES AND SERVICES

Minimum Credits: 3
Maximum Credits: 3
Collection development, reference, and educational services in the domain of consumer health resources in print, non-print, and electronic formats. Identification of appropriate and accurate resources for consumer health and family education; policy issues in providing consumer and family health information in different settings; role of public media; and information and referral services to and from healthcare organizations, community agencies, and public libraries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2586 - HEALTH SCIENCES RESOURCE AND SERVICES

Minimum Credits: 3
Maximum Credits: 3
Survey and evaluation of current sources, services, and trends related to information transfer in the health sciences, including medicine, nursing, pharmacy, dentistry, allied health, and veterinary science. Materials and services appropriate to hospital, academic, and special libraries and information centers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2633 - TECHNOLOGY IN THE LIVES OF CHILDREN AND YOUTH

Minimum Credits: 3
Maximum Credits: 3
Effects of media on young people, ages birth to 18 years; technology in everyday life--from toys to television; gaming and libraries; filtering; privacy and child safety; social networking/cyber-bullying; information/media literacy instruction in children's libraries (public); digital libraries for children; evaluation of digital resources for children; children's information behavior; interaction/interface design for young people; digital divide and social equity issues; global perspectives--technology in young people's lives around the world; future trends.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2640 - INSTRUCTIONAL DESIGN

Minimum Credits: 3
Maximum Credits: 3

Instructional design is the systematic planning, creating, delivering, and evaluating instructional activities, products, environments, and modules/courses. Instructional design can be used in face-to-face or digital settings, but typically involves the use of educational technologies to enhance learning. For information professionals, instructional design is a growing area that enables new ways of connecting with and educating the community in a scalable and sustainable manner.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2671 - DIGITAL HUMANITIES

Minimum Credits: 3
Maximum Credits: 3
Digital Humanities surveys the history, core debates, and evolving future of the digital humanities, with particular attention to the roles of information professionals as researchers, collaborators, and stewards. Students explore a range of digital tools and methods, especially as they relate to library and archival contexts. The course blends seminar-style discussion with studio-based practice, allowing students to design and interpret DH projects, teach and learn about a range of DH tools, and critically reflect on the field. Assignments support both theoretical understanding and hands-on engagement with digital humanities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Sch Computing and Information

LIS 2674 - PRESERVING DIGITAL CULTURE

Minimum Credits: 3
Maximum Credits: 3
This course is divided into two sections. First, we delve into fundamental concepts and principles of digital preservation, studying what the Library of Congress's Trevor Owens terms "the theory and craft of digital preservation." We will consider standards, strategies, and tools that librarians, archivists, data curators, and information professionals broadly employ to ensure long term availability of digital materials. We will view digital preservation as a spectrum, using the National Digital Stewardship Alliance's (NDSA)"Levels of Digital Preservation" as a means to understand the ways that and the extent to which an organization may implement a preservation strategy. The NDSA Levels of Digital Preservation will serve as a framing for our discussions on file formats, storage and repositories, and file fixity. This first section of the course will involve lectures, discussion, and tool labs. In the second section, we will conduct a deep dive into complex digital object types and probe the strategies, systems, and ethical/legal issues surrounding the curation of this sample of materials: social media, websites, email, and software.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2680 - DATABASE DESIGN AND APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
Characteristics and concepts of database systems; database development process, including entity-relationship model, relational database models, normalization, structured query language (SQL), basics of transaction management and physical database design; current database technologies; and database applications in libraries and archives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: LIS 2600 or LIS 2610; PROG: School of Information Science or Sch Computing and Information

LIS 2700 - MANAGING AND LEADING INFORMATION SERVICES

Minimum Credits: 3
Maximum Credits: 3
Managing and leading libraries and information services, one of the required core courses for the MLIS degree, focuses on key management theories and practice-based competencies in preparing students to be successful, service-oriented managers and leaders at all levels of diverse organizations. Students in this diversity and inclusion 'infused course will develop understanding of important skill sets and management and leadership domain areas, such as communication; strategic planning; core values and organizational culture; leading productive meetings; managing people, money, facilities, conflict, and change; legal and ethical issues; collaboration and partnerships; marketing and public relations; and professional development. Guest speakers representing different types of libraries, as well as other institutional settings, will provide students with exposure to varied management and leadership styles and perspectives. Individual and group assignments, course content and case studies from non-profit and for-profit sectors, readings, podcasts, and in-class and online discussions will examine emerging trends, challenges, and opportunities for 21st century information center managers and leaders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or ; EXCLUDING SBPLAN: Archives and Information Sci (MLISAIS-SP); School Library Cert Program (MLISLCP-TR); MLIS Fast Track School Lib Cer (MLISFTL-TR)

LIS 2771 - ACADEMIC LIBRARIES

Minimum Credits: 3
Maximum Credits: 3
The environment of academic libraries has changed radically since the 1990s with rapid advances in technology, developments in higher education and innovations in scholarly communication. The fundamental purpose of academic libraries has not changed, but traditional jobs have given way to self-service and professional roles have evolved into complex specialties. This course explores the challenges and problems facing academic libraries today, examining their resources, services, facilities and staffing, with reference to historical contexts and future directions. It will cover traditional and emerging practices in areas such as academic liaison, information literacy, research support, scholarly publishing, library assessment and career management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG:School Computing and Information or School of Information Science

LIS 2774 - SCHOOL LIBRARY MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Planning, providing, managing, and assessing library programs for students and teachers in elementary and secondary school libraries, including access, budget, collection, instruction in information and digital literacy, infrastructure, and technology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2850 - INFORMATION PROFESSIONALS ROLE IN TEACHING AND LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course prepares participants for formal and informal educational roles as teachers, trainers, and facilitators of learning for all age groups found in school, public and academic libraries, as well as those found in archives, museums, and other information service organizations. Topics covered include: teaching and training fundamentals; information literacies; learning styles; instructional strategies; managing large and small instruction programs; and delivering online instruction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2901 - INDIVIDUAL RESEARCH 1

Minimum Credits: 1
Maximum Credits: 3
Research on a topic selected by the student and carried out with scheduled reports to a faculty member. Reports of the research may take various forms as determined in advance by the student and faculty member. Faculty member's agreement to sponsor required.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: PROG:School Computing and Information or School of Information Science

LIS 2902 - INDIVIDUAL RESEARCH 2

Minimum Credits: 1
Maximum Credits: 3
Research on a topic selected by the student and carried out with scheduled reports to a faculty member. Reports of the research may take various forms as determined in advance by the student and faculty member. Faculty member's agreement to sponsor required.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: PROG:School Computing and Information or School of Information Science

LIS 2921 - FIELD EXPERIENCE

Minimum Credits: 3
Maximum Credits: 3
This course provides MLIS students practical, mentored experiences in library, archives, and information organizations, encouraging observation, engagement, and reflection. Activities on site are supplemented and situated in the library and information science field via instructor conferences and other assigned learning activities. Students must have completed a minimum of 12 credits and have earned a QPA of at least 3.0 in the MLIS program to apply. Acceptance is determined through an application process. Approval must be obtained from the field experience faculty coordinator, academic advisor, and field work supervisor. Additional prerequisites may apply.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG:School Computing and Information or School of Information Science

LIS 2922 - PRACTICUM IN SCHOOL LIBRARY MEDIA PROGRAMS

Minimum Credits: 3
Maximum Credits: 6
Experience in a school library, under the supervision of a cooperating teacher librarian working collaboratively with teachers, teaching information literacy skills, providing services to students and teachers, and managing resources. Weekly seminars, individual coaching sessions, and other online written requirements focus on identifying best practices and using case studies to problem solve. Professional assessment; completion of SLCP portfolio of demonstrated competencies and electronic professional portfolio.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PLAN: Not Candidate for Degree (NCDSCIG-ND); SUBPLAN: School Library Cert-End Option (SCPE-TR) or School Library Cert-Intern Opt (SCPI-TR)
Course Attributes: Hybrid

LIS 2970 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Courses offered on an experimental basis or as special topics seminars.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2975 - SEMINARS: SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Analysis of journal articles, books, and conference proceedings involving issues in information science. Techniques for preparing for the preliminary and comprehensive examinations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Sciences or Sch Computing and Information

LIS 3000 - INTRODUCTION TO DOCTORAL STUDIES

Minimum Credits: 3
Maximum Credits: 3
An introduction to the requirements for the Ph.D. Degree in the department of library and information science and to the broader social and academic context of doctoral studies: its history and traditions, social role, methodologies, and outcomes of doctoral scholarship in library and information science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3901 - INDIVIDUAL RESEARCH 1

Minimum Credits: 1
Maximum Credits: 3
The course is used for individual research projects under the supervision of an ICDS faculty member. Student and sponsoring faculty should identify and agree to course expectations and rubric prior to enrollment.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3902 - INDIVIDUAL RESEARCH 2

Minimum Credits: 1
Maximum Credits: 3
The course is used for individual research projects under the supervision of an ICDS faculty member. Student and sponsoring faculty should identify and agree to course expectations and rubric prior to enrollment.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3950 - TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3970 - SEMINARS: SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3999 - DISSERTATION

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Library & Information Science (PHD); CUM GPA: 3.50

Linguistics

LING 1000 - INTRODUCTION TO LINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
This course is a survey of general linguistics, emphasizing the theory and methodology of the traditional central areas of the field--phonetics, phonology, morphology, and syntax- with special concentration on phonological and syntactic theories and analytical techniques. The remainder of the course will be devoted to phonetics, morphology, historical linguistics, semantics and pragmatics, sociolinguistics, and psycholinguistics.
Academic Career: UGRD
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

LING 1901 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides an opportunity for students to formally pursue work on an individual basis.
Academic Career: Undergraduate
Course Component: Independent Study
Grade Component: Satisfactory/No Credit

LING 2000 - THESIS RES FOR THE MA DEGREE

Minimum Credits: 1
Maximum Credits: 9

This course provides for individual work under the guidance of a faculty member.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

LING 2009 - ESL WRITING ADVANCED

Minimum Credits: 3
Maximum Credits: 3
This course is intended for foreign students who need work on advanced composition skills in English covering (a) the process and mechanics of writing a research paper (b) composition writing, with a focus on expository writing for college work (c) selected grammar skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

LING 2010 - STATISTICS FOR RESEARCH IN LINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
Students finish this course with a basic understanding of the reasoning behind the most common statistical tests and measures used in linguistics. Students are able to use their knowledge to select, perform, and interpret statistical tests in both corpus-based and experimental research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2020 - DATA SCIENCE FOR RESEARCH IN LINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
Approaches data science with an emphasis on the principles and practices that linguists need to know about how to approach data: how to get data into shape, how to extract a story from data, and how to communicate that story. Students learn modern data science tools like GitHub and R. Previous classwork or experience with R required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

LING 2141 - TEACHING ENGLISH ACROSS CULTURES

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce students to the ideologies and cultures of learning, teaching and living in countries where English is taught as a second or foreign language. The course will focus the roles of students and teachers, types of literacy, the role of gender, the influence of political and religious authority, educational policy, and classroom culture. We will also include the issue of identity, the construct of 'native speaker of English' and the 'non-native English-speaking' teacher.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING

Minimum Credits: 3
Maximum Credits: 3

This course is intended to introduce current and prospective foreign and second language teachers to the various theories, approaches, issues, and practices employed in the teaching of English as a foreign or second language and, by extension, to other foreign language teaching as well. The course provides a broad overview of content in order to provide foundational knowledge of the field, and includes lectures, exams, and practical experience components.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: LING 1000 or 2144

LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This is a course designed to introduce students to the de sign and development of materials and texts for the teaching of second languages. The course is conducted as a seminar with student presentations on the various aspects of materials designed to teach language skills. Each student also presents a project prospectus that describes the purpose, descriptive objectives, operational objectives, concepts, and procedures for incorporating concepts into the materials. Students then prepare the materials (or part of them) and present reports on their projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2144 - RES METHODS IN APPLIED LING

Minimum Credits: 3
Maximum Credits: 3
This course will give a broad introduction to research methods for the study of non-native language development. Both quantitative and qualitative methods will be discussed for the study of as well as informal learning and acquisition processes. But some emphasis will be put on qualitative methods and on classroom language development. Occasional reference will be made to research strategies in sociolinguistics and psycholinguistics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2145 - TESTING & ASSESSMENT IN TESOL

Minimum Credits: 3
Maximum Credits: 3
This course presents an overview of testing and assessment techniques in TESOL. Students will learn about current language testing and assessment principles and instruments. The course will distinguish among different assessment types and purposes, including standardized tests and classroom assessments. Students will have the opportunity to create and critique a variety of assessment tools and examine the benefits and drawbacks of alternative assessments. Students will also evaluate a variety of language testing instruments with regards to their usefulness, validity, reliability, practicality, inter-activeness, and washback effects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

LING 2146 - SECOND LANGUAGE ACQUISITION

Minimum Credits: 3
Maximum Credits: 3
This course will deal with second language development from a linguistic and psychological, rather than from an educational point of view. Both the influence of linguistic theory on second language research and the importance of second language data for linguistic theory will be discussed. Second language development in children as well as adults will be described, and frequent comparisons will be made with data from first language acquisitions.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: LING 1000
Course Attributes: Global Studies

LING 2150 - LANGUAGE LEARNING AND TECHNOLOGY (CALL)

Minimum Credits: 3
Maximum Credits: 3
This course seeks to provide students with an understanding the benefits and limits of technology in instructed SLA. It will familiarize students with the most current language technology programs and apps and distinguish among different technology types and purposes. Students will also understand web-based technologies for delivering instruction and assessment (e.g., Canvas, Quizlet, the iBT and Accuplacer). The course will also examine the benefits and drawbacks of communication through technology: synchronous and asynchronous interaction, and on line language tutors. It will also review and evaluate: (i) how to integrate technology into the classroom as a mediational tool; (ii) games for language learning; (iii) Social Media in Language Learning: (Facebook, Twitter, Snapchat, Instagram).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2194 - PRACTICUM OBSERVATION ESL TEACHING

Minimum Credits: 2
Maximum Credits: 2
This 2-credit Practicum/Observation includes observation of classes in English as an additional language (EAL) in higher education contexts, supervised practice teaching of adult English language learners, application of course-work content and tools to teaching contexts, and interactions with EAL teaching faculty and students outside the classroom.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

LING 2195 - PRACTICUM ESL TEACHING

Minimum Credits: 1
Maximum Credits: 3
The requirements of the practicum may be fulfilled by supervised teaching either in the English language institute or in its informal ESL course (for at least 15 contact hours). Teachers are required to attend orientation and training meetings, be observed in class, attend post-observation discussions, and provide an evaluation of the curriculum.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

LING 2235 - LANGUAGE, GENDER AND SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
The course considers the ways in which linguistic patterns are sensitive to the social categories of gender and sexuality, including intersectional categories such as race, class, and age, and the role of power and privilege in these patterns. The main questions considered are: How does language categorize the gender/sexuality world in both grammar and interaction? How do speakers display, create, and orient to gender, sexuality, and desire in interaction? How and why do people display different ways of speaking based on their gender/sexual identities?
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

LING 2267 - SOCIOLINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course in the social aspects of language. The course is divided into three parts: (1) linguistic competence; (2) communicative competence; and (3) language policy, which deals with implications of earlier topics when applied to society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

LING 2270 - ADVANCED SOCIOLINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
This course is a continuation of LING 2267, Sociolinguistics. This course will focus on topics selected by students' particular interests and these topics will be covered in depth.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

LING 2274 - LANGUAGE CONTACT

Minimum Credits: 3
Maximum Credits: 3
This course examines the effects of language contact on the structure of the involved languages. We will investigate a variety of language contact situations and the ways in which varying degrees of intensity of contact lead to differing degrees of interference between linguistic systems. Topics include: language contact as a cause for linguistic change (loan words, phonological and other structural change); typologies of language contact (substratum, sprachbund); bilingualism in the individual and the bilingual community (social dialects, diglossia); the emergence of new languages through contact (regional versions of standard languages, pidgins and Creoles).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: LING 1253 or 2253 or 2267

LING 2330 - INTRODUCTION TO COMPUTATIONAL LINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
This is a course designed to introduce students in linguistics to the foundations and real-world applications of computational linguistics. Students will learn how core aspects of human language-words, morphology, grammar, and meaning-are represented and processed computationally. They will also be introduced to the challenges of real-world language engineering problems and discover how the latest language technologies and artificial intelligence systems seek to solve them. Many practical applications will be covered: search, document classification, spell checking, machine translation, corpus exploration, and more. Throughout the course, there will be a big emphasis on hands-on training; students will work extensively with popular natural language processing platforms. NOTE: The Python prerequisite (CS 8, 10-12) can be waived upon proof of Python knowledge. Please email the instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS (0008 or 0010 or 0011 or 0012) with grade of B or better

LING 2340 - DATA SCIENCE FOR LINGUISTS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2391 - PHONOLOGY OF SPANISH

Minimum Credits: 3
Maximum Credits: 3
This course provides a description of Spanish sounds (vowels, diphthongs and consonants in all their allophonic realizations), and prosodic features (stress and intonation) in light of current phonological theories. Special attention will be paid to syllable structure, as well as different phonological processes such as assimilation, dissimilation, and epenthesis. The relationship between phonology and other components of the grammar (in particular morphology and syntax) will also be dealt with.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

LING 2394 - SPANISH DIALECTOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course looks at varieties of Spanish from different perspectives: regional, social, and stylistic. Phonological, morphological, syntactic, and lexical variation will be taken into account. Special attention will be paid to heritage Spanish, creoles, language contact, as well as the diachronic sources of regional differentiation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

LING 2397 - SPECIAL TOPICS IN HISPANIC LINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
This course aims to cover a number of topics which are presently under discussion in the field of Hispanic linguistics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2441 - FIELD METHODS IN LINGUISTICS

Minimum Credits: 3
Maximum Credits: 4
This course is meant to simulate the experience of linguistic field work, and raise awareness about the effective ness of specific interview techniques for acquiring linguistic data. The course will give instruction and experience in eliciting data from a speaker of a non (Indo) European language. Students will undertake the investigation of the phonology, some aspect of grammar, and the ethno semantic study of a taxonomically structured semantic field such as plants or animals. Students will make detailed elicitation plans in advance of their administration.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: LING 2579 and 2773 and 2777

LING 2490 - LINGUISTICS ANTHROPOLOGY CORE COURSE

Minimum Credits: 4
Maximum Credits: 4
This course approaches language as a practice through which social relations, cultural models, and consciousness are constituted. Specific topics include: approaches to signs and significance; linguistic relativity (relationships between habits of speech, thought, and action); analysis of conversation and interaction; relationships between meaning and intention; models of variation and change; linguistic dimensions of cultural stereotypes; and the means by which languages, styles, and other aspects of cultural patterning, can be mapped onto populations. Throughout the course we pay particular attention to how tools from linguistic and semiotic anthropology can be applied to the study of topics other than language ' as a framework for ethnography, for textual research, and for the study of material culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2578 - PHONETICS AND PHONEMICS

Minimum Credits: 3
Maximum Credits: 3
Intensive analysis of the sounds of speech, giving special attention to organs involved in the articulations of speech sounds and auditory discrimination. Students will obtain grounding in practical phonetic skills. Concepts of phoneme, features, abstractness in addition to grammatical theory regarding descriptive phonology will be introduced.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2579 - PHONOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course introduces the principles of phonological analysis and theory. After a brief survey of the roots of modern phonology in Prague school and American descriptivist ('classical phonemic') theories, the main focus of the course will be on generative phonology. Both in and out of class, students will be expected to solve phonological problems and construct theoretical arguments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: LING 2578

LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH

Minimum Credits: 3
Maximum Credits: 3
This course is a "nuts and bolts" description of the lexical and syntactic structures of English. An attempt will be made to provide students with a thorough grounding in traditional grammar, while, at the same time, presenting insights and explanations from a transformational-generative perspective. The class is designed for English language teachers- either those who are teaching it in American school systems or those who wish to teach EFL. Lecture format with class discussion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: LING 1000

LING 2761 - DISCOURSE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3

Many aspects of language cannot be handled adequately in sentence grammars. Although these aspects arguably pertain to a separate area of study, the fieldworker or student of language in context must not avoid them. This course studies discourse in a number of languages, from formal and functional perspectives. Discourse will be shown to provide rich insights into language and culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2773 - MORPHOLOGY

Minimum Credits: 3
Maximum Credits: 3
Morphology, the study of words, is interrelated with the syntax, the phonology, the lexicon, and semantics. The purpose of this course is to develop operational competence, through problem solving and discussion, in the major aspects of morphological theory. Theoretical issues to be addressed will include lexical phonology, prosodic morphology, morphology and logical form, morphology and valence alternations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, Latin American Studies

LING 2777 - SYNTACTIC THEORY

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction, stressing understanding of theoretical concepts, to the transformational generative approach to English sentence structure. This approach uses formal rules to produce sentences, and to explain how they are composed of phrases. The first part of the course concentrates on mechanical manipulation of systems of rules, aiming to acquaint the student with how the rules work. The second part concentrates on how syntacticians use evidence about a language to support or disconfirm their theories.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2800 - SPECIAL TOPICS IN LINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on a specialized topic in linguistics. The content changes depending on the instructor, but most often a particular language, language group, or language area will be the topic.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2860 - INTRO TO HISTORICAL LINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
A survey of the principles and methods of historical linguistics; practice in the basic techniques of historical linguistic research. The major topics to be studied are the analysis of sound change, analogic change, contact-induced language change, the relationship between variation (regional and social) and language change, the comparative method, and internal reconstruction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

LING 2900 - LINGISTICS CONSULTING/INTERNSHIP: CONNECTING LINGUISTICS TO THE COMMUNITY AND INDUSTRY

Minimum Credits: 1
Maximum Credits: 3
Humanities subjects have many practical applications outside of academia, yet our students do not feel confident in effectively selling themselves in today's STEM-saturated job market. It is crucial to prepare humanities students to take advantage of growing opportunities in the region. It is equally imperative other organizations realize the potential contributions of humanities to their projects. Preparing students for versatile careers is especially important in light of changing trends in employment. Teaching them skills like creativity, critical thinking and collaboration will serve them in almost any job they pursue (NAS, 2018; Harper, 2018) . Through this internship program, we desire to enhance the visibility of the humanities and its important connections with several disciplinary areas across the University, foster collaborative work in research, education, clinical services and other areas of study and to strengthen connections with the wider community in Pittsburgh and beyond. At the same time, it is an opportunity to enrich the humanities and outline the diverse ways in which humanities, and linguistics in particular, can in fact help us navigate the new reality of our digital age and more.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

LING 2902 - DIRECTED STUDY FOR MA STUDENTS

Minimum Credits: 1
Maximum Credits: 9
This course provides for individual work under the guidance of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

LING 2959 - DEPARTMENTAL SEMINAR

Minimum Credits: 1
Maximum Credits: 1
A forum for the exchange of ideas among faculty members and advanced graduate students. Topics to be presented and discussed will include areas of linguistic endeavor which are under current exploration by any of the program participants, i.e. Faculty projects, doctoral dissertation work, and M.A. Long paper research.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad LG/SNC Basis

LING 2990 - INDEPENDENT STUDY FOR MA STUDNTS

Minimum Credits: 1
Maximum Credits: 9
This course provides an opportunity for students to formally pursue work on an individual basis.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

LING 3000 - DISSERTATION RESEARCH FOR PHD

Minimum Credits: 1
Maximum Credits: 9
This course provides for individual work under the guidance of a faculty member.
Academic Career: Graduate

Course Component: Thesis Research
Grade Component: Grad SN Basis

LING 3099 - INDEPENDENT STUDY FOR PHD STDNT

Minimum Credits: 1
Maximum Credits: 9
This course provides the opportunity for students to formally pursue work on an individual basis.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

LING 3101 - PHD COMPREHENSIVE PAPER 1

Minimum Credits: 1
Maximum Credits: 9
This course provides students with guidance in proposing, researching, writing, and orally presenting the final draft of part one of the Ph.D. comprehensive requirement, normally no later than their fourth year. Depending on the time spent on the comprehensive, the course can be worth one to nine credits. If nine credits are chosen, the comprehensive paper must be completed by the end of the semester.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

LING 3102 - PHD COMPREHENSIVE PAPER 2

Minimum Credits: 1
Maximum Credits: 9
This course provides guidance to students in proposing, researching, writing, and orally presenting the final draft of part two of the Ph.D. comprehensive requirement, normally no later than their fourth year. Depending on the time spent on the comprehensive, the course can be worth one to nine credits. If nine credits is chosen, the comprehensive paper must be completed by the end of the semester.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

LING 3146 - ADV SECOND LANGUAGE ACQUISITION

Minimum Credits: 3
Maximum Credits: 3
This course is a doctoral seminar in which students discuss the most recent papers on a topic of interest to the professor and the students in second language acquisition and learning. Students and the faculty member will agree on a set of topics to be covered in the class, and students will present papers and lead discussions on topics relevant to their doctoral work.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 3578 - ADVANCED PHONETICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

LING 3579 - ADVANCED PHONOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will continue to build on LING 2579 constructing a model of phonological theory. This course provides students with an overview of advanced topics in phonology such as feature geometry, under specification, lexical phonology, syllable theory, auto segmental phonology, metrical phonology and optimal theory. Students will be provided with opportunities to apply the theory to data from a wide variety of languages, leading to a greater understanding of the applications of the theory to sound systems and of the implications for an understanding of human cognition.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 3773 - ADVANCED MORPHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course consists of an in-depth analysis of morphological phenomena in natural language in light of current theories (both formal and functional). Special attention will be paid to polysynthetic and non-concatenative morphology, as well as to the interaction between morphology and other components of the grammar.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 3777 - ADVANCED SYNTAX

Minimum Credits: 3
Maximum Credits: 3
This course consists of an in-depth analysis of syntactic phenomena in natural language in light of current theories. The interaction between syntax and other components of the grammar will occupy a central place in the syllabus. Representative problems to be addressed include non-local dependencies, functional categories, ellipsis, and the representation vs derivation debate in syntactic theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 3902 - DIRECTED STUDY FOR PHD STUDENTS

Minimum Credits: 1
Maximum Credits: 9
This course provides for individual work under the guidance of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

LING 3990 - INDEPENDENT STUDY FOR PHD STUDENT

Minimum Credits: 1
Maximum Credits: 9
This course provides the opportunity for students to formal ly pursue work on an individual basis.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

Management Information Systems

BMIS 2053 - DESIGNING THE USER EXPERIENCE

Minimum Credits: 3
Maximum Credits: 3
Designs are all around us. Most visible are apps and websites, which offer a user experience that might fall short of what users expect or what the creators intended. As a result, firms of all types have encountered pressures to improve the user experience. Organizational practices should be adopted to make sure designers and developers take into account theories and practices developed over the last half-century. There are tools for gathering requirements, achieving a usable first draft, and testing and improving upon that draft. Several assignments will make such processes of design more vivid. An early project will evaluate usability of what the student considers a poor website or app. A sequence of additional assignments will focus on improving the user's experience of the site or app, justifying a change, and evaluating the results. A final project presentation will "pitch" the design changes to management, examining benefits and costs of the improvements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 2056 - MGT INFORMATION SYSTEMS PRACM

Minimum Credits: 3
Maximum Credits: 3
The objective of the practicum is to give the student information systems experience in an actual organizational set ting. Examples of areas for internships are: Systems Analysis and design; Programming and Implementation; Problem Definition and Documentation; marketing and needs analysis, education and training. A project proposal is prepared by the student that, when approved by both a faculty advisor and a corporate supervisor, becomes the formal agreement to complete the project.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Management of Information Systems(MS)

BMIS 2060 - INDEP STUDY MGT INFOR SYSTEMS

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 2061 - INDEP STUDY MGT INFO SYSTEMS 2

Minimum Credits: 1
Maximum Credits: 6
An independent study in management information systems.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

BMIS 2061 - INDEP STUDY MGT INFO SYSTEMS 2

Minimum Credits: 1
Maximum Credits: 6
An independent study in management information systems.
Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

BMIS 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS

Minimum Credits: 1
Maximum Credits: 1
This online course examines the advantages and complexities of ERP software within the context of global SCM and demonstrates how the system can improve processes and streamline operations. The course progresses through seven experience-based-learning Modules. Each Module includes both a synchronous class session, and asynchronous individual work. The synchronous sessions are focused on the execution of an ERP Simulation where teams of students complete with one another to operate a make-to-stock company that sells a product to a European market. The asynchronous portion of the class allows students to work at their own pace to learn the how ERP systems automate and integrate SCM business processes including hands-on execution of end-to-end business processes in the SAP ERP system; and completion of quizzes and exams.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 2402 - COMPUTATIONAL THINKING FOR BUSINESS LEADERS

Minimum Credits: 1
Maximum Credits: 1
The main objective of this course is to lay a foundation for business students to develop computational thinking and analytics skills. Computational thinking involves solving problems by formulating them clearly and systematically so that we can effectively leverage the power of computational tools and models. It is increasingly being recognized that computational thinking and programming are fundamental skills for everyone, not just for students interested in technology careers . Adopting a learning-through-examples approach, the course focuses on developing fluency with computational concepts and programming in a business context. Students will learn the fundamentals of computational thinking and apply them using Python and R programming languages as well as other menu-driven applications such as Excel, Rapid Miner, and Tableau. An additional pedagogical objective of the course is also to pave a path for students to build on the fundamental skills and proceed with confidence to advanced data analysis and machine learning workflows using various open-source libraries available in the Python and R ecosystem. This is an extensively hands-on course, and major components of students' grades are based on their individual submissions for the course's assignments and projects. No prior programming experience is required to enroll in the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BMIS 2409 - INFORMATION SYSTEMS

Minimum Credits: 1
Maximum Credits: 1
.How does information technology enable the business? How does it provide business value? This course provides an overview of information technology and its application in a business. By simultaneously examining business cases and the capabilities of relevant technologies, students will develop an understanding of how information technology supports and enables business strategies, innovation, and improved business capabilities and processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 2501 - ENTERPRISE SYSTEMS AND INTEGRATION OF BUSINESS PROCESSES

Minimum Credits: 3
Maximum Credits: 3

Participants in Enterprise Systems and Integration of Business Processes course will gain extensive theoretical knowledge of Enterprise Resource Planning (ERP) systems. The theoretical knowledge is practically implemented and deepened through hands-on exercises using the 11 modules of the SAP S/4HANA system. This immersion course is designed to prepare students for the online SAP TS410 Certification Exam which will be completed during the last day of class. All students are required to take the SAP TS410 Exam Certification exam. Students who pass the exam will receive the "SAP Certified Application Associate - Business Process Integration with SAP S/4HANA" credential from SAP, which is widely acknowledged in business. The University of Pittsburgh, as an active member of SAP's University Alliances program, is qualified to offer the SAP TS410 course to its students. Further, the SAP specific knowledge gained through this course is readily transferrable to other commercial, off-the-shelf, ERP software systems (such as Oracle eBusiness Suite). No computer programming background is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 2525 - CURRENT ISSUES IN COMPUTING

Minimum Credits: 1
Maximum Credits: 1
In this course, students explore a computing/technology related topic of interest and conduct an in-depth independent study, guided by the instructor. A variety of independent study pathways are possible, including but not limited to technical analysis and solutions development using an emerging technology; data-driven analysis; industry analysis; examinations of the adoption, use, and decommissioning of complex enterprise systems; and investigating regulatory and policy landscapes related to an emerging technology. The course is designed to offer a personalized learning journey, and students can align their topic with their career interests, work-related projects, and industry sector preferences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 2526 - ADVANCED DATA PROGRAMMING WITH R

Minimum Credits: 3
Maximum Credits: 3
Data science skills are highly valued in the job market and most businesses are heavily investing to develop their analytics capabilities. This course adopts an experience-based learning approach and introduces the practice of data science to Katz graduate students. The course will emphasize the acquisition of skills such as (1) the use of a programming language (R, Python, etc.) to assemble, clean, and analyze data sets, (2) analytical and text-processing procedures for answering business questions, and (3) visualization and presentation of data-driven results for evaluation of business goals. The primary mode of learning will be through hands-on exercises involving real-world data used to make business decisions. For example, students will make use of the datasets and scripts used in data science competitions (e.g., Kaggle). Although no prior programming experience is required to enroll in the course, students should expect intensive out-of-class readings and practice sessions to get the most out of this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BQOM 2401

BMIS 2537 - BUSINESS SYSTEMS PLATFORMS

Minimum Credits: 3
Maximum Credits: 3
Platforms such as Amazon, Google, LinkedIn, Uber, Yelp, and others surround us. This course introduces the technology tools, economics principles, and statistical and analytical tools that platform managers use to make decisions. In the technology module, the course introduces cloud computing and application programming interfaces (API), esp., machine learning APIs widely used by platforms. Labs supplement lectures and provide hands-on experience. In the economics module, the course starts with underlying concepts such as network effects, and then builds to cover platform architecture, launch, monetization, metrics, and strategy. Finally, in the statistical and

analytical tools module, the course introduces causal analysis and covers the statistical analyses of randomized trials, an increasingly used managerial tool in platform companies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Joseph M. Katz Grad Sch Bus

BMIS 2542 - DATA PROGRAMMING ESSENTIALS WITH PYTHON

Minimum Credits: 3
Maximum Credits: 3
This course introduced basic data science concepts behind turning data into actionable insights and knowledge. In addition, the course will emphasize the development of necessary programming skills needed for doing data science. Students will learn and use the Python programming language along with a focus on learning applied statistical inference, machine learning, data visualization, text analysis, and social network analysis techniques. The course takes a hands-on approach and no prior programming experience is expected. This is a required course for students interested in pursuing the Katz Data Science specialization. Follow on courses include Practical Data Science (BMIS 2526) and Advanced Topics in Data Science (BMIS 2543)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 2552 - PROJECT MANAGEMENT PROCESSES AND CONCEPTS

Minimum Credits: 1
Maximum Credits: 1
This course provides a comprehensive introduction to project management principles and practices, covering the project lifecycle from initiation through closure, including scope, time, cost, quality, risk, and stakeholder management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BMIS 2588 - DATA BASE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Explains data base design, effective use of data bases, basic design objectives, methods, costs and benefits associated with the use of data base management systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: Katz Graduate School of Business

BMIS 2630 - TECHNICAL FOUNDATIONS OF GENERATIVE ARTIFICAL INTELLIGENCE FOR BUSINESS

Minimum Credits: 3
Maximum Credits: 3
This course is part of the "Artificial Intelligence (AI) and Business" curriculum at Pitt Business. The course is designed to equip business students with technical concepts, skills, and understanding necessary to harness the capabilities of generative AI systems. A key learning objective is to gain proficiency in using cloud-computing platforms, application programming interfaces (APIs), transformer architectures, and large language models. Students will build on the data programming skills learned in the pre-requisite courses and will utilize cloud computing and APIs to access large language models and generative AI interfaces for processing and generating text and multimedia content for business workflows. Throughout the course, students will engage with hands-on labs and projects, enabling them to build and fine-tune generative AI applications. To do well in this course, students must be prepared to engage in intensive out-of-class practice sessions based on the topics, examples, and techniques introduced in class sessions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BMIS-2402 or BMIS-2542 or BMIS-2526

BMIS 2635 - DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS: STRATEGY, DESIGN, AND EXECUTION

Minimum Credits: 3
Maximum Credits: 3
This course is part of the "Artificial Intelligence (AI) and Business" curriculum at Pitt Business. The course focuses on the strategic planning, design, and deployment of AI systems for businesses. Students will identify business opportunities where AI and generative AI systems can create value, develop strategic roadmaps for integrating AI with business workflows, and learn to assess the potential return on investments from AI projects. The course will dive into the design principles, methodologies, and governance frameworks required to develop and implement effective enterprise AI systems as well as the strategies for stakeholder engagement, performance evaluation, managing change, and fostering a culture of AI-enabled innovation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BMIS 2402 or 2542 or 2526; CREQ: BMIS 2630

BMIS 2640 - RESPONSIBLE ARTIFICIAL INTELLIGENCE (AI) FOR BUSINESS

Minimum Credits: 3
Maximum Credits: 3
This course is part of the "Artificial Intelligence (AI) and Business" curriculum at Pitt Business. The course focuses on the significant challenges that accompany the use of AI and generative AI in business and societal settings. Students will learn the implications of "what could go wrong" with AI deployments and learn how to detect and prevent outcomes that could cause significant damage to people, businesses, and society. Students will also build a framework for the responsible use of AI that focuses on purpose of use, ethics, fairness, transparency, and mitigating bias. As a result, students will be able to lead organizational-wide discussions of responsible data science and the potential societal and environmental impacts of using AI in business workflows. The course uses a mixture of lectures, readings, case discussions, and written case analyses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BMIS-2402 or BMIS-2542 or BMIS-2526; CREQ: BMIS 2630

BMIS 2679 - TECHNOLOGY INNOVATION, ADOPTION, AND DIFFUSION

Minimum Credits: 3
Maximum Credits: 3
Expose students to concepts in technology innovation, markets for information technology goods and services, and adoption dynamics within organizations for new products and processes, and therefore should prove useful in a variety of student careers. Assignments emphasize written and oral communication skills. There is an opportunity for a self-selected project to customize the course to particular student interests. Skill acquisition and improvement goals for the course include case analysis, short analytic writing, technology research,

and long-form writing. Technological innovation is the origin of what the economist Joseph Schumpeter termed the `creative destruction' of capitalism (1942). This is the dynamic process by which prior technologies, and their accompanying industrial structures and associated leading firms, are replaced by successive generations of technologies. This is a constantly ongoing process that provides both opportunities for new entrants and threats to existing firms in the market. Students are likely to need a thorough understanding of this process throughout their professional careers. Topics typically covered include: innovation sources and management, s-curves and product life cycles, dominant design and paradigm shifts, disruptive and discontinuous innovation, innovation in design, network effects, standards, complementary goods, standards, intellectual property, partnerships , alliances, and value chain ownership, environment/government regulations, organizational assimilation of technology, and lead-user design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Joseph M. Katz Grad Sch Bus

BMIS 2681 - INFORMATION SYSTEMS SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the nomenclature, concepts, and applied techniques of information systems security. The technology module of the course will start with foundations, such as digitization, operating systems shells, host types, and networking concepts as they pertain to security issues. Individual labs will supplement the lectures to provide hands-on experience. The technology module covers applied cryptography in enough detail to equip managers with basic understanding to make sound decisions. The module then covers access control, attacks, malicious code and control, and monitoring and analysis. In the managerial module the course introduces students to risk, control and countermeasures, incident response, recovery, security administration and planning, and legal issues. Cases and guest lectures from business leaders augment the concepts learned in the course by showcasing their applicability in the real-world. This course can provide a solid start to students planning to take the Systems Security Certified Practitioner (SSCP), Certified Information Systems Security Professional (CISSP), or Certified Information Security Manager (CISM) credential. Students who have not taken the prerequisite BMIS 2588 but feel that they are sufficiently prepared should seek the permission of the instructor to enroll in the class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BMIS 2588; PROG: Joseph M. Katz Grad Sch Bus

BMIS 2811 - INFORMATION TECHNOLOGY AND BUSINESS VALUE

Minimum Credits: 3
Maximum Credits: 3
This required EMBA course introduces students to information technology, with an emphasis on employing it to maximize business value. Topical coverage will be broad, and will examine both processes and it products that executives encounter on a regular basis. After completing the course, students will be better able to communicate with it staff, understand how systems are developed, and evaluate the strategic implications of it decisions. Class sessions will involve lecture, discussion, and business case problem-solving. Outside of the classroom, students will make use of on-line resources, academic research, and case studies. Both written and oral communications skills will be tapped in frequent and focused case write-ups and class presentations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 2812 - RESPONSIBLE AI AND ANALYTICS FOR BUSINESS LEADERS

Minimum Credits: 1
Maximum Credits: 1
The course focuses on the significant challenges that accompany the use of analytics and artificial intelligence (AI) systems in business settings. Students will learn the implications of "what could go wrong" with analytics and AI deployments, and learn how to detect and prevent outcomes that could cause significant damage to people, businesses, and society. Students will also build a framework for the responsible use of analytics and AI that focuses on purpose of use, ethics, fairness, transparency, and mitigating bias. As a result, students

will be able to lead organizational-wide discussions of responsible data science and the potential societal and environmental impacts of using AI in business workflows. The course uses a mixture of lectures, readings, case discussions, and written case analyses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BMIS 2911 - HEALTHCARE INFORMATION TECHNOLOGY

Minimum Credits: 3
Maximum Credits: 3
Healthcare information technology
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SUBPLAN: EMBA Healthcare Program

BMIS 2912 - DATA VISUALIZATION TECHNIQUES AND STORYTELLING IN HEALTHCARE

Minimum Credits: 1
Maximum Credits: 1
Healthcare organizations, among others hospitals and clinics, are becoming increasingly data-driven in tracking every aspect of operations. Ranging from core areas, such as visits, surgeries and patient analysis, all the way to corporate aspects: finance, HR, logistics to sales, and beyond. With the rise of Big Data and growing availability of datapoints that healthcare companies have at their disposal, employees at every level need technologies to analyze, present and share data. In this course, students will learn skills and technologies useful in reviewing and delivering aggregated healthcare data in a visually appealing and easy-to-understand manner to support managing hospitals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BMIS 3010 - INDEP STUDY MGT INFOR SYSTEMS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BMIS 3012 - FDS INFORMATION SYSTEMS RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to provide doctoral students with a foundation for becoming is researchers and scholars. As such, we will cover several areas during the course. We will overview the field of is, reading "classic" articles as well as more current research in a variety of is domains. We will also identify relevant reference disciplines, and discuss their role in is research. Finally, we will examine what it means to do "good" research in is, and how to do such research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BMIS 3019 - HUMAN/COMPUTER INTERACTION

Minimum Credits: 3
Maximum Credits: 3

Investigates the current research and research directions of the Human-Computer Interaction (HCI) literature. The course will emphasize aspects of the relationship between humans and computers, including user learning, understanding and manipulation (usage) of systems.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BMIS 3027 - ECONOMICS MODELS OF ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
AI is one of the most significant technologies of our time. However, AI also faces several issues such as algorithmic bias, adoption incentives, algorithmic collusion, interpretability, etc. Most of these issues are not due to technological limitations, but due to the misaligned incentives of stakeholders in the ecosystem. In this course, we will discuss several seminal papers related to these issues and discuss economic models of AI used for addressing these issues. Using these papers, students will also be exposed to game-theoretic modeling techniques in research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BMIS 3029 - SOCIAL MEDIA AND DIGITAL PLATFORMS

Minimum Credits: 3
Maximum Credits: 3
This doctoral seminar is designed to provide doctoral students an introduction to recent research issues and challenges in the contexts of social media and other digital platforms. In doing so, the students will gain exposure to how research problems are formulated and refined to a working definition, and how research is conducted and reported. The seminar will also discuss various research perspectives, examine various research methodologies, and explore research in information systems and related disciplines.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BMIS 3035 - AI, SYSTEM WITHIN SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This seminar examines artificial intelligence as a system embedded within other systems: human, organizational, and societal. Rather than isolating AI as a purely technical artifact, the course explores its interdependencies, highlighting how design choices, individual behaviors, organizational routines, and institutional structures shape and are shaped by AI. Yet such framings overlook a fundamental truth: AI and human systems are mutually constitutive. Each shapes and reshapes the other in a continuous, bi-directional process. Human cognition, behavior, and decision-making influence how AI is designed, interpreted, and embedded, while AI transforms those very processes, altering human cognition patterns, organizational routines, and even societal norms. Core themes include adoption and use in high-stakes contexts, cognitive and behavioral dynamics in human-AI collaboration, ethical and responsible practices, and the systemic consequences of AI for fairness, governance, and social outcomes. We will engage relevant papers on AI and human behavior from IS and related disciplines to ground theory development in both the capabilities and limitations of AI use and implementation. Through readings, discussions, and case analyses, students will develop a multilevel perspective that connects micro-level human interaction with macro-level institutional and societal implications, actively building connections and synthesizing insights that illuminate AI as a system within systems.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BMIS 3039 - DIGITAL PLATFORMS, ALGORITHMS AND REMOTE WORK

Minimum Credits: 3
Maximum Credits: 3
This course will offer opportunities to discuss research work in digital platforms, algorithms and remote work. Students are expected to perform weekly readings in related papers and provide critique. At the end of each topic, students are also encouraged to propose meaningful future research questions in related topics. In the second half of the course, students will start working on research proposal under the guidance of the instructor.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BMIS 3042 - DESIGN INFORMATION SYSTEMS RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This Ph.D. seminar course exposes students to management theories related to the design of software-intensive products and processes. Drawing upon the literatures of design thinking, software engineering, and sociotechnical systems, we will explore the role of product and process design in influencing phenomena of interest to management scholars such as organizational transformation, innovation, and industrial evolution. Classes will be principally student-led discussions of research papers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BMIS 3043 - DESIGN IN INFORMATION SYSTEMS RESEARCH 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BMIS 3044 - QUANTIATIVE METHODS IN INFORMATION SYSTEMS RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to prepare Ph.D. students to understand and confidently apply a variety of statistical methods and research designs that are important for research in information systems and technology management (ISTM). Through discussions of published ISTM research papers and practical data analysis exercises, we will explore models such as those applied for event counts, time-series cross-sectional analysis, causal inference, Bayesian inference, competing risks, differences-in-differences, and designs for randomized field experiments. The course will also place an emphasis on developing skills to communicate econometric results in a rigorous way.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BMIS 3045 - HEALTH INFORMATION TECHNOLOGY

Minimum Credits: 3
Maximum Credits: 3
This seminar introduces students to research on information technology in health care. We will examine how technologies such as electronic health records, clinical decision support systems, telemedicine, and artificial intelligence shape clinical decision-making, care coordination, access to care, and patient outcomes. A central question is whether these technologies actually improve the efficiency, quality, and equity of health care delivery. The seminar also covers the empirical approaches used to study these questions, including quasi-experimental designs for observational data, such as difference-in-differences and regression discontinuity, as well as laboratory and field experiments. Through close reading and discussion of research papers, students will learn to assess study designs, interpret empirical evidence, and identify promising questions in health information technology.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

BMIS 3099 - READINGS IN MIS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

BMIS 3541 - INFORMATION SYSTEMS RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course has been specifically created for the DBA student cohort, and is designed to help students to: 1. Learn to read "A-list" academic research articles, and 2. Learn to write applied research articles designed for a practitioner audience. Students will be exposed to a variety of topics within the Information Systems and Technology Management domain, and will be required to choose one within which to develop a detailed outline of an applied research article based on a published academic research article.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

Materials Science and Engr

MSE 2003 - STRUCTURE OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Fundamentals of crystallography; lattice geometry; bravais lattices; crystal systems; stereographic protection; point and space groups; symmetry elements; tensor properties of crystals; physical properties; elasticity of crystals; introduction to diffraction by crystals; reciprocal lattice; ewald construction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2008 - PROCESSING OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
This course is primarily designed for graduate students entering the program without a degree in materials. Students will be introduced to the processing and applications of different types of engineering materials used in industrial applications. The topics to be covered are steelmaking, solidification, alloy design, strengthening mechanisms, mechanical properties: plastic deformation, mechanical properties, and microstructure control; high temperature deformation, grain size control during reheating and during deformation
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2011 - ENERGETICS

Minimum Credits: 3
Maximum Credits: 3

Advanced classical thermodynamics; chemical equilibrium solution thermodynamics; quasichemical model; electrochemical cells; surface tension; thermodynamics of interfaces; introduction to thermodynamics of irreversible processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2012 - COMPUTATIONAL MATERIALS SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course teaches the fundamentals and applications of computational materials science, which concerns the use of modern computational tools to the analysis of the properties and behavior of materials at various temporal and length scales. The current emphasis of this course is on integrated multiscale simulation method. The course covers topics on the first-principles density functional theory, molecular dynamics, Monte Carlo simulation, and phase-field method. Crystal structure, mechanical properties, structural defects, and electronic structures of materials as well as techniques for modeling them are also discussed. The course consists of a term project, in which students perform modeling and simulation of a material system of their choice and analyze simulation results by visualization and data mining methods using software provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2013 - KINETICS IN MATERIALS SCIENCE

Minimum Credits: 3
Maximum Credits: 3
Diffusion in solids; mathematics of diffusion; atomistics of diffusion and diffusion mechanisms; diffusion in alloys, the Kirkendall effect; uphill diffusion; generalized phenomenological treatment of diffusion; diffusion in ionic solids; diffusion in mutlicomponent systems; grain boundary diffusion; surface diffusion and dislocation effects; anelasticity and internal friction phenomena; the liquid state; diffusion in liquids; viscosity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2015 - ELECTROMGNTC PROPS MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Magnetic properties of matter; ferro- ferri- and antiferromagnetism; diamagnetic and paramagnetic substances; magnetostatics; the fundamental quantities in the description magnetic behavior; measurement of magnetic quantities; hysteresis; magnetic domains; magnetic anisotropy; magnetostriction; permeability; coercivity; hard and soft magnetic materials for engineering applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2030 - MECHANICAL BEHAVR OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Continuum mechanics concepts; elastic, plastic, and viscous deformation; strength in metals, ceramics, and polymers. Application of concepts to details of material tests (e.g., Tension, torsion, compression, hardness tests); metallurgical phenomena (e.g., Precipitate strain fields, dislocations, transformations, residual stresses, anistropy); failure (by brittle fracture, ductile fracture, creep, fatigue, wear, hydrogen effects); design of components for industrial use or research equipment.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2032 - FRACTURE MECHANICS FOR PRODUCT DESIGN AND MANUFACTURING

Minimum Credits: 3
Maximum Credits: 3
Failure of manufactured products in service, implications for design. Energy release rates, toughness, evaluation of experimental tests. Fracture mechanisms in different material systems. Damage tolerance. Fracture control. Design studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2033 - MAGNETIC PROPERTIES OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Magnetic properties of matter; ferro-, ferri-, and antiferromagnetism; diamagnetic and paramagnetic substances; magnetostatics; the fundamental quantities in the description magnetic behavior; measurement of magnetic quantities; hysteresis; magnetic domains; magnetic anisotropy; magnetostriction; permeability; coercivity; and hard and soft magnetic materials for engineering applications; thin film and fine-particle behavior.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2033 - MAGNETIC PROPERTIES OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Magnetic properties of matter; ferro-, ferri-, and antiferromagnetism; diamagnetic and paramagnetic substances; magnetostatics; the fundamental quantities in the description magnetic behavior; measurement of magnetic quantities; hysteresis; magnetic domains; magnetic anisotropy; magnetostriction; permeability; coercivity; and hard and soft magnetic materials for engineering applications; thin film and fine-particle behavior.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2033 - MAGNETIC PROPERTIES OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Magnetic properties of matter; ferro-, ferri-, and antiferromagnetism; diamagnetic and paramagnetic substances; magnetostatics; the fundamental quantities in the description magnetic behavior; measurement of magnetic quantities; hysteresis; magnetic domains; magnetic anisotropy; magnetostriction; permeability; coercivity; and hard and soft magnetic materials for engineering applications; thin film and fine-particle behavior.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2034 - OPTICAL MATERIALS & THIN FILM FOR ENGINEERING OPTICAL AND THERMAL ENERGY TRANSPORT

Minimum Credits: 3
Maximum Credits: 3
This graduate level course targets to provide students with a sound fundamental understanding of applied optics principles relevant for the design of engineered optical coatings for energy related applications including (1) low emissivity coatings for energy efficient windows, (2) anti-reflection coatings for solar photovoltaics, (3) optical absorber material coatings for concentrating solar power, and (4) thermal barrier coatings. Students will also gain experience with custom mathematica or matlab based code development and/or commercial thin film optical modeling packages such as TFCalc, FreeSnell, and Thin Film Cloud. Students will learn techniques and methodologies for modeling the optical constants of typical materials used in optical coating applications which can be integrated with optical coating design models.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2036 - INTRODUCTION TO CONTINUUM MECHANICS

Minimum Credits: 3
Maximum Credits: 3
The fundamental concepts of continuum mechanics necessary for studying the mechanical behavior of solids and fluids. Includes a review of vectors and tensors; stress; strain and deformation; general principles in the form of balance laws; constitutive equations and their restrictions; and specialization to the theories of linearized elasticity and fluid mechanics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2037 - NANOMECHANICS, MATERIALS AND DEVICE

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction for current nanotechnology and fundamentals for nanoengineering. It mainly contains three areas: nanomechanics, nanomaterials and nanoscaled devices. In nanomechanics, it covers nanoindentation mechanics, thin film mechanics and one dimensional nanowire mechanics, nanocrack mechanics, deformation in nanomaterials. Nanomechanical model will be emphasized. In nanomaterials, it covers carbon nanotube, one dimensional semiconducting nanowires and nanomultilayers as well as nanostructured composites. Novel property/phenomena reviewed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2038 - APPLIED SOLID MECHANICS

Minimum Credits: 3
Maximum Credits: 3
Stress and strain transformations; applied elasticity problems in torsion and plane problems; thermal stresses and elementary plasticity; energy methods; fundamentals of finite element methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2039 - BASICS AND APPLICATIONS OF POWER MAGNETICS

Minimum Credits: 3
Maximum Credits: 3
Magnetic materials and components play an increasingly critical role for emerging power and energy applications including inductors, transformers, motors / generators, and sensors. For truly optimized design of magnetic components, material properties attainable through material selection and application of advanced manufacturing methods must be considered in parallel (and consistently) with systems and component level design methods. The purpose of this course is to provide a sound background in the fundamentals of magnetic materials and component design. Fundamental principles will also be applied to practical component-level design problems throughout the course, with a final design project to leverage analytical and/or finite element simulations. This course is targeted towards advanced undergraduate, masters, or PhD level students in materials science, mechanical engineering, electrical engineering, and / or applied physics with an interest in learning about power magnetic materials and devices relevant for emerging power and energy applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2040 - QUANTUM MECHANICS FOR ENGINEERS

Minimum Credits: 3
Maximum Credits: 3
Introduction to quantum physics, matrix formulation of quantum mechanics, postulates of quantum mechanics, qubits and their description, composite quantum systems, quantum circuits, density matrices, entanglement and its characterization, introduction to quantum computation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2041 - ADVANCED PHYSICAL METALLURGY 1

Minimum Credits: 3
Maximum Credits: 3
The cold-worked state; crystal plasticity, production of crystalline defects; annealing phenomena; recovery, recrystallization, and grain growth; secondary recrystallization, tertiary recrystallization; genesis of preferred orientation; deformation and recrystallization textures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2042 - ADVANCED PHYSICAL METALLURGY 2

Minimum Credits: 3
Maximum Credits: 3
Strengthening mechanisms in metals and alloys; theoretical strength of crystals; particle strengthening; dislocation particle interactions; grain size strengthening; strengthening by presence of grain boundaries; hall-petch expression; theories of discontinuous yielding; solid solution strengthening; fiber strengthening and the design of high strength microstructures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2046 - PHYSICAL METALLURGY ENGR ALLOYS

Minimum Credits: 3
Maximum Credits: 3
Property requirements of engineering alloys are discussed: strength, toughness, formability, weldability, fatigue resistance, corrosion/oxidation resistance. Review is made of pertinent phase diagrams, transformations, and microstructures in the fe-fe3c and other alloy systems. Composition, processing, microstructure and properties of important structural steels, sheet steels, stainless steels, tool

steels, aluminum alloys, titanium alloys, as well as nickel based & copper-based alloys will be presented. Case studies, design problems & selection criteria are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2047 - ANALYSIS AND CHARACTERIZATION AT THE NANO-SCALE

Minimum Credits: 3
Maximum Credits: 3
This course offers a survey of micro-analytical, microscopy and diffraction methods that are widely used for the analysis of composition, chemistry, structure, scale and morphology of advanced materials. It introduces the most basic concepts required to understand experimental data obtained with these modern techniques. The main objectives of the course are to enable students to interpret and evaluate relevant data sets presented in the research literature and to identify experimental tools to solve a given Nano-research characterization problem. Some prerequisite basic knowledge of the structure of solid matter (e.g. Crystals and amorphous materials), diffraction methods (e.g. X-ray diffraction) and processing-property-structure relationships in materials is expected.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2048 - ENGINEERING ALLOYS FOR CONSTRUCTION

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to understand modern metallic alloys used in construction. To accomplish this goal, the following sequence is offered: review of mechanical properties required of structural alloys; review of physical metallurgy principles: thermodynamics, kinetics, phase diagrams and phase transformations; microstructure and properties of stainless steels, aluminum alloys, titanium alloys, nickel and cobalt-based super alloys and alloys for nuclear core applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering (PENGR)

MSE 2049 - TENSOR NETWORKS: COMPUTATIONAL METHODS FOR MATERIALS SCIENCE, ENGINEERING, AND BEYOND

Minimum Credits: 3
Maximum Credits: 3
Introduction to tensor network algorithms. Topics include a general introduction to tensors; their description as matrix product states (MPSs); operators as matrix product structures (MPOs); MPS methods for minimization and time evolution; alternative tensor network structures; and applications of tensor networks to quantum transport, solution of differential equations, machine learning, and quantum computation. Example codes in Julia, based on the ITensor package, will be provided and worked through for each topic discussed in class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2050 - GAS-METAL REACTIONS

Minimum Credits: 3
Maximum Credits: 3
Oxidation of metals, alloy oxidation, internal oxidation, effect of metallurgical variables on oxidation, reactions of metals and alloys with gases other than oxygen, hot corrosion, coatings.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2052 - INTRODUCTION TO TECHNICAL COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
An introduction to technical writing and oral presentation skills using Word, Powerpoint, Mendeley, InkScape and LaTeX.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

MSE 2055 - PRIN OF SOLIDIFICATION ENGRNG

Minimum Credits: 3
Maximum Credits: 3
Study of fundamental phenomenon during the formation of crystalline materials. Delineation of the processing parameters that control crystal perfection, solidification substructure, grain size and shape, microsegregation, macrosegregation, microporosity, inclusions, mechanical properties, and physical properties. Application of fundamental principles to the processing of single crystals, ingots, castings, and composites.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2061 - TRIBOLOGY: THE STUDY OF ADHESION, FRICTION, LUBRICATION, AND WEAR

Minimum Credits: 3
Maximum Credits: 3
Tribology is the study of sliding surfaces. This course will cover fundamental topics in tribology relating to surface characterization, surface roughness, adhesion, friction, lubrication, and wear. Students completing the course will be able to describe the theoretical origins of these topics, which relate to mechanics, materials science, and chemistry. They will also be able to apply tools to solve novel problems in these areas. The course will especially emphasize applications in nanotechnology and biology. Students who do not have a background in solid mechanics should contact the instructor before enrolling in the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQS: UGRAD: ENGR 0022 or MEMS 0023 or ENGR 0145 or Consent from Instructor; GRADS: ME 2003 or MSE 2036 or BIOENG 1633 or Consent from Instructor; PLAN: ME, MSE, BioE Graduate Students. All other students will need permission from the instructor

MSE 2064 - NANOMATERIALS AND BIOMOLECULAR ASSEMBLY

Minimum Credits: 3
Maximum Credits: 3
With the miniaturization of the building blocks of materials down to the nanoscale, one hundred-thousandth the size of a human hair, many interesting properties emerge that underlie the societal interest in nanotechnology. Importantly, learning how nature builds a panoply of functional materials from the bottom-up opens the door for bio-inspired self-assembly techniques for engineering nanomaterials. This class focuses on the fundamentals of size-dependent properties and interactions governing the manipulation of matter in the 1-100 nm length scale. Various synthesis methods are leveraged for creating nanoscale building blocks with tailored sizes, shapes, and properties. Moreover, techniques for assembling nanoscale building blocks depend on the interplay among different types of forces and how they scale, including van der Waals, electrostatic, magnetic, molecular, and entropic interactions. Topics covered include chemical synthesis and self-organization of low dimensional materials, such as zero-dimensional nanoparticles, one-dimensional nanowires/nanotubes, and two-

dimensional layered structures, like graphene. Examples of heterostructures and multiphasic/hybrid material systems with organic and inorganic components will be discussed leveraging capillary assembly, block copolymer phase segregation, protein assembly, and DNA origami.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2065 - MATERIALS DESIGN

Minimum Credits: 3
Maximum Credits: 3
Alloy manufacturing has been improved over the last 50 years with many new technologies developed. This course introduces several advanced manufacturing of advanced alloys. The methods introduced in this course include alloy casting, additive manufacturing, rapid solidification, powder metallurgy. However, rather than exclusively introducing the techniques themselves, the course particularly focuses on the metallurgical fundamentals of these manufacturing techniques. The materials design concepts and methods will be introduced, and design principles with the process-structure-property-performance relationships for these manufacturing techniques will be emphasized. The course will also cover major contents as below: 1. Fundamental metallurgical concepts for alloy design and manufacturing 2. Materials design principles and methods 3. Casting, welding, and their metallurgical design aspects 4. Powder metallurgy and their applications 5. Alloy 3D printing and its optimization 6. Computational simulation of advanced manufacturing 7. Microstructure engineering for advanced manufacturing 8. Future manufacturing of advanced alloys Each lecture will cover two weeks of class. About 16 weeks are planned for this course. The course will further develop some design projects for students to accomplish.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2067 - ELEMENTS OF MATRLS SCI & ENGRG 1

Minimum Credits: 3
Maximum Credits: 3
This course is primarily designed for graduate students entering the program without a degree in a field of materials engineering. Bonding and structure of materials; thermodynamics and phase diagrams; imperfections in crystals; rate processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2072 - CERAMIC PROCESSING

Minimum Credits: 3
Maximum Credits: 3
The course is focused on powder processing of ceramic materials. It is arranged according to the steps in processing, statiing with powder synthesis and characterization, proceeding through the commonly used powder forming methods and finally to the high temperature sintering of the product.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2073 - CERAMIC MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Ceramics engineering is to design and manufacture components of inorganic nonmetallic materials which mainly starts from solid articles. A series of lectures involves a comprehensive treatment of the structure-property relationships of ceramic materials for students with a background in materials science and engineering. Topics include: crystal structures of ceramics and their effect on physical and chemical

properties, the structure and properties of oxide glasses and glass ceramics, defects and transport properties in oxides, ceramic phase diagrams and microstructure-property relationships, basic theory of sintering and various processing techniques of ceramics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2085 - SUSTAINABLE MATERIALS PRODUCTION

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the use of global resources in the production of the most heavily consumed materials in manufacturing and construction. For each of these materials the production process will be described starting with the resources from which they are derived and ending with the needs of the manufacturing or construction process in which they are used. The material life cycle and materials eco-selection criteria will be used to highlight end-of-life issues and how the sustainability of materials production may be improved. The use of strategic minerals in materials production will also be highlighted. Finally, renewable materials will be introduced and the prospects for their widespread use in materials production considered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ENGR 0022 or MEMS 0023 or MSE 2067

MSE 2088 - POWDER PROCESSING OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Powder processing is widely practiced in the traditional powder metals and ceramics industries as well as in additive manufacturing. This course will review these applications and focus on the underlying materials science and engineering employed in: production of metals and ceramic powders, powder characterization methods, the forming methods used to make shapes from metal and ceramic powders as well as sintering and heat treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2090 - CORROSION AND FAILURE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course covers the principles of corrosion and the analysis and prevention of failures. The initial part of the course covers the thermodynamics of corrosion reactions, metallurgical aspects of corrosion, and the various mechanisms of corrosion. An in-depth study is then made of modes of failure and corrosion-assisted failures. Guidelines are given for the prevention of corrosion through the use of coatings, selection of materials, and design improvement.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: MSE 2067; PROG: Swanson School of Engineering

MSE 2096 - MS/MBA INTEGRATED PROJECTS COURSE

Minimum Credits: 1
Maximum Credits: 1
This is the integrated projects course for MS/MBA majors. The project will be jointly overseen by Katz and SSOE. A 1-2 page proposal is due at the beginning of the term, followed by a final report. The project should blend the student's business and engineering skills.
Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad Letter Grade

MSE 2104 - ADVANCED PHYSICAL METALLURGY OF NONFERROUS ALLOYS

Minimum Credits: 3
Maximum Credits: 3
The course covers the following content but is not limited to thermokinetics, phase transformations, and microstructure evolution in different non-ferrous alloys; phenomena related to non-metallic inclusions as well as strengthening particles; structure defects and their impacts on mechanical performance; processing with heat treatment; grain size and texture control through heat treatment; the relationship between processing, microstructure, and mechanical properties. Particularly, some of the case studies related to industrial applications will be discussed. Fundamental problems related to the physical metallurgy of advanced manufacturing, such as additive manufacturing, will be addressed by discussing practical applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2105 - STEELMAKING AND SUSTAINABILITY

Minimum Credits: 3
Maximum Credits: 3
This course will cover the various routes of modern ironmaking and steelmaking, including the primary existing processes and alternative processes, as well as attempts to develop lower carbon and carbon-free ironmaking and steelmaking routes. The blast furnace process for ironmaking will be analyzed, together with currently available alternative technologies and the possible use of hydrogen or electrolysis for ironmaking. The engineering aspects of the basic oxygen furnace and electric arc furnace steelmaking routes will be examined, together with alternative process routes to produce steel. The technical aspects of ingot casting and continuous casting will be reviewed. There will be a focus on some of the environmental issues facing the steel industry, as well as recent developments related to sustainability.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2106 - IRONMAKING AND STEELMAKING PROCESSES

Minimum Credits: 3
Maximum Credits: 3
This course will cover the various routes of modern ironmaking and steelmaking processes from raw materials through semi-finished products such as steel plates, coils, and pipes. The primary focus will be on existing processes, but the course will also cover topics in the development of alternative processes to lower the carbon intensity in the steel industry. The blast furnace process for ironmaking will be analyzed and contrasted with alternative technologies. The basic oxygen furnace and electric arc furnace steelmaking routes will be compared, and their strengths and limitations will be outlined. Some technical aspects of ingot casting and continuous casting will be covered, followed by coverage of rolling, coating, and other finishing processes. Some of the challenges facing the steel industry will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2110 - NUCLEAR MATERIALS

Minimum Credits: 3
Maximum Credits: 3
This course presumes that students have the knowledge base needed to understand materials issues associated with the design and operation of nuclear power plants, such as basic concepts of physical metallurgy, a mechanistic and microstructural-based view of material properties, and basic metallurgical principles. This course will cover the metallurgy and phase diagrams of alloy systems important in the design of commercial nuclear power plants. The micro-structural changes that result from reactor exposure (including radiation damage and defect cluster evolution) are discussed in detail. The aim is to create a linkage between changes in the material microstructure and changes

in the macroscopic behavior of the material. Also discussed is the corrosion of cladding materials as well the effects of irradiation on corrosion performance, as well as the effects of primary and secondary coolant chemistry on corrosion. Both mathematical methods and experimental techniques are emphasized so that theoretical modeling is guided by experimental data. Materials issues in current commercial nuclear reactors and materials issues in future core and plant designs are covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2111 - MATERIALS FOR ENERGY GENERATION AND STORAGE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Related

MSE 2112 - NANOSCALE MODELING AND SIMULATION: MOLECULAR DYNAMICS

Minimum Credits: 3
Maximum Credits: 3
The course covers the essentials of molecular dynamics simulation by integrating theories from dynamics, statistical mechanics, thermodynamics, continuum mechanics, and quantum mechanics. Topics include heat bath methods, time integration methods, accelerated methods, and different applications related to nanotechnology. Students gain hands-on experience using state-of-the-art simulation software.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2113 - NANOSCALE MODELING AND SIMULATIONS:

Minimum Credits: 3
Maximum Credits: 3
This course teaches the essentials of nanoscale modeling and simulations, which concerns the use of modern computational tools to the analysis of materials at the nanoscale. The current emphasis of this course is on first-principle density functional theory (DFT) calculation method. The course covers topics on basic quantum mechanics, fundamentals of DFT, statistical mechanics, thermodynamics, and continuum mechanics, and their role in atomistic scale modeling and simulation. Crystal structure, mechanical properties, structural defects, and electronic structures of materials as well as techniques for modeling them are also discussed. The course consists of a term project, in which students perform modeling and simulation of a nanomaterial system of their choice and analyze simulation results by visualization and data mining methods using software provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2120 - INTRODUCTION TO ADDITIVE MANUFACTURING OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
This class is targeted toward students who want to learn more about additive manufacturing in general, different additive manufacturing techniques, and how they can be used to produce parts out of a large variety of materials. We will cover the general difference between subtractive and additive manufacturing, introduce and detail the advantages and disadvantages of energy beam based and non-beam based additive manufacturing methods, and discuss which materials can be additive manufactured. We will also describe as-printed microstructures and properties and their improvement through post-processing. Furthermore, elements of characterization, testing and qualification will be introduced. If circumstances permit, students will be able to tour the Additive Manufacturing Research Laboratory at

the Swanson School of Engineering and potentially compare different AM methods in hands-on demonstrations
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2122 - FUNDAMENTALS OF MAGNETIC MATERIALS AND APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
This course will cover the fundamentals of magnetic properties of materials and will provide an introduction to a number of important applications. Classes of materials to be covered include elemental metals and metallic alloys as well as ceramics with an emphasis on ferromagnetic and ferrimagnetic material systems. Topics to be discussed in detail include quantum mechanical exchange interactions, magnetic anisotropy (shape, magnetocrystalline, exchange bias, induced, etc.), saturation magnetization, magnetostriction, temperature dependence of magnetic properties including statistical mechanics treatments of magnetic moment ordering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2123 - POWER MAGNETIC MATERIALS AND DEVICES

Minimum Credits: 3
Maximum Credits: 3
Magnetic materials and components play an increasingly critical role for emerging power and energy applications including inductors, transformers, motors / generators, and sensors. Optimized design of magnetic components requires careful consideration of magnetic material selection and manufacturing techniques in conjunction with systems and component level design methods. The purpose of this course is to provide a sound background in the fundamentals of both magnetic materials and component design. Fundamental principles will be applied to practical component-level design problems throughout the course, with a final design project to leverage analytical and/or finite element simulations. This course is targeted towards advanced undergraduate, masters, or PhD level students in materials science, mechanical engineering, electrical engineering, and / or applied physics with an interest in learning about power magnetic materials and devices relevant for emerging power and energy applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2131 - METAL COOLED REACTORS

Minimum Credits: 3
Maximum Credits: 3
This course is intended to provide you with an understanding of the technology associated with high-energy neutron reactors (most often called fast reactors). The course materials consist primarily of archival papers from literature, the GENIV International Forum materials, my slides, and the time we spend together during lectures; a bibliography of papers relevant to these reactors is provided in the course syllabus. Although many nations' sodium-cooled reactor programs continue to be based on oxide fuel, there is a better way metal fuel. In this course, the student will become more aware of the state of high-energy neutron reactor technology. Moving nuclear power from low-energy neutron fission (water-cooled reactors) to high-energy neutron fission (metal-, salt-, or gas-cooled reactors) will revolutionize fission, just as jet engines and fracking revolutionized commercial air transportation and oil/gas production, respectively. We will focus on metal-cooled high-energy neutron reactors, but you can easily transpose this knowledge to salt or gas systems
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2132 - BOILING WATER REACTOR SYSTEMS AND SAFETY

Minimum Credits: 3
Maximum Credits: 3
This course will review the fundamentals of boiling water reactor systems and operations as they apply to analysis, design, selection and

application of power generation. The course will cover the evolution of BWR systems including BWR features and characteristics and containment configurations. With successful completion of the class students will understand how BWRs operate through the fundamental principals of reactor power flows and core flow
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2185 - GRADUATE SEMINAR

Minimum Credits: 0
Maximum Credits: 0
Speakers are invited to review their current research on broad areas of interest with materials engineers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

MSE 2997 - RESEARCH, M.S.

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

MSE 2998 - GRADUATE PROJECTS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

MSE 2999 - M.S. THESIS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSE 3001 - PRACTICUM

Minimum Credits: 1
Maximum Credits: 12
Provide in curriculum practical training in an area related to advanced materials related research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

MSE 3023 - GRADUATE SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Speakers are invited to review their current research on broad areas of interest with materials engineers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

MSE 3024 - GRADUATE SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Speakers are invited to review their current research on broad areas of interest with materials engineers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

MSE 3100 - ENGINEERING RESEARCH LEADERSHIP AND MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 3997 - RESEARCH, PHD

Minimum Credits: 1
Maximum Credits: 12
Research methods and procedures for outlining methods of solution of research problems. Students are assigned problems and are required to submit an outline of attack and prepare a literature survey concerning a research problem that can meet the dissertation requirement.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Materials Science and Engineering PHD

MSE 3998 - PH.D. INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis

MSE 3999 - PH.D. DISSERTATION

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Mathematics

MATH 0120 - BUSINESS CALCULUS

Minimum Credits: 4
Maximum Credits: 4
This course introduces the basic concepts of limits, continuity, differentiation, integration, maximization and minimization. Applications to the social sciences, especially business and economics, are stressed.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: MATH 0020 or 0031 (MIN GRADE 'C') or MATH PLACEMENT SCORE (61 or GREATER)

MATH 0220 - ANALYTIC GEOMETRY AND CALCULUS 1

Minimum Credits: 4
Maximum Credits: 4
This is the first of a sequence of three basic calculus courses. It covers the derivative and integral of functions of one variable and their applications.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: MATH 0032 (MIN GRADE 'C') or MATH 0200 (MIN GRADE 'C') or MATH PLACEMENT SCORE (76 or GREATER)

MATH 0230 - ANALYTIC GEOMETRY AND CALCULUS 2

Minimum Credits: 4
Maximum Credits: 4
This is the second of a sequence of three basic calculus courses. It covers the calculus of transcendental functions, techniques of integration, series of numbers and functions, polar coordinates, and conic sections.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: MATH 0220; MIN GRADE: 'C'

MATH 0280 - INTRO TO MATRICES & LINEAR ALG

Minimum Credits: 3
Maximum Credits: 3
The principal topics which this course will cover include vectors, matrices, determinants, linear transformations, eigenvalues and eigenvectors, and selected applications.
Academic Career: Undergraduate
Course Component: Lecture

Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: MATH 0220 or 0235 (Min Grade 'C')

MATH 0400 - FINITE MATHEMATICS

Minimum Credits: 3
Maximum Credits: 3
The course covers the basic concepts of set theory, logic, combinatorics, Boolean algebra, and graph theory with an orientation towards applications.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: MATH 0020 or 0031 (MIN GRADE 'C') or MATH PLACEMENT SCORE (61 or GREATER)

MATH 0450 - INTRODUCTION TO ANALYSIS

Minimum Credits: 4
Maximum Credits: 4
This course is intended as a first course in mathematical analysis for highly motivated students. Topics will include sets and functions, number systems, topology of Euclidean spaces, limits, continuity, and the main theorems of elementary calculus.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212 or 0213 or 0214) or FP (0003 or 0006) *Applies to all WRIT Courses*

MATH 1180 - LINEAR ALGEBRA 1

Minimum Credits: 3
Maximum Credits: 3
This course stresses the theoretical and rigorous development of linear algebra. Major topics include the theory of vector spaces, linear transformations, matrices, characteristic polynomials, bases and canonical forms. Other topics may be covered as time permits.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: CREQ: MATH 0413 or MATH 0450

MATH 2000 - THESIS MS

Minimum Credits: 1
Maximum Credits: 15
This course is for students writing a master of science thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MATH 2010 - TEACHING ORIENTATION

Minimum Credits: 1
Maximum Credits: 1
This course prepares T.A.'S to teach mathematics at a University level.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

MATH 2020 - PROGRESS IN MATH

Minimum Credits: 3
Maximum Credits: 3
This course will deepen the students understanding of analysis through intensive training in problem solving followed by comprehensive study and dissection of the problems attempted. Students preparing for the analysis portion of the preliminary exam are strongly encouraged to enroll.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2030 - ITERATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
Topics include matrix theory, matrix and vector norms, error analysis, factorizations, direct and iterative methods for solving linear systems, least squares and the algebraic eigenvalue problem.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2060 - COMBINATORICS 1

Minimum Credits: 3
Maximum Credits: 3
This is a graduate level course in combinatorics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2070 - NUMERCL METH IN SCI COMPUTING 1

Minimum Credits: 4
Maximum Credits: 4
This course is the first part of the sequence MATH 2070 - MATH 2071, which is an introduction to numerical methods for science and engineering. Topics to be covered include: general concepts related to error, solution of nonlinear equations, interpolation theory, approximation of functions, numerical integration. Both theoretical analysis of the algorithms and practical implementation issues will be emphasized. The course is complemented with a fully integrated computer laboratory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2071 - NUMERCL MATH IN SCI COMPUTING 2

Minimum Credits: 4
Maximum Credits: 4
This course is the second part of the sequence MATH 2070 - MATH 2071, which is an introduction to numerical methods for science and engineering. Topics to be covered include: numerical methods for ODEs, selected linear algebra topics, numerical solution of linear systems, numerical solution of eigenvalue problems. Both theoretical analysis of the algorithms and practical implementation issues will be emphasized. The course is complemented with a fully integrated computer laboratory. MATH 2070 is not a prerequisite.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2090 - NUMERICAL SOLUTN ORDNRY DE

Minimum Credits: 3
Maximum Credits: 3
The topic covered is modern methods for solving initial value problems. This will include the basic theory and software implementations and numerical experiments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2245 - ALGEBRAIC NUMBER THEORY

Minimum Credits: 3
Maximum Credits: 3
In this course the theory of numbers will be algebraically, that is, as the study of algebraic numbers. Particular attention will be paid to the development of quadratic and cyclotomic number fields and to factorization theorems. Other topics include ideal theory and the work of Kummer and Fermat's last theorem.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2301 - ANALYSIS 1

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to real analysis/measure theory and functional analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2302 - ANALYSIS 2

Minimum Credits: 3
Maximum Credits: 3
This course presents an introduction to the analysis of holomorphic functions followed by an introduction to harmonic analysis. It is a natural continuation of math 2300 analysis 1.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2303 - ANALYSIS 3

Minimum Credits: 3
Maximum Credits: 3
This course presents an introduction to the analysis of holomorphic functions followed by an introduction to harmonic analysis. It is a natural continuation of MATH 2300 analysis 1.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2304 - ANALYSIS 4

Minimum Credits: 3
Maximum Credits: 3

Analysis 4 is a new course that follows on from the analysis 1, 2, 3; especially analysis 2. Its focus will be complex and harmonic analysis. We will integrate this new material with the real, functional, complex and harmonic analysis of the previous three courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2370 - MATRICES AND LINEAR OPERATORS

Minimum Credits: 3
Maximum Credits: 3
Linear transformations on finite dimensional vector spaces are studied in a semi-abstract setting. The emphasis is on topics and techniques which can be applied to other areas, e.g., Bases and dimension, matrix representation, linear functional, duality, canonical forms, vector space decom position, inner products and spectral theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2371 - MATRICES & LINEAR OPERATORS 2

Minimum Credits: 3
Maximum Credits: 3
Continuation of MATH 2370.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2430 - INTRODUCTION TO MATHEMATICAL PROBABILITY

Minimum Credits: 3
Maximum Credits: 3
This course provides a rigorous introduction to the mathematical foundations of probability theory. Topics include probability spaces, random variables, expectation, independence, modes of convergence, laws of large numbers, the central limit theorem, martingales, Markov chain, and Brownian motion. Applications to various fields of mathematics are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2440 - TOPICS IN MATHEMATICAL PROBABILITY

Minimum Credits: 3
Maximum Credits: 3
This course explores selected advanced topics in modern probability theory, with emphasis on recent developments and research-oriented methods. Possible topics include stochastic processes, martingale theory, concentration inequalities, random matrices, or probabilistic methods in fields of mathematics including but not limited to analysis, algebra, combinatorics, optimization, and more. The precise content varies by semester and instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2500 - ALGEBRA 1

Minimum Credits: 3
Maximum Credits: 3
The basic concepts and results of group theory are developed with an emphasis on finite groups. Topics include: homo morphism theorems,

isomorphism theorems, Sylow theorems, permutation representations and hall's characterization of solvable groups.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2501 - ALGEBRA 2

Minimum Credits: 3
Maximum Credits: 3
In this course the fundamental properties of rings, fields and modules are studied.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2505 - ALGEBRA 3

Minimum Credits: 3
Maximum Credits: 3
This is a third course in algebra. It covers commutative algebra, homological algebra and rudiments of category theory. The material covered provides the necessary background for the advanced courses in algebraic geometry and number theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2507 - ALGEBRA 4

Minimum Credits: 3
Maximum Credits: 3
This is the fourth course in Algebra. It covers introductory topics in algebraic geometry, number theory, and representation theory. Course material will be selected by the instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2530 - ADVANCED CALCULUS 1

Minimum Credits: 3
Maximum Credits: 3
This course contains a rigorous development of the calculus of functions of a single variable, including compactness on the real line, continuity, differentiability, integration, and the uniform convergence of sequences and series of functions. Other topics may be included, such as the notion of limits and continuity in metric spaces.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2540 - ADVANCED CALCULUS 2

Minimum Credits: 3
Maximum Credits: 3
This course, a continuation of MATH 1530/2530, covers the theory of limits, differentiation, and integration of functions of several variables.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2601 - ADVANCED SCIENTIFIC COMPUTING 1

Minimum Credits: 3
Maximum Credits: 3
These courses develop the computational mathematics of evolving areas of current scientific interest.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2602 - ADVANCED SCIENTIFIC COMPUTING 2

Minimum Credits: 3
Maximum Credits: 3
Course develops the computational mathematics of evolving areas of current scientific interest.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2603 - ADVANCED SCIENTIFIC COMPUTING 3

Minimum Credits: 3
Maximum Credits: 3
These courses develop the computational mathematics of evolving areas of current scientific interest.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2604 - ADVANCED SCIENTIFIC COMPUTING 4

Minimum Credits: 3
Maximum Credits: 3
These courses develop the computational mathematics of evolving areas of current scientific interest.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2700 - TOPOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
A first course in topology, some of the topics covered include separation axioms, bases and sub-bases, product and quotient topology, homeomorphisms, compactness, the Baire category theorem, the Lindelof property, connected ness, topological spaces and compactification.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2701 - TOPOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
This course is a continuation of 2700. In this course the basic concepts and results in algebraic topology will be covered, this includes both homotopy and homology theory. In particular the calculation of the fundamental group and homology groups from chain complexes will be covered.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2800 - DIFFERENTIAL GEOMETRY 1

Minimum Credits: 3
Maximum Credits: 3
This course covers introductory topics in differential geometry. Topics include topological manifolds, differential structures, tangent and tensor bundles, vector fields and differential equations, integral manifolds and Riemannian structures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2801 - DIFFERENTIAL GEOMETRY 2

Minimum Credits: 3
Maximum Credits: 3
This course is a continuation of 2800 and its goal is to develop advanced concepts in differential geometry. Some topics which might be covered include Riemann surfaces and the differential geometry of r4 and in particular the relevance of these to quantum super string theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2810 - ALGEBRAIC GEOMETRY

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the basic ideas of algebraic geometry. The approach to the subject may be via either the linear series on a curve approach or the algebraic approach through fields of algebraic functions or the sheaf theoretic approach. Applications may also be included.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2900 - PARTIAL DIFFERENTIAL EQUATIONS 1

Minimum Credits: 3
Maximum Credits: 3
This is an introduction course to this area. Some of the topics to be covered include: linear second order equations, the method of characteristics, Laplace and wave equations, the heat equation and various maximum principles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2901 - PARTIAL DIFFERENTIAL EQUATIONS 2

Minimum Credits: 3
Maximum Credits: 3
This course is a continuation of 2900. The topics covered in this course include an introduction to parabolic and hyperbolic equations, a priori estimates, free boundary problems, shock waves and Riemann problems.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2920 - DYNAMICAL SYSTEMS 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces fundamental concepts for the study of continuous and discrete dynamical systems. The dynamical systems perspective treats solutions to dynamical systems as flows in a phase space. The course will cover linearization and associated concepts of stability, energy-related concepts such as Hamiltonians and Lyapunov functions, Floquet theory for periodic orbits, invariant manifolds, and existence, uniqueness, and dependence of solutions on initial conditions and parameters including an introduction to bifurcations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2921 - DYNAMICAL SYSTEMS 2

Minimum Credits: 3
Maximum Credits: 3
This course continues the presentation of nonlinear dynamical systems theory. It includes detailed analysis of center manifolds and bifurcations, averaging theory, an introduction to multiple timescale dynamics, and the properties and detection of chaos including Smale horseshoes, Lyapunov exponents, and Melnikov's method.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2940 - STOCHASTIC PROCESSES WITH APPLICATIONS IN BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course covers fundamental theory and methods for analysis and simulation of Markovian stochastic processes. The topics include recurrence, transience, absorption probabilities and mean passage times, and steady states for processes with continuous or discrete state spaces on both continuous and discrete time domains, such as Markov chains, diffusion processes, and basic stochastic differential equations. Applications will be taken primarily from biology but also from chemistry, physics, or mathematical finance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2950 - METHODS IN APPLIED MATHEMATICS

Minimum Credits: 3
Maximum Credits: 3
This course is a rigorous treatment of various aspects of numerical linear algebra, special features of symmetric operators, optimization with emphasis on properties of convex functions and duality theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 15
This course is independent study by the student under the direction of a faculty member.
Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad SN Basis

MATH 3000 - THESIS PH.D.

Minimum Credits: 1
Maximum Credits: 15
This course is taken by a student who is working on a Ph.D. dissertation under the direction of a student's thesis advisor.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MATH 3020 - CALCULUS OF VARIATIONS

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the subject. Topics include: variation formulation, the Euler-LaGrange equations, and applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3040 - TOPICS IN SCIENTIFIC COMPUTING

Minimum Credits: 3
Maximum Credits: 3
This course seeks to provide a broad introduction to the field of machine learning. The emphasis will be the development of a rigorous mathematical basis for the most commonly used algorithms in the field. Topics to be covered include non-convex optimization, convex optimization, clustering, dimensionality reduction and neural networks. A background in multivariable calculus and linear algebra is recommended. Prior programming experience is not required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MATH 3060 - TOPICS IN COMBINATORICS

Minimum Credits: 3
Maximum Credits: 3
This course covers a variety of topics in combinatorics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3071 - NUMRC SOLUTN PARTL DIFFT EQUA

Minimum Credits: 3
Maximum Credits: 3
This course covers contemporary methods for solving initial and boundary value problems. Topics include: properly posed problems, characteristics, finite difference and finite element methods and error estimates.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3072 - FINITE ELEMENT METHOD

Minimum Credits: 3
Maximum Credits: 3
Topics include a description of the method in one, two and three dimensions, variation and minimum energy principles, implementation and discussion of the necessary data structure and evaluation of the errors. Possibly a special topic such as applications to fluid dynamics will be done.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3224 - MATHEMATICS OF FINANCE

Minimum Credits: 3
Maximum Credits: 3
This course introduces the mathematical foundations of modern financial theory. Topics include partial differential equations, stochastic analysis, portfolio optimization, pricing and hedging financial instruments, risk management and financial decision making etc. No financial background is required, but many of the examples and illustrations of the mathematics will be drawn from economics and finance. Knowledge of multivariable calculus, linear algebra, and Probability 1 are prerequisites for this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3225 - MATHEMATICS OF FINANCE 1

Minimum Credits: 3
Maximum Credits: 3
A mathematical introduction to the pricing of options and other derivative securities, portfolio theory and risk management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3226 - MATHEMATICS OF FINANCE 2

Minimum Credits: 3
Maximum Credits: 3
This course will investigate the mathematical modeling, theory and computational methods in modern finance. It will treat mathematical models for financial risk factors, pricing of options and other derivative securities, basic portfolio theory and elementary risk management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3227 - MATH FINANCE 3

Minimum Credits: 3
Maximum Credits: 3
This course covers special topics in mathematical finance. Topics will include: extensions of the blacK-Scholes model to alternative stochastic processes, risk management, models for credit risk and credit derivatives, American options, portfolio selection and derivatives pricing under trans actions costs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3228 - MATHEMATICS OF FINANCE 4

Minimum Credits: 3
Maximum Credits: 3
This course covers advanced topics in modern mathematical finance. Topics will include: advanced credit risk and interest rate models, stochastic control and stochastic optimization models for portfolio selection and option pricing, and numerical methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3370 - MATHEMATICAL NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3
Course covers computational and mathematical neuroscience. It will do modeling and analysis of complex dynamics of single neurons and large-scale networks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3375 - COMPUTATIONAL NEUROSCIENCE METHODS

Minimum Credits: 3
Maximum Credits: 3
This course offers an introduction to modeling methods in neuroscience. Topics range from modeling the firing patterns of single neurons to using computational methods to understand neural coding. Some systems level modeling is also done.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3380 - MATHEMATICAL BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course introduces a number of modeling methods for biological systems. We will examine a number of problems from cell biology, immunology, population biology, physiology and molecular genetics. The main tools will be techniques from ordinary and partial differential equations. Discrete and delay-differential equations will also be used however the background for these will not be assumed. We will take models from current and classic papers in the field.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3385 - MATHEMATICS OF POPULATIONS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on classical and modern modeling approaches for populations as well as their analytical and computational analysis. Topics span a wide range of processes governing populations, including conditions for persistence and species coexistence, optimal control and management strategies, and the effects of seasonality and other disturbances including exposure to pathogens. The latter is linked to the study of epidemic systems. Model formulations include discrete- and continuous-time systems, spatially heterogeneous and metapopulation models, and eco-evolutionary frameworks grounded in game theory. Analytical methods from dynamical systems, probability, and linear algebra are integrated with computational techniques for simulations, bifurcations, and data-driven exploration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3436 - FIXED POINTS WAVELETS & FRACTALS

Minimum Credits: 3
Maximum Credits: 3
The course will cover iterative image reconstruction using the wavelet transform, initiated by Mallat and Zhang.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3501 - TOPICS IN ALGEBRA

Minimum Credits: 4
Maximum Credits: 4
This is a course on the representation theory of reductive p-adic groups. It is a direct continuation of the Fall 2024 Math 2505 (Algebra 3), which covers the foundations of representation theory and applications. One of the main motivations for the study of the representation theory of p-adic groups has to do with the realization of automorphic forms as representations of adelic groups whose local components are representations of p-adic groups. The conjectures formulated by Langlands in the late sixties have been a driving force in the development of both theories of automorphic representations and representation of reductive p-adic groups. The course will cover 1. The theory of admissible representations. 2. Parabolic induction. 3. Interwining operators. 4. Composition series of parabolically induced representations. 5. The Bernstein center. 6. The spherical and Iwahori Hecke algebras. 7. The Bernstein-Zelevinsky classification for GL(n).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MATH 3550 - LIE THEORY

Minimum Credits: 3
Maximum Credits: 3
This course will cover the basic properties of lie groups and lie algebras. Also the basic classification of simple lie algebras and lie groups.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3650 - TOPICS IN SYMPLECTIC GEOMETRY

Minimum Credits: 3
Maximum Credits: 3
This course will cover topics in symplectic geometry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3760 - TOPICS IN TOPOLOGY

Minimum Credits: 3
Maximum Credits: 3
Topics will include topological algebra, especially non metric topological groups, and topological semi-groups.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3900 - INTERNSHIP

Minimum Credits: 1
Maximum Credits: 9
Internship and/or employment experience under the supervision and oversight of a faculty member. This experience is to be an integral part of the student's individual course of study.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

MATH 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This is a course of directed study under a faculty member covering a topic of special interest which is not normally in the curricula.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

MATH 3923 - TOPICS PARTIAL DIFFERENTIAL EQNS

Minimum Credits: 3
Maximum Credits: 3
This course will explore recent developments in the theory of partial differential equations centered on the notion of viscosity solution. After a review of Hamiton-Jacobi equations, we will discuss how they can be used as a substitute for convolution in non-linear problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Mechanical Engineering

ME 2001 - DIFFERENTIAL EQUATIONS

Minimum Credits: 3
Maximum Credits: 3
Ordinary differential equations; series solutions of differential equations; introduction to partial differential equations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2002 - LINEAR AND COMPLEX ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Linear algebra; vector analysis; complex variables; intro to calculus of variations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2003 - INTRODUCTION TO CONTINUUM MECHANICS

Minimum Credits: 3
Maximum Credits: 3

The fundamental concepts of continuum mechanics are necessary for studying the mechanical behavior of solids and fluids. Includes a review of vectors and tensors; stress; strain and deformation; general principles in the form of balance laws; constitutive equations and their restrictions; and specialization to the theories of linearized elasticity and fluid mechanics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2004 - ELASTICITY

Minimum Credits: 3
Maximum Credits: 3
Fundamental concepts of stress and strain. Linear theory; boundary-value problems of elasticity, including plane stress, plane strain, torsion, and flexure. Elementary variational theory of elasticity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ME 2003; PROG: Swanson School of Engineering

ME 2005 - STRUCTURE OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Fundamentals of crystallography; lattice geometry; Bravais lattices; crystal systems; stereographic protection; point and space groups; symmetry elements; tensor properties of crystals; physical properties; elasticity of crystals; introduction to diffraction by crystals; reciprocal lattice; Ewald construction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2006 - MODELING MATERIAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
Using the principles of constitutive modeling in continuum mechanics to model the behavior of materials. Constitutive models for viscous fluids, thermoviscous fluids, elastic solids, thermoelastic solids, viscoelasticity, and plasticity are covered both because of their relevance and as examples of the process for developing constitutive models.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ME 2003

ME 2007 - ELEMENTS OF MATERIAL SCIENCE AND ENGINEERING 1

Minimum Credits: 3
Maximum Credits: 3
This course is primarily designed for graduate students entering the program without a degree in a field of materials engineering. Bonding and structure of materials; thermodynamics and phase diagrams; imperfections in crystals; and rate processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2009 - PROCESSING OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
This course is primarily designed for graduate students entering the program without a degree in a field of materials. Alloy design, strengthening mechanisms, mechanical properties: plastic deformation, mechanical properties and microstructure control; high temperature deformation, grain size control during reheating and during deformation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2010 - NANOMECHANICS, MATERIALS AND DEVICE

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction for current nanotechnology and fundamentals for Nano engineering. It mainly contains three areas: Nano mechanics, nanomaterials and nanoscale devices. In Nano mechanics, it covers Nano indentation mechanics, thin film mechanics and one dimensional nanowire mechanics, Nano crack mechanics, deformation in nanomaterials. Nano mechanical model will be emphasized. In nanomaterials, it covers carbon nanotube, one dimensional semiconducting nanowires & Nano multilayers as well as nanostructured composites. Novel property/phenomena reviewed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2011 - FUNDAMENTALS OF MICRO AND NANOMANUFACTURING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2016 - NONLINEAR DYNAMICAL SYSTEMS 1

Minimum Credits: 3
Maximum Credits: 3
Nonlinear systems are the rule, rather than the exception, in physics and engineering. This course serves as an introduction to their formal study and leverages both analysis and computation heavily to study analysis methods for nonlinear physical and engineering problems. The course introduces important topics such as bifurcations, limit cycles, Lyapunov functions and stability, and chaos.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2017 - NONLINEAR DYNAMICAL SYSTEMS 2

Minimum Credits: 3
Maximum Credits: 3
Nonlinear systems are the rule, rather than the exception, in physics and engineering. This course serves to extend their formal study and leverages both analysis and computation heavily to study analysis methods for nonlinear physical and engineering problems. The course reviews analytical techniques and programming, and briefly reviews important topics from the previous course. It then begins with the study of discrete time linear and nonlinear dynamical systems, additional study of bifurcation theory, chaos control and synchronization, and delay differential equations.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2018 - INTRODUCTION TO COMPUTER-AIDED ENGINEERING ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Introduction to computational fluid dynamics and finite element analysis using industry-grade simulation software. The class covers the fundamental concepts behind finite volume and finite element methods. The class emphasizes application and effective use of simulation software through laboratory exercises and simulation assignments. Topics covered include mesh generation, time-dependent flows, thermally driven flows, turbulence modeling, and linear stress analysis of mechanical parts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2020 - MECHANICAL VIBRATIONS

Minimum Credits: 3
Maximum Credits: 3
Analysis of linear and non-linear multi-degree of freedom systems. Lagrangian formulation, model analysis, lumped parameter analysis of discrete systems, and continuous system vibrations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2022 - APPLIED SOLID MECHANICS

Minimum Credits: 3
Maximum Credits: 3
Stress and strain transformations; applied elasticity problems in torsion and plane problems; thermal stresses and elementary plasticity; energy methods; fundamentals of finite element methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2023 - TRIBOLOGY: THE STUDY OF ADHESION, FRICTION, LUBRICATION, AND WEAR

Minimum Credits: 3
Maximum Credits: 3
Tribology is the study of sliding surfaces. This course will cover fundamental topics in tribology relating to surface characterization, surface roughness, adhesion, friction, lubrication, and wear. Students completing the course will be able to describe the theoretical origins of these topics, which relate to mechanics, materials science, and chemistry. They will also be able to apply tools to solve novel problems in these areas. The course will especially emphasize applications in nanotechnology and biology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ME, MSE or BioE Graduate Students. All other students will need permission from the instructor to register

ME 2027 - ADVANCED DYNAMICS

Minimum Credits: 3
Maximum Credits: 3
Through the development and solution of the equations of motion of 3D mechanical systems, this course forms a foundation for applications such as three-dimensional robotics, autonomous driving and aerospace systems. The extension of elementary dynamics to multiple bodies in three dimensions treats basic kinematics, coordinate transformations/rotations and the constraints imposed by interbody connections. Methods that can be covered include the Newton-Euler formulation, the principle of virtual work, the Lagrangian formulation, the Method of Virtual Power (Kane's Equations), the calculus of variations, Hamiltonian formalism, first integrals, Routh's method, stability, canonical transformations, and the Hamilton-Jacobi theory. Numerical methods are applied to problems and are shown to accurately find the motions resulting from forces and moments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2033 - FRACTURE MECHANICS FOR PRODUCT DESIGN AND MANUFACTURING

Minimum Credits: 3
Maximum Credits: 3
Failure of manufactured products in service, implications for design. Energy release rates, toughness, evaluation of experimental tests. Fracture mechanisms in different material systems. Damage tolerance. Fracture control. Design studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2035 - COMPOSITE MATERIALS DESIGN AND APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
Extensive uses of composites can be seen in several aspects of engineering applications. Industrial sectors, such as in wind turbines, oil and natural gas exploration and production, natural gas and hydrogen vehicle storage tanks, high-speed and precision machinery, etc., are today the largest user of composites, surpassing aerospace industries. Other applications are in semiconductor manufacturing equipment; automobile engines, bodies, brakes and clutches; energy storage flywheels; gas turbine engines; process industries equipment; data storage equipment; medical diagnostic equipment; prosthetics and orthotics, etc. The advantages of composite materials stem from their outstanding strengths and stiffnesses, low densities, in addition to their unique and tailorable physical properties, including good thermal conductivities compared to copper and thermal expansions that can be varied from high to near zero. Composites, such as metallic, ceramic and carbon materials have both high-temperature and low-temperature capabilities, making them useful in high temperature regimes, e.g. in gas turbine engines, automobile and aircraft brakes. This course offers an in-depth presentation of design, analysis and manufacturing methods for composites, with particular reference to polymer matrix composites. For an efficient use of composites in lightweight structural design applications, this course offers the needed fundamental understanding of the structure, properties, and mechanics of composite materials. A typical mechanical analysis and design of composite structures, which are significantly more complex than those of their metallic equivalents due to the anisotropic nature of laminated composite materials, will be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ME 2001 and 2003 and 2004, or sufficient background in structural mechanics; PLAN: Swanson School of Engineering

ME 2038 - TENSOR NETWORKS: COMPUTATIONAL METHODS FOR MATERIALS SCIENCE, ENGINEERING, AND BEYOND

Minimum Credits: 3
Maximum Credits: 3
Introduction to tensor network algorithms. Topics include a general introduction to tensors; their description as matrix product states (MPSs); operators as matrix product structures (MPOs); MPS methods for minimization and time evolution; alternative tensor network

structures; and applications of tensor networks to quantum transport, solution of differential equations, machine learning, and quantum computation. Example codes in Julia, based on the ITensor package, will be provided and worked through for each topic discussed in class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2039 - QUANTUM MECHANICS FOR ENGINEERS

Minimum Credits: 3
Maximum Credits: 3
Introduction to quantum physics, matrix formulation of quantum mechanics, postulates of quantum mechanics, qubits and their description, composite quantum systems, quantum circuits, density matrices, entanglement and its characterization, introduction to quantum computation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2042 - MEASUREMENT AND ANALYSIS OF VIBRO-ACOUSTIC SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course will present measurement and analysis techniques for dynamic systems, with particular emphasis on mechanical vibrations and acoustics. Background on vibration of lumped and continuous parameter systems, acoustics, and noise and vibration control will be given. Other concepts include FFTS, windowing, input/output relationship calculations, test methods, transducers, instrumentation, and the use of dynamic signal analyzers. Application to system identification and modal analysis will be included, as well as hardware demonstrations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2043 - MACHINE LEARNING-BASED METHODS FOR DYNAMICS AND CONTROL

Minimum Credits: 3
Maximum Credits: 3
This course will discuss and study the utility of learning algorithms in dynamic systems and control applications. Approximately 1/6 of the course will study iterative learning control (useful in manufacturing, robotics, etc.), and the remainder split between shallow and deep neural networks for approximating and designing controllers and prediction algorithms (widely applicable in time series prediction), and a final portion spent on reinforcement learning and basic dynamic programming. It is meant to complement other data-driven courses in the department and add a dynamic systems and control flavor and perspective, and provide some survey of the state of the art via the projects. This course will mostly focus on linear and nonlinear ODE (difference, and differential equation) based systems as opposed to PDE-based ones.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2045 - LINEAR CONTROL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course builds upon the foundation laid in a classical feedback control course. The tools will be developed for analyzing and designing controllers for multi-input, multi- output dynamic systems. Ideas of controllability and observability will be discussed, as well as modern control design techniques such as pole-placement.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2046 - DIGITAL CONTROL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course provides the student with the tools necessary to analyze and design discrete-time (digital computer) control systems for real-time control of dynamic systems. It builds upon the background of classical control topics including Nyquist, bode, and root locus, and transform ideas will be used extensively for design and analysis to give the student an understanding of how discrete-time and classical control systems are related. State-space representations will be used for Mimo systems, so a prior understanding of modern control ideas is important.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2047 - FINITE ELEMENT ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Development of elements from variational principles and application to static continuum problems. Introduction to techniques for dynamics, stability, and generalized field problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2050 - THERMODYNAMICS

Minimum Credits: 3
Maximum Credits: 3
Detailed presentation of the conceptual foundations of thermodynamics. Energy and the first law of thermodynamics. The second law of thermodynamics and entropy. Thermo-physical properties of pure substances. Energy conversion systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2052 - INTRODUCTION TO TECHNICAL COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
An introduction to technical writing and oral presentation skills using Word, Powerpoint, Mendeley, InkScape and LaTeX.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ME 2053 - HEAT AND MASS TRANSFER

Minimum Credits: 3
Maximum Credits: 3
Steady state and transient conduction in solids. Conservation laws of mass, momentum, and energy. Forced and free convection heat transfer; condensation and boiling; thermal radiation.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2054 - PARALLEL COMPUTING FOR ENGINEERS

Minimum Credits: 3
Maximum Credits: 3
Modern engineering is increasingly relying on numerical software applications and benefits from fast turnaround time enabled by multi-core processors. From smart phones to flagship supercomputers, parallelism has become pervasive. This class introduces students to parallel scientific computing with compiled languages. Students will develop a basic understanding of computer architecture, memory hierarchy, number representations and computer arithmetic. Students will become proficient in modern software environment of supercomputers, working with large scientific software and using sophisticated external libraries to solve technical problems. Students will learn Flynn's taxonomy for parallel computers and develop parallel programs using the message passing interface (MPI) library for distributed-memory parallelism, OpenACC for computing with graphics processing units (GPU) and shared memory parallelism with OpenMP. Students will learn common data formats to store and visualize large data. Class assignments and projects will be derived from linear algebra, partial differential equations and numerical analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2055 - COMPUTER AIDED ANALYSIS OF TRANSPORT PHENOMENA

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to implementation of some of the numerical/computational methods for solving problems in transport phenomena. Fields described by linear and non-linear ordinary differential equations (initial and boundary value problems), and partial differential equations (elliptic, parabolic and hyperbolic) will be considered by means of various examples from fluid dynamics, heat and mass transfer, and combustion. Numerical discretization techniques based on finite difference methods (FDM) will be the subject of main discussions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2056 - INTRO TO COMBUSTION THEORY

Minimum Credits: 3
Maximum Credits: 3
Covers the general solution techniques associated with combustion phenomena as well as chemical thermodynamics, heat and mass transfer, laminar flame theory, one dimensional reactive flow, heterogeneous combustion, and turbulent combustion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2060 - NUMERICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Introduction to numerical techniques for the solution of linear and non-linear equations, numerical integration and differentiation, interpolation, ordinary and partial differential equations, and eigenvalue problems.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2061 - REDUCED ORDER MODELING FOR ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course will provide an introduction to dimension reduction techniques and reduced order modeling. The course covers the mathematical foundation of all the techniques discussed and includes a diverse set of applications. In particular, the course covers the utility of dimension reduction in diagnostics of complex data, deterministic and stochastic reduced order modeling and their applications in optimization and uncertainty quantification.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2063 - DATA-DRIVEN MODELING FOR ENGINEERS

Minimum Credits: 3
Maximum Credits: 3
Introduction to data-driven modeling techniques: regression, Bayesian probabilities, parameter estimation, dimension reduction, neural networks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2067 - MUSCULOSKELETAL BIOMECHANIC

Minimum Credits: 3
Maximum Credits: 3
Course work will include the structure, function, and mechanics of the musculoskeletal system. Specific topics will include the kinematics and control of human movement and the mechanics of the musculoskeletal connective tissues, such as ligament, tendon, bone, cartilage, and muscle. Special emphasis will be placed on the relationship between function and material properties of these tissues. A research paper will be required as a term project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2070 - MICROFLUIDICS

Minimum Credits: 3
Maximum Credits: 3
The basic hypotheses in the macro-scale fluid mechanics may no longer be applicable in micro or even smaller scale. The objectives of this course are: to identify dominant forces and their effects in micro-scale fluid systems that are different from those in the macro-scale; to understand the fundamentals of micro fluidic phenomena; to discuss various micro fluidic applications in research and commercial levels and to explore new possible microfluidic applications in the emerging fields.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2074 - ADVANCED FLUID MECHANICS 1

Minimum Credits: 3
Maximum Credits: 3
Kinematics of fluids, Eulerian and Lagrangian descriptions, continuity, stream and potential functions, stress and rate of strain relation, derivations of Navier stokes and energy equations, some exact solutions, boundary layer theory, turbulent flows.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2075 - ADVANCED FLUID MECHANICS 2

Minimum Credits: 3
Maximum Credits: 3
Fluid mechanics is a broad field of study that serves as a fundamental subject in various disciplines such as aerospace engineering and geosciences. Nonlinear aspects of the governing Navier-Stokes equations manifest themselves in unique ways in different applications while sharing a common theory. This course builds upon the first graduate fluid mechanics course in the mechanical engineering graduate curriculum. The course will emphasize the nonlinear aspects of fluid mechanics in the context of different applications and provide the essential techniques and methods to study them. The course will cover the theory of temporal flow instabilities, statistical theory and modeling of turbulence for wall bounded and free shear flows, geophysical fluid dynamics and compressible aerodynamics at the intermediate level to prepare graduate students to pursue graduate level courses in each subject.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: Swanson School of Engineering

ME 2081 - SMART MANUFACTURING - KEY TO INNOVATIONS

Minimum Credits: 3
Maximum Credits: 3
This course covers a range of topics centered on "smart manufacturing", which is a key to provide novel products and solutions for critical industries and special situations. These topics include additive manufacturing, manufacturing metrology, quality control, cyber-physical manufacturing system, supply chain, and artificial intelligence. Fundamental concepts and hands-on practice in smart manufacturing will be demonstrated through lectures, assignments and projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2082 - ELECTRO MECHANICAL SENSORS & ACTUATORS

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to provide a thorough understanding of the various mechanisms that can be exploited in the design of electromechanical sensors and actuators. These transduction mechanisms include: 1) transduction based on changes; in the energy stored in the electric field, 2) in the energy stored in the magnetic field, 3) piezoelectricity and pyro electricity, 4) linear inductive transduction mechanisms, and 5) resistive transduction mechanisms. Will discuss various transduction materials, sensors and actuators from a wide range of applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2083 - INTRODUCTION TO ADDITIVE MANUFACTURING

Minimum Credits: 3
Maximum Credits: 3

Additive manufacturing processes, operating principles, materials used in the processes, applications, process chain, design for manufacturability, mechanical behavior of printed plastics and metals, process-microstructure-property relationship, post-processing and inspection.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2085 - GRADUATE SEMINAR

Minimum Credits: 0
Maximum Credits: 0
Designed to acquaint graduate students with various subjects in advanced mechanics and graduate-level current research in mechanical engineering; aspects of graduate-level engineering and applied mechanics not normally encountered in classes.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

ME 2086 - DESIGN FOR 3D PRINTING AND ADDITIVE MANUFACTURING

Minimum Credits: 3
Maximum Credits: 3
This course covers the mechanics of materials and structures fabricated by 3D printing. Topics to be covered include various 3D printing processes and materials, effects of process parameters and printing direction on mechanical behavior, microstructure-mechanical property relationships, constitutive models, etc. The difference between 3D printing and traditional materials will be highlighted.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2087 - STRUCTURAL TOPOLOGY OPTIMIZATION FOR ADDITIVE MANUFACTURING

Minimum Credits: 3
Maximum Credits: 3
This course introduces structural topology optimization and teaches the related problem solution skills. Specific methods including SIMP (Solid Isotropic Material with Penalization), level set method, and PTO (proportional topology optimization) will be explained in depth. Topics to be covered include the different types of topology optimization problems (compliance-minimization, stress-constrained, natural frequency design, etc.), multi-material topology optimization, multi-scale topology optimization and meta-material design, etc. Applications will be focused on addressing manufacturability issues in order to produce manufacturing-friendly design solutions. With regard to design optimization for additive manufacturing (or 3D printing), various important topics will be covered, including lattice structure design, self-support structure and infill design, material anisotropy issue, hybrid manufacturing part design, etc. Homework assignments and projects will focus on implementing basic topology optimization algorithms and performing design optimization using a commercial tool for additive manufacturing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ME 2047 and 2060 and 2022 and 2003 and 2004

ME 2088 - ADVANCED MANUFACTURING METROLOGY AND PROCESS CONTROL

Minimum Credits: 3
Maximum Credits: 3
To provide students with an understanding of the status, challenges and trends in manufacturing and to prepare them for the potential opportunities of Industry 4.0, this course covers a broad range of topics centered on manufacturing-related measurement and control functions, which are aimed to improve manufacturing accuracy and precision and thereby to mature a manufacturing technology for

demanding applications. These topics include a diverse variety of advanced manufacturing methods, cutting-edge metrology systems, measurement science and sensing technologies, data acquisition and analysis, machine learning, and process control with feedback systems. Class projects with lab work will offer the students real-world experience on manufacturing, material, measurement, modeling and control. Students will be required to develop a measurement and control system for a representative advanced manufacturing process such as an additive manufacturing process in a lab at Pitt, and gain experience for end-to-end digital integration and implementation of manufacturing processes with metrology- and model-based control systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2094 - PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide students who are engaged in thesis or dissertation research an opportunity to participate in an internship with an external organization (industry or government laboratory). The internship must be related to the thesis or dissertation research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

ME 2095 - GRADUATE PROJECTS

Minimum Credits: 1
Maximum Credits: 15
A special problems or reading course of individual study guided by the student's major adviser. Topics selected from any phase of mechanical engineering not covered in the regular M.S. - Level course. This course serves as comprehensive examination for non-thesis programs.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

ME 2096 - MS/MBA INEGRATED PROJECTS COURSE

Minimum Credits: 1
Maximum Credits: 1
This is the integrated projects course for MS/MBA majors. The project will be jointly overseen by KATZ and SSOE. A 1-2 page proposal is due at the beginning of the term, followed by a final report. The project should blend the student's business and engineering skills. Prerequisites: approval of advisor and graduate director.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: Swanson School of Engineering

ME 2097 - SPECIAL STUDY MECHANICAL ENGRG

Minimum Credits: 3
Maximum Credits: 3
Special topics of particular importance to an individual's plan of study.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

ME 2098 - SPECIAL TOPICS IN THERMAL-FLUID SCIENCES

Minimum Credits: 3
Maximum Credits: 3
Current topics and new advances in thermal and fluid sciences are discussed and analyzed. Students will learn current topics and new technical developments in the area of thermal and fluid sciences that are not covered by existing courses in the graduate curriculum. Specific outcomes will depend on the proposed topics at each offering of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2108 - CYBERSECURITY-BY-DESIGN FOR OPERATIONAL TECHNOLOGY SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to cybersecurity-by-design practices for operational technology (OT) systems. An OT system is the hardware and software used to monitor, control, and automate physical processes in industrial environments. OT systems were traditionally designed for reliability and safety, not cybersecurity; however, the increasing digitization and connectivity of these systems have exposed them to sophisticated cyber threats. Students will learn to integrate cybersecurity engineering with other aspects of OT system design to achieve "security-by-design". Students will learn the fundamental principles of OT systems and OT cybersecurity, then apply those principles through a series of hands-on research projects aligned with the design of a high-stakes OT system. Topics include threat modeling, risk assessment, consequence analysis, defensive cybersecurity architecture design, and adversary task analysis. Cybersecurity-by-design is a multi-disciplinary challenge - students of all engineering disciplines are encouraged to participate.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2150 - HIGH-ASSURANCE CYBER-PHYSICAL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to high-assurance systems, its application for the design and analysis of safe and secure cyber-physical systems. It serves as the foundation for further study in the field of high-assurance systems. In this course, high-assurance systems are computer-controlled systems that are designed and verified to meet stringent reliability, safety, security, and correctness standards that must reliably operate under normal and abnormal conditions, ensure safety, resist malicious attacks, adhere to requirements, and remain maintainable over time. Students will learn how to achieve high assurance through rigorous engineering practices, formal methods, verification techniques, and certification processes. They will learn how to enhance system security and justify the security implications of software and hardware system design and implementation. They will learn to use knowledge of operating system design principles to achieve safety and security goals. Students will learn to use formal methods to mathematically prove a cyber-physical system meets useful properties.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2208 - MECHANICS AND PHYSICS OF SOFT MATERIAL

Minimum Credits: 3
Maximum Credits: 3
Comparing to hard materials (e.g. steel and ceramics), soft materials such as rubber, hydrogel, and tissue are in many aspects more "liquid-like": large deformation, viscoelasticity, high permeability, and poor mechanical strength. This course covers the molecular pictures that underlie these behaviors and the continuum models that describe them. Topics discussed include nonlinear elasticity, rheology, stimuli-responsiveness, capillary effects, and fracture. The aim of the course is preparing students to tackle the important practical questions: how to design soft materials to achieve desired behavior, and how to process the material to obtain the designed structure.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ME 2003

ME 2222 - NANOSCALE MODELING AND SIMULATION: MOLECULAR DYNAMICS

Minimum Credits: 3
Maximum Credits: 3
The course covers the essentials of molecular dynamics simulation by integrating theories from dynamics, statistical mechanics, thermodynamics, continuum mechanics, and quantum mechanics. Topics include heat bath methods, time integration methods, accelerated methods, and different applications related to nanotechnology. Students gain hands-on experience using state-of-the-art simulation software.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2223 - NANOSCALE MODELING AND SIMULATIONS:

Minimum Credits: 3
Maximum Credits: 3
This course teaches the essentials of nanoscale modeling and simulations, which concerns the use of modern computational tools to the analysis of materials at the nanoscale. The current emphasis of this course is on first-principle density functional theory (DFT) calculation method. The course covers topics on basic quantum mechanics, fundamentals of DFT, statistical mechanics, thermodynamics, and continuum mechanics, and their role in atomistic scale modeling and simulation. Crystal structure, mechanical properties, structural defects, and electronic structures of materials as well as techniques for modeling them are also discussed. The course consists of a term project, in which students perform modeling and simulation of a nanomaterial system of their choice and analyze simulation results by visualization and data mining methods using software provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2227 - FINITE ELEMENT ANALYSIS 2

Minimum Credits: 3
Maximum Credits: 3
This course builds upon material given in an entry level finite element course. Variational principles are introduces and used to derive element quantities. The theory and methods for the development of advanced continuum and beam and plate elements are covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2230 - TRANSPORT PHENOMENA IN AEROSPACE AND AUTOMOTIVE ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to cover the fundamentals of transport phenomena as pertain to aerospace and automotive engineering (AAE). Our graduating seniors are well trained in fundamentals of classical thermodynamics, fluid mechanics, and heat transfer. However, they have virtually no training in analyzing a strong coupling of these subjects and their additional coupling with chemical kinetics. The course starts with the basic transport equations of chemically reacting flow in which the effects of exothermicity and compressibility are portrayed by the governing conservations equations along with chemistry consideration. All of the basic concepts in transport phenomena be reviewed including: 4 laws of classical thermodynamics, the Euler & Navier-Stokes, Fourier law of heat conduction, Fick's law of mass diffusion, the law of mass action and fundamentals of chemical kinetics and reduced order chemistry modeling. The flows to be considered includes incompressible, subsonic, transonic, supersonic and hypersonic with consideration of both ideal gas and real gas effects. The flow conditions of interest to aerospace and automotive engineering will be considered. This includes both external and internal flows with considerations of premixed and nonpremixed flames. The physics of shock waves, flame deflagration and detonations will be covered along with some of the fundamentals of propulsion and aerodynamics. In short, the course will cover the basic elements of transport

phenomena and combustion which are of relevance for modeling of aircraft and automobile internal engines and external aerodynamics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2232 - MATHEMATICS OF DATA-ENABLED SCIENCE AND ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Fundamental mathematical skills as required for data-enabled science and engineering. Topics covered encompass linear algebra, probability theory, convex and nonconvex optimization, multi-variable calculus, linear and non-linear regression, kernel regression, neural networks and multi-layer perception. Applications will be drawn from basic problems in dynamical systems, including electrical circuits, hydraulics, thermal systems, and vibrations. Basic knowledge of computer programming is necessary.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2243 - BAYESIAN SIGNAL PROCESSING

Minimum Credits: 3
Maximum Credits: 3
This course presents Bayesian methods for signal processing and estimation. Course topics include: Bayesian estimation, sampling theory, importance sampling, simulation-based Bayesian methods, classical and modern Bayesian state-space processors, and particle filters. Other topics of interest, like joint state/parameter estimation, discrete hidden Markov models, sequential detection, may also discussed, and various engineering-related applications are presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2252 - CONDUCTION HEAT TRANSFER

Minimum Credits: 3
Maximum Credits: 3
To provide the student with an understanding of the classical and general approach to heat conduction within stationary homogeneous materials through the analysis of one- and multi-dimensional steady-state and transient system with homogeneous and non-homogeneous boundary conditions. This includes analytical and numerical solutions to Fourier's law and the conduction equation using separation of variables, Laplace transforms, superposition, variation of parameters and similarity techniques. Phase change will be introduced and resolved analytically and numerically. Special topics will include micro- and nano-scale heat transfer.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2254 - CONVECTION HEAT TRANSFER

Minimum Credits: 3
Maximum Credits: 3
To provide the student with an understanding of the transport of mass and heat in fluid systems, including free and forced convection for internal and external laminar and turbulent flow. Conservation equations for mass, momentum and energy will be developed. The development of the hydraulic and thermal boundary layer will be presented for laminar and turbulent flows, leading into film cooling, condensation, evaporation and boiling phenomena. Correlations for heat transfer characteristics for turbulent flows will be presented as a departure point from analytic solutions of laminar flows. Numerical methods for convection will be presented in the form of finite differencing schemes.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2256 - APPLIED COMPUTATIONAL HEAT AND MASS TRANSFER

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: ME 2060 Strongly recommended; PROG: Swanson School of Engineering

ME 2257 - TRANSPORT PHENOMENA IN NANO-TO-MICRO SCALE

Minimum Credits: 3
Maximum Credits: 3
This intermediate graduate level course will discuss the transport phenomena of heat (phonons), mass (molecules), and charge (electrons) from nano- to micro-scale using the Boltzmann transport theory. The transport phenomena in extremely large and small scales are often described by the continuum equations and wave equations, respectively. These two extreme cases leave an intermediate length scale (often nano- to micro-meter scale) where the continuum description is invalid, and the wave characteristics of carriers can be ignored. The Boltzmann transport equation (BTE) bridges this gap and is used to describe the transport phenomena in nano- to micro- scale, which exist in many modern engineering problems. While the Boltzmann transport theories of those carriers share the same fundamental basis and similarities, the theories have been developed and discussed in different disciplines without many cross-disciplinary interactions. A goal of this course is to provide a unified perspective regarding the transport phenomena of the three practically important carriers - phonons, molecules, and electrons. This course also aims at providing a summary of introductory statistical thermodynamics and solid-state physics for the graduate students in early years. *** No Pre-reqs: It is highly recommended that students previously took at least one or two of the following undergraduate-level courses : classical thermodynamics in mechanical engineering dept., heat transfer, fluid mechanics, statistical mechanics, and solid-state physics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2300 - LINEAR ALGEBRA FOR MACHINE LEARNING

Minimum Credits: 3
Maximum Credits: 3
Core concepts from linear algebra that are key for understanding and creating applied machine learning algorithms. Topics include least square approximation, neural networks, and matrix factorization for dimension reduction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2440 - FUNDAMENTALS OF ACOUSTICS AND VIBRATION

Minimum Credits: 3
Maximum Credits: 3
This course will provide the basic fundamentals of acoustics, including wave motion, the wave equation and its solution, modal solutions, acoustic sources, radiation and reception, and filters, and sound/structure interaction. In addition, the student will be introduced to acoustic metamaterials and hearing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2441 - MEASUREMENT AND ANALYSIS OF RANDOM DATA FROM DYNAMICAL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This courses will present measurement and analysis techniques for experimental physical data from engineering applications. The treatment is intended to complement courses in estimation, including Kalman filtering and Bayesian signal processing. The course covers standard time-, frequency-, and quefrency-domain methods of signal analysis, with applications to frequency response function estimates, system identification, modal analysis, and array processing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2500 - PROFESSIONAL ENGINEERING PRACTICE

Minimum Credits: 1
Maximum Credits: 1
Students will tailor a graduate program experience for their professional Master of Science degree in the context of an industry-relevant project. The project will serve as a scaffold for course selection in the graduate program and provide a foundation of course (and program) relevance for their career objectives.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

ME 2501 - PROFESSIONAL ENGINEERING DEVELOPMENT TOPICS 1

Minimum Credits: 1
Maximum Credits: 1
The course will introduce students to career-enriching professional development topics. Specific topics will be announced each term and will focus on professional skills including design approaches, project life cycle and management, intellectual property, quality control and manufacturing.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

ME 2502 - PROFESSIONAL ENGINEERING DEVELOPMENT TOPICS 2

Minimum Credits: 1
Maximum Credits: 1
The course will introduce students to career-enriching professional development topics. Specific topics will be announced each term and will focus on professional skills including design approaches, project life cycle and management, intellectual property, quality control and manufacturing.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

ME 2646 - LINEAR SYSTEM THEORY

Minimum Credits: 3
Maximum Credits: 3
Linear spaces and operators, mathematical descriptions of linear systems, controllability and observability, irreducible realization of rational transfer-function matrices, canonical forms, state feedback and state estimators, stability.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2671 - OPTIMIZATION METHODS

Minimum Credits: 3
Maximum Credits: 3
Analytical and computational aspects of finite dimensional optimization, unconstrained and equality constrained problems, basic descent methods, conjugate direction methods, nonlinear programming, and the Kuhn-Tucker Theorem, linear programming, dynamic programming, multicriteria optimization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2811 - INNOVATING FOR PUBLIC IMPACT

Minimum Credits: 3
Maximum Credits: 3
This course will teach students how to build products and services using lean methods. This will be done by solving real-world military and intelligence community problems. The course uses the lean launchpad platform for entrepreneurship. This is a highly customer-centered hypothesis-test approach to developing a mission modes, and is particularly well-suited for technology startups. It incorporates customer needs and user testing to build a minimum viable prototype. At the conclusion of the course, students will be able to understand the problems/needs of searching for product-market fit; understand all the stakeholders, deployment issues, costs, resources, and ultimate mission value; deliver minimum viable products that match customer needs in an extremely short time; produce a repeatable model that can be used to launch other potential technology solutions. This course was formerly titled HACKING FOR DEFENSE.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

ME 2901 - INTRODUCTION TO ENGINEERING COMMUNICATION

Minimum Credits: 1
Maximum Credits: 1
In this course, students will learn the fundamental tools and skills for effective technical communication at the graduate level. Students will be introduced to citation tools (e.g. Mendeley, EndNote) and paper-writing tools (e.g. Word, LaTeX) during this course. Students will also learn how to produce high-quality graphics, conduct a literature review, and give a qualifying exam presentation. This course will be one credit, the old course is three credits.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

ME 2997 - RESEARCH, M.S.

Minimum Credits: 3
Maximum Credits: 3

Students prepare a literature survey on a major research problem and submit an outline for future work on the master of science thesis.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

ME 2999 - M. S. THESIS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

ME 3003 - THEORY OF CONTINUOUS MEDIA

Minimum Credits: 3
Maximum Credits: 3
Kinematics of deformation, compatibility, material rates, relative deformation. Analysis of stress; balance equations; constitutive relations for simple materials, isotropy groups; elastic solids, viscous fluids.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 3008 - FINITE ELASTICITY OF SOFT TISSUES

Minimum Credits: 3
Maximum Credits: 3
This team-taught course is designed as the second course in graduate biomechanics that applies and builds on the concepts of finite elasticity to study the constitutive response of various soft tissues. Course topics will include kinematics of large deformation, concepts of stress, thermodynamic principles, and development of constitutive relationships for hyperelastic materials. Isotropy, transverse isotropy, incompressibility, viscoelasticity as well as isotropic damage will be discussed. Specific application areas will include the mechanics of three general types of primary load-bearing soft tissues: vascular, orthopedic, and reproductive.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 3023 - COMPOSITES

Minimum Credits: 3
Maximum Credits: 3
Anisotropic linear elasticity, laminates. Basic micromechanics; particulates reinforcement, polycrystalline aggregates, continuous fiber reinforced materials. The inclusion problem. Hashin-Shtikman bounds and estimates of overall moduli. Strength. Micro cracking and damage.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 3075 - HYDRODYNAMIC STABILITY

Minimum Credits: 3
Maximum Credits: 3
Global stability and uniqueness, Stuart-Landau theory, introduction to bifurcation theory, thermal instability, inertial instability, and

stability of parallel shear flow.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 3079 - TURBULENCE

Minimum Credits: 3
Maximum Credits: 3
Definitions and equations of turbulent flow, correlations, scales of turbulence. Differential equations, spectrum and decay of isotropic turbulence. Nonisotropic turbulence, mathematical models, transport processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 3090 - SPEC TOPICS IN MECHANICAL ENGRNG

Minimum Credits: 3
Maximum Credits: 3
Special topics of current interest to students and faculty given by a senior member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

ME 3095 - GRADUATE PROJECTS

Minimum Credits: 3
Maximum Credits: 3
A special problems or reading course of individual study guided by the student's major advisor. Topics selected from any phase of mechanical engineering not covered in the regular Ph.D.-Level course.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

ME 3100 - ENGINEERING RESEARCH LEADERSHIP AND MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 3997 - RESEARCH, PHD

Minimum Credits: 1
Maximum Credits: 12
Research methods and procedures for outlining methods of solution of research problems. Students are assigned problems and are required to submit an outline of attack and prepare a literature survey concerning a research problem that can meet the dissertation requirement.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Mechanical Engineering PHD

ME 3999 - PHD DISSERTATION

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Mechanical Engr and Materials Science and Engr

MEMS 0051 - INTRODUCTION TO THERMODYNAMICS

Minimum Credits: 3
Maximum Credits: 3
Basic concepts and interlinking relationships of thermodynamics, fluid mechanics and heat transfer; fluid statics; system and control volumes; thermodynamic properties; work and heat; first law of thermodynamics for control mass and control volume; integral forms of conservation of mass and momentum.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: (PHYS 0150 or 0174 or 0201 or 0475) and (CHEM 0101 or 0110 or 0111 or 0410 or 0710 or 0760 or 0960); PROG: School of Engineering

MEMS 2055 - INTRODUCTION TO ENGINEERING COMMUNICATION

Minimum Credits: 1
Maximum Credits: 1
"In this course, students will learn the fundamental tools and skills for effective technical communication at the graduate level. Students will be introduced to citation tools (e.g. Mendeley, EndNote) and paper-writing tools (e.g. Word, LaTeX) during this course. Students will also learn how to produce high-quality graphics, conduct a literature review, and give a qualifying exam presentation." This course will be one credit, the old course is three credits.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Medical Education

MEDEDU 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
The course provides instruction on the use of computerized methods for clinical research. Dataset manipulation, descriptive statistics, and the graphical presentation of data will be presented using a standard statistical package.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2010 - CLINICAL RESEARCH METHODS

Minimum Credits: 3
Maximum Credits: 3

Clinical research methods provides an overview of the basic research strategies, methods, and goals of clinical research. Topics include study design, data analysis and interpretation, and determination of appropriate methodologies to answer different research questions. Bias and confounding in observational research, the clinical value of diagnostic tests, appropriate use of cross-sectional, case control and cohort study designs, and various statistical modeling used in clinical research will be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2020 - BIOSTATISTICS

Minimum Credits: 4
Maximum Credits: 4
This course focuses on basic concepts and statistical methods and their application to problems in the health and biomedical sciences. Topics include data description and summarization, basic probability theory, estimation, and hypothesis testing with emphasis on one- and two-sample comparisons involving continuous and categorical data. Linear regression and analysis of variance will be introduced. Students will develop their analytic skills through the analysis and discussion of large clinical studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: MEDEDU 2005; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2040 - MEASUREMENT IN CLINICAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
The course focuses on properties of good measurement that are integral to the research process. Specific objectives are to analyze methods for testing psychometric properties (reliability and validity) of psychological instruments and physiological instruments; to evaluate the adequacy of selected scaling methodologies used in research; to apply knowledge of instrumentation to the description of a psychosocial instrument and a physiological instrument for a research proposal; and to synthesize course content with statistical criteria for scale evaluation and make decisions regarding scale revision. The domain sampling model is presented as the major theory of measurement error, with the parallel test model presented as a special case of the domain sampling model. The construct, criterion, and content validity of psychosocial instruments are explored, and methods for evaluating each of these relative to specific instruments are presented. A variety of scaling methodologies, as well as the principles involved in the design and formatting of questionnaires, will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2045 - SURVEY DESIGN AND DATA ANALYSIS

Minimum Credits: 1
Maximum Credits: 1
Survey design and data analysis will provide information on the skills and resources needed to design and conduct survey and techniques of analyzing survey data. The skills include identifying and developing specific survey objectives, designing survey studies, sampling respondents, developing reliable and valid self-administered questionnaires, and administering surveys. The techniques of analyzing survey data include both classic methods such as factor analysis and advanced methods such as item response theory. A majority of lectures will focus on survey research, constructing surveys, response set, survey administration methods, questionnaire construction and programming surveys, sampling and power calculation, maximizing response rates, data coding and entry, reliability and validity, survey data analysis, factor analysis and item response theory. The students will be introduced to the internet based survey and the computerized adaptive testing to broaden their scope of the current survey design and collection. I will use manuscripts of survey data and protocols of completed studies to facilitate learning of concepts discussed in class.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: CLRES 2040 or MEDEDU 2040; PLAN: Medical Education (ACM or MS) or Clinical Research (ACM or MS) or Clinical and Translational Sci (PHD)

MEDEDU 2080 - MASTERS RESEARCH

Minimum Credits: 1
Maximum Credits: 3
Trainees may register for this course with approval from the mentor and selected faculty of the Degree Granting Programs in Medical Education Curriculum Committee. The course is designed for trainees who are prepared to undertake their substantive research project or thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2085 - HEALTH PROFESSIONS EDUCATION INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 2
For Master of Science and Certificate in Health Professions Education students. An independent study is designed by the student to pursue an area of study within health professions that is (1) not covered by other established courses and (2) necessary for a student's academic development. It cannot be used to replace required or core courses and students must provide a compelling reason for proposing the course of study. The student will complete the independent study form, and the faculty preceptor and Director of Academic Programs must approve it. An independent study project may carry 1-2 graduate credits for Master of Science students and 1 credit for Certificate students, assigned at the Director and Assistant Director of Academic Programs' discretion based on the proposal.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

MEDEDU 2100 - ENHANCING TEACHING SKILLS

Minimum Credits: 2
Maximum Credits: 2
This course will briefly review the basic principles of adult learning as they relate to clinician-educators but will devote the majority of the time to discussing, developing, and advancing teaching skills of clinician-educators. Using a combination of formal didactics, presentations by students, role playing, and videotape review, participants will have ample opportunity to refine their skills in case-based learning, teaching at the bedside, and teaching in small and large groups. Topics will also include setting goals and expectations, feedback and evaluation, and dealing with the student in need of remediation. MEDEDU 2100 is intended to complement the Medical Mind, Cognitive Studies in Medicine, and Enhanced Teaching Skills: Longitudinal Practicum, and, in an integrated fashion, provide comprehensive knowledge and experience to shape future teaching skills of the master teacher.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2101 - ENHANCHING RESEARCH SKILLS

Minimum Credits: 1
Maximum Credits: 1
The objective of this course is to expose students to a breath of research designs and methodologies which can be applied to evaluate and

explore relevant topics in health sciences education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MEDEDU 2111 - FUNDAMENTALS OF ADULT LEARNING PART 1

Minimum Credits: 1
Maximum Credits: 1
At the completion of this course, participants will have demonstrated through class participation and written assignments, 1) knowledge of current research and theory on the adult learner and adult learning as they relate to the practice of adult education, 2) understanding of the theoretical basis of clinical reasoning and concepts of expertise and 3) skill in the selection and use of theoretical foundation of learning as it applies to the context of medical education practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2120 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
Academic physicians who function as clinician-educators face career challenges unique to their career path. This course will provide future clinician-educators with information about these challenges so they are better prepared when starting their career. In addition, the course will provide specific skills to enhance the ability of clinician-educators to set goals, demonstrate their suitability for promotion, manage time effectively, and function in leadership roles. This course is open to Medical Education students ONLY.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2125 - ASSESSMENT OF MEDICAL LEARNERS

Minimum Credits: 1
Maximum Credits: 1
This course will prepare learners to use a wide variety of assessment methods in their educational programs. Specifically, we will address assessing knowledge, clinical performance and technical skills and create questions and cases in class. The theory behind constructing high quality assessments for educational programs will be discussed, and participants will use assessment data to make competency decisions for UGME and GME scenarios.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MEDEDU 2130 - CURRICULUM DEVELOPMENT & EVALTN

Minimum Credits: 1
Maximum Credits: 1
This course is designed to explore and develop the principles of curriculum design, implementation, and evaluation. Students will learn the fundamentals of developing goals and objectives; performing a needs assessment for curriculum development; designing the most efficient teaching strategy, including lecture, workshop, and problem-based learning sessions; evaluating student performance, including both knowledge assessment and performance-based assessment; evaluating faculty performance and course success; and strategies for grading.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2131 - STRATEGIES FOR DEALING WITH THE STRUGGLING LEARNER

Minimum Credits: 1
Maximum Credits: 1
MEDEDU 2131 is designed to be a practical, hands-on approach to dealing with students who present with learning difficulties. Both didactic instruction and small-group problem solving for difficult learners will be presented. The goals for the course are to learn how to identify problem learners; to develop a differential diagnosis of problem learner behavior; to develop strategies for remediation and monitoring remediation; to review strategies for documentation and tracking of problem students, and to review issues of competency and promotion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2132 - HELPING LEARNERS LEARN: REMEDIATION AND SUPPORT IN HEALTH SCIENCES EDUCATION

Minimum Credits: 1
Maximum Credits: 1
MEDEDU 2132 is designed to be a practical, hands-on approach to dealing with students who present with learning difficulties. Both didactic instruction and small-group problem solving for difficult learners will be presented. The goals for the course are to learn how to identify problem learners; to develop a differential diagnosis of problem learner behavior; to develop strategies for remediation and monitoring remediation; to review strategies for documentation and tracking of problem students; and to review issues of competency and promotion
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MEDEDU 2140 - SCIENTIFIC WRITING & PRESENTATION SKILLS (ONLINE)

Minimum Credits: 1
Maximum Credits: 1
Medical educators and researchers must be able to present their work clearly and effectively. However, important educational material and research data are sometimes obscured by poorly delivered presentations or poorly written manuscripts. The main objective of this fully online, asynchronous course is to help students develop excellent scientific writing and presentation skills. This objective will be achieved through a combination of videos, readings,individual assignments, and team projects in which students will practice specific skills. Students will craft an abstract, write a discussion section of a manuscript, practice methods of disseminating their science to the lay public, create a poster, construct a table or figure, and develop a PowerPoint presentation and record themselves delivering a 10-minute talk. *Please note in previous terms, this course was titled "Medical Writing and Presentation Skills."
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2150 - MANAGEMENT OF EDUCATIONAL PROGRAMS

Minimum Credits: 1
Maximum Credits: 1

This course provides an overview of how medical schools and residency programs run in regards to accreditation, recruitment, finances, and leadership positions. We will examine forces shaping medical education by reviewing its history, social responsibility, and public accountability. Clinician-educator pathways will be explored, from program director to medical school course director to all the administrative faculty roles possible within UME and GME. The practical aspects of designing, implementing, and sustaining an educational program will be explored.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2160 - CURRENT TOPICS IN TEACHING AND LEARNING - A SEMINAR SERIES

Minimum Credits: 1
Maximum Credits: 1
This seminar series includes critical discussion and evaluation of relevant topics in medical education and presentation review of methods employed by researchers in medication education. Seminars on the first Friday of the month (Medical Education Journal Club) consist of presentations of recent medical education research evaluating new teaching methods or educational curricula. Seminars on the third Friday of the month (Medical Education Research Conference) deal with topics in research methods in medical education and also serve as a forum to present research-in-progress or completed research projects. Enrollees for this series are expected to present at one of these conferences during the year, having reviewed their presentation topic with the course director prior to the session. Attendance at 16 sessions in addition to the presentation is required for 1 credit.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2170 - MAKING THE MOST OF MENTORING

Minimum Credits: 1
Maximum Credits: 1
We strongly believe that effective mentoring is the cornerstone of a successful academic career, whether it be in education, research, or clinical work. Good mentors are able to guide mentees as they attempt to navigate through the course of their careers. This course is designed to provide a basis for understanding the mentor-mentee relationship and to provide strategies for making the most out of the experience. Topics will include communication and negotiation, the use of mentoring contracts, providing and accepting feedback, evaluating the mentoring relationship, and solving problems and meeting challenges. Fellows, postdocs, other Institute for Clinical Research Education (ICRE) trainees, and junior faculty will discover useful ways to enhance the mentoring relationship and make it a rewarding experience both for the mentees and the mentors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2182 - TEACHING HEALTH HUMANITIES

Minimum Credits: 1
Maximum Credits: 1
We call the academic disciplines that study aspects of human society and culture "the humanities" and further define a subset of those disciplines that speak directly to the experiences of being a clinician, patient, or caregiver-including history, philosophy, language arts, bioethics, performing and visual arts-as the "health humanities." One subset of the health humanities that has received particular attention in health sciences education is the field of narrative medicine, which aims to harness the innate, narrative-building inclination of the human mind to develop clinical skills, improve communication, and cultivate empathy. This course aims to equip health educators with the knowledge and skills to teach and to practice with greater narrative competence and to incorporate material from the health humanities into

their teaching.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MEDEDU 2185 - STRATEGIC LEADERSHIP IN ACADEMIC MEDICINE

Minimum Credits: 1
Maximum Credits: 1
Health care professionals regularly occupy leadership roles in research, educational, and clinical arenas, and leadership opportunities abound in academic settings. Yet clinicians have been described as "accidental administrators," lacking training in skills necessary to be an effective to leader. Given the current challenges facing healthcare, increasing reliance on interdisciplinary teams to provide care, and greater emphasis on cost control and quality improvement, the need for clinicians to develop effective leadership skills is paramount. This course is designed for clinician-educators and researchers who want to understand the basics of leadership and management. Through selected readings, this course will develop participants' leadership skills across a variety of domains. Topics covered include understanding how academic medical centers function and how to set team culture, run a meeting, manage time, lead across difference, and create/maintain a five year plan. At the completion of the course, trainees will understanding of the basic principles of leadership and management in the context of academic medicine. *Please note in previous terms, this course was titled "Managing Your Career in Clinical & Translational Science" and "Strategic Leadership".
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

MEDEDU 2190 - TEACHING ACROSS TEAMS

Minimum Credits: 1
Maximum Credits: 1
This special educational course will provide a component that is rarely provided in medical education and often not in other health professions education. Trainees will: 1. Be able to describe the training that other health professionals receive and come to understand the purpose of multidisciplinary teams as well as each provider's role on the team, 2. Review and practice critical communication skills necessary to build teams and negotiate conflict, 3. Learn educational methodology to assess team communication skills, and 4. Have the opportunity to participate in interdisciplinary learner teaching.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2201 - OUTPATIENT TEACHING

Minimum Credits: 0
Maximum Credits: 3
This course involves 16 hours of observed outpatient clinical teaching plus feedback and evaluation by teaching preceptor. The student is required to identify a primary preceptor who will be responsible for observation and evaluation of clinical teaching in the outpatient setting. Deliverables include a formal summative evaluation by primary preceptor reviewed with student and a 1-page personal reflection response by student. This course can be completed over several terms and can be registered for only once.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2202 - INPATIENT TEACHING

Minimum Credits: 0
Maximum Credits: 3
This course involves 16 hours of observed patient clinical teaching on inpatient service (including consult services) plus feedback and evaluation by teaching preceptor. Optimally, this observation should be a mix of bedside teaching, work rounds and formal teaching rounds. Deliverables include a formal summative evaluation by primary preceptor reviewed with student and a 1-page personal reflection response by student. This course can be completed over several terms and can be registered for only once.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2203 - CLASSROOM TEACHING

Minimum Credits: 0
Maximum Credits: 3
This course involves 16 hours of observed nonclinical teaching including but not limited to classroom teaching, lectures, PBL facilitator, student teaching attending. Deliverables include a formal summative evaluation by primary preceptor reviewed with student and a 1-page personal reflection response by student. This course can be completed over several terms and can be registered for only once.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2211 - TEACHING CLINCAL REASONING

Minimum Credits: 1
Maximum Credits: 1
This course will reinforce core principles of clinical reasoning while equipping participants with a toolkit of educational strategies they can use to teach and assess this essential clinical skill. The class will be highly interactive with a focus on students implementing these tools in their current practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MEDEDU 2221 - APPLYING QUALITY IMPROVEMENT METHODS IN THE CLINICAL CONTEXT

Minimum Credits: 1
Maximum Credits: 1
Over the course of eight 2hr sessions, we aim to build knowledge of basic quality improvement (QI) concepts and apply QI methods to the clinical setting, to facilitate an integration of the front-line perspective into translating research into practice. More specifically, this includes problem definition and contextual inquiry concepts and tools, including process mapping, value stream modeling, selection of measures, Pareto analysis, understanding of variability of quality measures, and design of sustainable interventions. This content will be interwoven with concepts of healthcare workplace culture, leadership, and health system science, such as Just Culture and human factors engineering, which in turn facilitate stakeholder engagement in the improvement process and lead to successful and sustainable interventions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MEDEDU 2230 - INNOVATION IN TEACHING & LEARNING

Minimum Credits: 2
Maximum Credits: 2

This course is designed to enable medical educators to use information and telecommunications technology (ITT) to expand access to educational resources, implement new models of education, and enhance student and physician competence throughout the continuum of training and practice.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2234 - TEACHING FOR CONNECTION: EMPATHY, HUMILITY AND PURPOSE IN HEALTH PROFESSIONS EDUCATION

Minimum Credits: 1
Maximum Credits: 1
In an AI-driven and increasingly complex society, this course invites healthcare educators to pause, reflect, and reconnect with the human dimensions of teaching and learning. Teaching for Connection and Purpose reframes teaching as a relational and transformative practice that enhances how healthcare educators, physicians, and other professionals teach, mentor, and connect in educational and clinical settings. The course offers practical approaches to strengthen human connection and to integrate awareness and purpose into flexible, personalized, learner- and patient-driven education. It prepares reflective and human-centered educators to meet the evolving needs of medical education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MEDEDU 2240 - CULTURAL COMPETENCE MEDICAL EDUCATION

Minimum Credits: 1
Maximum Credits: 1
Cultural differences have always been integral to U.S. society and represent a dynamic mixture of races, ethnicities, and beliefs. Indeed, these differences are one of the characteristics most associated with Americans overseas. Only recently has there been recognition of the importance of these cultural differences in medical education. Therefore, there is still some confusion in medical academia regarding what the focus should be and why cultural competence is now of interest to the Liaison Committee on Medical Education, the accrediting body for allopathic medical schools, universities, managed care organizations, and various governmental bodies. This course is designed to explore the impact of diversity on the training of physicians and other health care providers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2250 - TEACHING COMMUNICATION SKILLS

Minimum Credits: 2
Maximum Credits: 2
The most common thing that a physician does in his or her career is communicate with patients. This is the method that physicians use to gather information for the medical history, educate patients about their illness, and obtain informed consent regarding the various therapeutic options. During the past 25 years, doctor-patient communication has received increasing attention in medical education. Every medical school currently has a course focusing on communication skills, and many internal medicine, family medicine, and pediatric programs devote attention to these skills. The new ACGME requirements list communication skills as one of the six major focuses. In the future, physicians will need to be able to document their communications skills for certification and licensure. Over the past 10 years, there have been increasing data regarding the efficacy of educational interventions to improve physician communication skills. Courses at the medical school level and at the residency level need to incorporate these data to develop evidence-based interventions. The point of this course is to ensure that medical educators both understand the data and have the practical skills needed to design and teach communication courses.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2260 - CURRENT TOPICS IN MEDICAL EDUCATION RESEARCH - A SEMINAR SERIES

Minimum Credits: 1
Maximum Credits: 1
This course allows students the flexibility to choose among 3 established seminar series in medical education and attend specific topics of interest and relevance to their teaching roles. The seminar series include: mermaid series: medical educational research methods and innovative design, academy of master educators (AME) seminar series, and medical education grand rounds. Specific information of dates and current and past topics for each series is contained on the individual websites. In order to receive the credit, the student is responsible to document attendance at 16 sessions. In order to promote active learning and enhance the relevance of the topics to the individuals' teaching roles, enrollees for this course will be required to choose one skill or learning point from the any of the 16 sessions attended. The enrollee will then provide a one page (maximum) description on how this was implemented in one of their specific teaching assignments or activities and describe its outcome. This needs to be completed prior to credit allocation and submitted to the course director.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2284 - MODERN LEARNING TECHNOLOGIES IN HEALTH PROFESSIONS EDUCATION

Minimum Credits: 1
Maximum Credits: 1
You have your curricular goals and objectives - now what? Recent advances in education technology afford clinician-educators the opportunity to enhance learning both in and out of the classroom, and yet picking the best methods and implementing them effectively can be challenging. This course will prepare learners to select and effectively implement modern educational technologies to complement the teaching-learning process and assess outcomes for a wide range of learners in health professions training.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MEDEDU 2325 - FUNDAMENTALS OF ADULT LEARNING IN MEDICAL EDUCATION PART 2

Minimum Credits: 1
Maximum Credits: 1
The process by which physicians make decisions is complicated and multifactorial. Understanding this process is critical for teaching the principles of clinical problem solving and medical decision making. Many theories and strategies have been put forward to better elucidate the process. The overall goals of this course are to introduce the learner to the principles of adult learning, to demonstrate how the principles are applied in the medical arena, and to develop strategies for teaching problem-solving and medical decision-making skills in the clinical setting.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: MEDEDU 2111

MEDEDU 2360 - CURRENT TOPICS IN TEACHING, LEARNING, AND HEALTH SERVICES RESEARCH

Minimum Credits: 1
Maximum Credits: 2
The objective of this course is to expose students to 1) current, relevant topics, that effect, teaching and learning and health sciences and 2)

models for health sciences education research methodology that can be applied to their own work.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

MEDEDU 2400 - QUALITATIVE RESEARCH METHODS 1 : THEORY & DESIGN

Minimum Credits: 1
Maximum Credits: 1
What are the study designs, data collection methods, analytical approaches, and theoretical frameworks used by qualitative researchers? How should the quality and rigor of qualitative research be assessed? In this course, we will analyze a range of qualitative studies and discuss principles that should guide the selection of qualitative research strategies (e.g., sampling, data collection methods, analytical approaches, theoretical models). By the end of the course, you will be equipped to review a qualitative manuscript, respond to reviewer comments, and work effectively with qualitative methodologists. This course provides necessary background for students new to qualitative research and prepares students for Qualitative Research Methods II (CLRES 2401), which offers hands-on practice using qualitative methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MEDEDU 2401 - QUALITATIVE RESEARCH METHODS 2: APPLICATIONS

Minimum Credits: 1
Maximum Credits: 1
In this course, you will develop and hone the skills of a qualitative researcher. You will practice designing qualitative and mixed methods research studies, creating interview guides and focus group protocols, applying different data collection methodologies, developing a codebook, and conducting thematic analysis. Finally, you will write a thorough and compelling methodology section for a grant or manuscript. The focus throughout the course will be applying the tools of qualitative research and reflecting on your experience. Prerequisite: Qualitative Research Methods I: Theory and Design (or equivalent).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: MEDEDU 2400

Medical Elective

MSELCT 5100 - PSTP PROFESSIONAL DEVELOPMENT 1

Minimum Credits: 0
Maximum Credits: 0
This course is designed for entering PSTP students. The purpose of this course is to highlight contemporary questions in biomedicine and how different scientific fields approach these questions. After surveying appropriate background material the students analyze scientific papers from the primary literature under the mentorship of different department faculty. Presentation of these papers provides a forum for discussion of experimental design, technique, laboratory and clinical observations. Exposure to different departments and faculty will help the students select laboratories for the summer rotations and the research year.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 1

MSELCT 5105 - FLEX WEEK MS1

Minimum Credits: 0
Maximum Credits: 0

FLEX WEEK MS1
Academic Career: Medical School
Course Component: Independent Study
Grade Component: No Grade Required

MSELCT 5110 - PSTP LABORATORY RESEARCH ROTATION

Minimum Credits: 0
Maximum Credits: 0
This lab is designed to introduce the student to relevant laboratory methods as well as the layout and conceptualization of experiments. The course will serve to acquaint the student with the laboratory process, and to facilitate his/her selection of a lab for the research year.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 1

MSELCT 5120 - PSTP PROFESSIONAL DEVELOPMENT 2

Minimum Credits: 0
Maximum Credits: 0
This course prepares PSTP students to successfully navigate key developmental milestones in their trajectory toward a physician scientist career. Career expectations are discussed and framed in the perspective of grant writing and the review process. A small amount of lecture material is linked to a series of workshops, where each student composes a bio-sketch, specific aims, experimental plan and training plan related to their research year. Constructive peer critiquing of grant material provides a perspective on which to build grant writing skills.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 1

MSELCT 5130 - PSTP RESEARCH BASIS OF MEDICAL KNOWLEDGE

Minimum Credits: 0
Maximum Credits: 0
This small group session is required during the first 3 semesters of medical school. Class meets to review primary literature linked to current first and second year curricula. Before each session, a faculty member and one student meet and review the paper assigned for that week. Students learn about the research basis of knowledge and how to present and critically review primary literature.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 1

MSELCT 5131 - PSTP STATISTICS, CODING AND DATABASE ANALYSIS

Minimum Credits: 0
Maximum Credits: 0
PSTP students learn about the NIH AllofUs database and build skills in its use, including its genomics, demographic, electronic medical record and other data. Students generate projects testing database centered hypotheses complementary to their summer laboratory rotations or overall research interest. A self-paced learning module for relevant statistics and R-coding needed for AllofUs were constructed by a master statistician who also instructs R programming in association with the class lessons. This course is taken during the summer of the research year.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: S/U Basis

MSELCT 5140 - TEACHING PRACTICUM

Minimum Credits: 0
Maximum Credits: 0
Hands-on teaching practicum elective course for medical students to learn about university-level teaching.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Satisfactory/No Credit

MSELCT 5155 - PROFESSIONAL DEVELOPMENT COURSE: FLEX WEEKS

Minimum Credits: 0
Maximum Credits: 0
Flex weeks provide students time to focus on professional identity development. Students use the time to work on different activities that are difficult to find time for in the rest of the fast-paced medical curriculum. Flex weeks are an opportunity for an in-depth experience in a particular discipline/approach, time to practice specific skills, time to work on a research or service project, connect with an institution or population, experience wellness activities, meet with advisors/mentors, remediate components of the curriculum, or to just do something meaningfully interesting. These experiences serve to "decelerate" curriculum and allow students to take a breath, catch up, or explore more deeply.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSELCT 5160 - PSTP TRANSLATING DISCOVERY TO THE CLINIC

Minimum Credits: 0
Maximum Credits: 0
The Translating Discovery into the Clinical Realm (Discov2Clinic) PSTP course provides a broad overview of how scientific discoveries are put into clinical practice. The primary objective of this course is to educate future physician-scientists about the scope and complexities of the translational science pipeline early in their careers so they can consider how factors downstream of an initial scientific discovery affect its societal impact.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSELCT 5205 - FLEX WEEK MS2

Minimum Credits: 0
Maximum Credits: 0
FLEX WEEK MS2
Academic Career: Medical School
Course Component: Independent Study
Grade Component: No Grade Required

MSELCT 5215 - MENTORED PROJECT INTERIM GRADE

Minimum Credits: 0
Maximum Credits: 0
The mentored scholarly project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. Interim grades will be assigned in May of the second year, November and may of the third year, and November of the fourth year. This course will record the grade assignment for May 1 of the second year.
Academic Career: Medical School
Course Component: Directed Studies

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 2

MSELCT 5300 - BOARD STUDY ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when the necessity to record a block of time taken to participate in an intensive study period is required. This will usually mean a structured USMLE study course taken outside Pitt but could include a self-structured study schedule here at the school.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 3

MSELCT 5301 - SPECIAL STUDIES

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when students are permitted to participate in a special project for one month during the third year of medical school. A descriptive title will be recorded on the official transcript to define this one month period of time.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MSELCT 5303 - BOARD STUDY ELECTIVE 3

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when the necessity to record an additional block of time taken to participate in an intensive study period is required. This will usually mean a structured USMLE study course taken outside Pitt but could include a self-structured study schedule here at the school.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSELCT 5305 - FLEX WEEK MS3

Minimum Credits: 0
Maximum Credits: 0
Flex week
Academic Career: Medical School
Course Component: Independent Study
Grade Component: No Grade Required

MSELCT 5310 - MENTORED PROJECT INTERIM GRADE

Minimum Credits: 0
Maximum Credits: 0
The mentored scholarly project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. Interim grades will be assigned in May of the second year, November and may of the third year, and November of the fourth year. This course will record the grade assignment for November 1 of the third year.
Academic Career: Medical School

Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MSELCT 5315 - MENTORED PROJECT INTERIM GRADE

Minimum Credits: 0
Maximum Credits: 0
The mentored scholarly project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. Interim grades will be assigned in May of the second year, November and may of the third year, and November of the fourth year. This course will record the grade assignment for May 1 of the third year.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MSELCT 5320 - STEP 2CK STUDY MONTH

Minimum Credits: 0
Maximum Credits: 0
Students are expected to study and pass USMLE's Step 2CK examination prior to graduation. This self-directed elective will allow students a focused time for preparation, which will include self-assessment via practice exams, self-study, support and guidance from peers/staff/faculty, and testing itself. Students could also use this month to register for an external study course. Students can test at any point of the month. Students are not mandated to take this elective but it is encouraged. Students will only be able to take this elective once; should they need additional study time, they must use vacation months or study during other electives.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSELCT 5375 - TEACHING PRACTICUM

Minimum Credits: 0
Maximum Credits: 0
Hands-on teaching practicum elective course for medical students to learn about university-level teaching.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MSELCT 5400 - BOARD STUDY ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when the necessity to record a block of time taken to participate in an intensive study period is required. This will usually mean a structured USMLE study course taken outside Pitt but could include a self-structured study schedule here at the school. The course may be given a specific title including the number of weeks.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: No Grade Required
Course Attributes: School of Medicine Year 4

MSELCT 5401 - SPECIAL STUDIES

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when students are permitted to participate in a special project for one month during the fourth year of medical school. This project will probably fall outside the responsibility of a specific clinical department. A descriptive title will be recorded on the official transcript to define this one month period of time.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5405 - MASTER'S THESIS PREPARATION

Minimum Credits: 0
Maximum Credits: 0
Students participating in a second degree program during the course of medical school may not have completed the MS portion before reentering the clinical curriculum. In these cases, students are permitted to utilize a portion of the senior electives to complete and defend their thesis. Cred it toward the MD Degree will be given for a maximum of two months.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: No Grade Required
Course Attributes: School of Medicine Year 4

MSELCT 5406 - FLEX WEEK MS4

Minimum Credits: 0
Maximum Credits: 0
Flex Week
Academic Career: Medical School
Course Component: Independent Study
Grade Component: No Grade Required

MSELCT 5410 - MENTORED PROJECT INTERIM GRADE

Minimum Credits: 0
Maximum Credits: 0
The mentored scholarly project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. Interim grades will be assigned in May of the second year, November and may of the third year, and November of the fourth year. This course will record the grade assignment for November 1 of the fourth year.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5415 - MENTORED PROJECT 5TH INTERIM GRADE

Minimum Credits: 0
Maximum Credits: 0
he Mentored Scholarly Project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. interim grades will be assigned in May of the second year, November and May of the third year, and November of the fourth year. This course will record the grade assignment for May 1 of the second year.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSELCT 5420 - MENTORED PROJECT 6TH INTERIM GRADE

Minimum Credits: 0
Maximum Credits: 0
The Mentored Scholarly Project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. interim grades will be assigned in May of the second year, November and May of the third year, and November of the fourth year. This course will record the grade assignment for May 1 of the second year.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSELCT 5425 - MENTORED PROJECT 7TH INTERIM GRADE

Minimum Credits: 0
Maximum Credits: 0
The Mentored Scholarly Project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. interim grades will be assigned in May of the second year, November and May of the third year, and November of the fourth year. This course will record the grade assignment for May 1 of the second year.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSELCT 5430 - MENTORED PROJECT 8TH INTERIM GRADE

Minimum Credits: 0
Maximum Credits: 0
he Mentored Scholarly Project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. interim grades will be assigned in May of the second year, November and May of the third year, and November of the fourth year. This course will record the grade assignment for May 1 of the second year.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSELCT 5436 - MEDICAL RUSSIAN ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This 4-week elective is designed for medical students seeking to improve their Russian language skills in the medical setting. The course will focus on key terminology, phrases, and cultural understanding needed to interact with Russian-speaking patients and their families in clinical and healthcare settings. By the end of the course, participants will have a practical understanding of medical Russian and a mastery of fundamental medical terms in Russian, enabling them to conduct basic consultations, understand and translate medical histories, relay instructions, and help Russian-speaking patients navigate the hospital setting effectively.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MSELCT 5448 - CLINICAL INFORMATICS ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This rotation will consist of a four-week experiential learning opportunity focusing on the application of informatics in health care.

Students will receive didactic education covering a variety of topics including clinical decision support, health information technology, data analytics, health information exchange, research, and artificial intelligence. Students will have an opportunity to work directly with practicing physicians, clinical informatics fellows, and interdisciplinary teams across medicine and information technology. They will be exposed to direct application of informatics principles in different care settings and disciplines which may include ambulatory, inpatient, emergency department, surgery, anesthesia, or obstetrics. This rotation will include both in-person and virtual components. At the end of the rotation, students should understand what clinical informatics is, how it applies to the practice of medicine, how it can be used to transform care delivery, and what career paths are available for those looking to pursue this subspecialty.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

MSELCT 5450 - GET READY FOR RESIDENCY

Minimum Credits: 0
Maximum Credits: 0
This elective is an intensive preparation for students who are about to enter residency. Through daily interactive sessions, students will explore potential challenges a resident may face in a variety of specialties including medicine, infectious disease, pediatrics, obstetrics/gynecology, psychiatry, radiology, etc. There will also be simulated patient scenarios, entitled "nightmares on call," medical/legal preparation, including a mock deposition and trial, and procedural workshops. The course objectives are: 1) integrate clinical skills and knowledge in preparation for internship; 2) facilitate the fusion of knowledge obtained throughout the four years of medical school and translate it into treatment of complex patients with multi-system issues; 3) explore the evaluation and treatment of the patient with acute abdominal pain including when to call for a surgical consult; 4) identify the acutely ill child and explore the appropriate advice to give parents; 5) identify and treat the top ten women's health issues; 6) evaluate and manage acute electrolyte imbalances; 7) evaluate and treat illnesses in the pregnant patient including medication use in pregnancy; 8) gain insight into treating the patient with acute delirium and management of the violent patient; 9) evaluate and treat acute epistaxis; 10) interpret disease processes on chest x-rays, abdominal films and ct scans; 11) gain insight in to the treatment of a patient with an acute stroke; 12) learn the proper way to communicate with patients, parents of patients and health care providers on the telephone; 13) manage (through simulation) a variety of urgent patient situations the student may encounter while on call in the hospital; 14) become familiar with the steps involved in legal actions against a medical practitioner including a simulated deposition and trial; 15) help students develop essential and durable approaches to personal wellness.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5455 - LITERATURE AND MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This course is intended for the student participating in the medical humanities area of concentration (AOC). The objective of this independent study elective is to use different kinds of culturally relevant literature (drama, poetry, children's literature, popular fiction, classics) to help explore the ways our culture imagines and interprets the experience of medicine. Specifically to gain an appreciation for the various parts physicians play in the literature of our culture. To learn to use the tools and systems of literary criticism to analyze literature, and then in turn to analyze the "text" of a clinical medical encounter. To gain an appreciation for the complex ways in which our own words and actions may be interpreted and misinterpreted within the clinical setting by patients who listen to us with ears and minds which have been prepared for the encounter by the literature, myths and stories of our culture. Selections to be read may include selections from Moliere, dr. Seuss, Nathaniel Hawthorne, Gwendolyn brooks, Jane Austen, J.R.R. Tolkien, the bible, mother goose and others. Requirements consist of: completion of a set of mutually agreed upon reading assignments. Preparation and submission of four, weekly essays each approximately 3 to 4 pages long. These essays will generally be reflective papers based on that week's reading assignment. Completion of an in-depth reflective manuscript of approximately 10 pages. This manuscript will be based on my reading of the poetry of Charles Bukowski, and will address the specific theme of Bukowski's attitudes (mainly pessimistic) towards the body and medicine, as well as his portrayal of poverty, addiction and other forms of "hard living." I may change my topic pending discussion with and approval of dr. Maier. Iv. Attend a literature and medicine discussion series during the four week elective. The progress of this elective will be assessed on the basis of the submitted essays, final paper, and participation in the literature discussions. All of the assigned papers will be submitted no later than the Friday of the fourth week of the rotation.
Academic Career: Medical School

Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5466 - NEW PARENTHOOD DURING MEDICAL SCHOOL 2-WEEK ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This is a non-clinical elective designed for medical students in the clerkships and bridges phase who become parents. This course teaches about the complex interplay between parenting and professional responsibilities, while completing the requirements of medical school. In 2021, the Graduate Questionnaire (AAMC survey sent to all graduating medical students) showed that 7.3% of graduates had dependents other than a spouse. Students are eligible to take this course within the first six months of adding a child to their household in any way (birthing, non-birthing, or adoptive parent). This elective emphasizes the impact of this sentinel life event on professional identity formation. Enrolled students are expected to focus on aspects of healthcare engagement that arise during this transition, reflecting both on their own adjustment to parenthood as medical students and on their child's adaptation to life with a parent in medical school.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSELCT 5495 - FUNDAMENTALS OF ORAL AND MAXILLOFACIAL SURGERY

Minimum Credits: 0
Maximum Credits: 0
This four-week clinical elective is offered by the School of Dental Medicine and is designed for the medical student seeking exposure to oral and maxillofacial surgery and oral medicine. There is an emphasis for the physician-student to develop skills in the initial evaluation, differential diagnosis, and decision-making for a variety of problems in the oral cavity and craniomaxillofacial region. Development of medical decision-making skills will be encouraged by working closely with the attending staff and residents in ambulatory and inpatient settings. The clinical experience consists of supervised activity with a variety of patients who have issues related to craniofacial trauma, congenital deformities, oral pathology, oral manifestations of systemic disease, and other entities useful for most any practicing physician. The course curriculum includes an orientation to the scope of oral and maxillofacial surgery, a workshop on performing a detailed examination of the head and neck, and a laboratory experience on anesthetic injection techniques. Students will be able to formulate a basic differential diagnosis of a variety of disorders and evaluate a variety of different imaging modalities commonly used. A sizeable component of the rotation occurs in the operating room, where students will encounter a wide variety of procedures including trauma reconstruction, cleft and craniofacial surgery, treatment of pathology, and others. Continuity of care is emphasized by having the opportunity to see patients with the attending staff both pre- and post-operatively. Students will also participate in the department's conference series and journal club. Other in-depth experiences may be arranged based on individual interests and career paths. One of the strengths of this elective is the ability to formulate a custom approach to learning based upon the student's desires. Student's interest in careers in otolaryngology, emergency medicine, OMFS, ophthalmology, pathology, plastic surgery, or dermatology are likely to find this experience particularly interesting and practical.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5500 - INTERNATIONAL MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This elective is intended to give some structure and guidelines for students wishing to experience medical care in another country. Students are encouraged to pursue their own interests and contacts to arrange an international experience. The student is responsible for arranging this rotation. Information to be provided to the office of student affairs at least two months in advance - prepare an international clinical experience request form, travel abroad contract and checklist for international electives; designate one primary preceptor at the elective site and have written approval from the preceptor or school; develop a list of goals and objectives and a tentative list of activities which will allow the goals to be met. The student is responsible for assuring that a grade is received at the end of the four-week elective.
Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5510 - GLOBAL TELEMEDICINE WITH THE ADDIS CLINIC

Minimum Credits: 0
Maximum Credits: 0
This course will involve partnerships with The Addis Clinic and Vanderbilt University School of Medicine. The Addis Clinic began as a volunteer effort of Dr. Stephen Chan, Professor of Cardiology at the University of Pittsburgh, when he was a graduate student at MIT and Harvard. Its mission is to utilize telemedicine to care for people living in medically underserved areas and connect volunteer physicians to local partner organizations and frontline health workers. The Addis Clinic has provided thousands of teleconsultations to over 24 countries on four continents. Their model requires frontline health workers to download an app to their existing smartphones, input patient data, and send it to consulting physicians who review the case and respond directly to the frontline worker. The Addis Clinic leadership recognizes that short-term mission trips are beneficial but have also found that telemedicine allows for longitudinal access to expert assistance across the globe. Their work rests on the simple fact that clinical knowledge spread widely saves lives. Last year, Vanderbilt University School of Medicine piloted a global health telemedicine course with one student who engaged in real-time telemedicine consults through The Addis Clinic. Vanderbilt will offer their own telemedicine course in parallel with this elective, and has agreed to share access to foundational science content, available online, focused on global health education for medical students. During this elective, students will be expected to participate as active members of the healthcare team via live telemedicine consults with patients in Kenya and possibly other countries. They will use WhatsApp to connect directly with patients and clinical officers in order to take a history, perform review of systems, and complete a virtual physical exam. Any available laboratory results and imaging studies will be submitted through a secure online portal for students to review. They will subsequently draft an assessment and plan, then review the case with an attending physician at UPSOM. The attending physician will refine their recommendations prior to submitting the formal consult to the local clinical officer through the secure portal. Students will receive written feedback for each patient write-up from the faculty member at UPSOM. When not participating in telemedicine consults, students will engage in foundational science modules shared by Vanderbilt University School of Medicine. Digital lectures will be assigned each week and are designed to augment their knowledge about topics pertinent to their clinical sites. These topics will include, but are not limited to, review of local epidemiology, infectious diseases, approach to prevention and outreach, and treatment protocols in resource-limited settings. Peer-reviewed journal articles will be assigned weekly for students to review in their own time, with in-person journal clubs led by one student per week. University of Pittsburgh resident physicians from the internal medicine department and faculty will be available to facilitate these journal club meetings and review the basic elements of study design and statistical analysis, as well as implications for clinical practice. Finally, weekly discussion sessions will be held with University of Pittsburgh clinical faculty to review student cases presented in the style of morning report, with the goal of reviewing diagnostic and management decisions. Special attention will be devoted to the way local epidemiology, resource availability, and cultural factors affected the final diagnostic and treatment recommendations.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MSELCT 5536 - ETHICAL ISSUES IN CLINICAL DECISION-MAKING

Minimum Credits: 0
Maximum Credits: 0
This entirely online, discussion-focused course will equip students to address ethical issues and conflicts arising in clinical decision-making. Topics addressed include: defining death and a "good death," and medical assistance in dying communicating effectively, including "bad news," with patients and families across a range of socioeconomic, cultural, and language backgrounds defining and assessing decisional capacity helping patients, families, and surrogates make medical decisions supporting end-of-life decision-making in a culturally competent manner negotiating conflicts among patient, family, surrogate, and healthcare team responding to challenging clinical scenarios (e.g., mismatch of treatment goals between patient and medical recommendations) employing decision support and AI in clinical decision-making resolving conflicts between patient or institutional requests/demands and one's own deeply held values
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MSELCT 5578 - NEW PARENTHOOD DURING MEDICAL SCHOOL 4-WEEK ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This is a non-clinical elective designed for medical students in the clerkships and bridges phase who become parents. This course teaches about the complex interplay between parenting and professional responsibilities, while completing the requirements of medical school. In 2021, the Graduate Questionnaire (AAMC survey sent to all graduating medical students) showed that 7.3% of graduates had dependents other than a spouse. Students are eligible to take this course within the first six months of adding a child to their household in any way (birthing, non-birthing, or adoptive parent). This elective emphasizes the impact of this sentinel life event on professional identity formation. Enrolled students are expected to focus on aspects of healthcare engagement that arise during this transition, reflecting both on their own adjustment to parenthood as medical students and on their child's adaptation to life with a parent in medical school.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MSELCT 5610 - COMICS AND MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Logistics and Educational Methods: This elective is a mix of a seminar course and a "studio art" course Each class session will be 3-4 hours long, we will meet 2-3 times per week Class sessions may involve: Short lectures by faculty about "art and medicine", drawing techniques, comic-making techniques Close readings and group discussions of comics and other visual arts "Studio art" sessions (Life drawing, Translating clinical anatomy knowledge to drawing anatomy, Practicing different art styles, Practicing different comic drawing skills) For every class session, students will have two homework assignments: A reading assignment - either a comic (many related to medicine) or a critical art analysis text related to either "art and medicine" or observation A drawing assignment In addition, students will also be expected to keep a sketchbook and draw at least once a day for the duration of the course. (The aim for this course-long project is to promote creativity and build observation and drawing habits.) There is also a tentative plan for 1 or 2 "field trips" to a local art museum to practice observation skills. Evaluation: Patient education comic = 15 percent Midway through the course, each student will create a 1 page "patient education" comic on a medical topic of their choice. The AMA recommends that patient education documents be written at no more than an 8th grade level (some argue it should be at a 4th grade level). Comics may be ideal for these education documents as comics predominantly use pictures to communicate. Potential topic ideas: Explanation of a disease or disorder Explanation of a procedure and what to expect How to prevent a disease or injury from occurring Final Comic = 35 percent The course's final project will be a 4-8 page comic related to medicine Topics may include (but are not limited to): a memorable patient experience, a challenge faced during medical training, a personal experience with illness or disability, or a comic about a specific healthcare issue This will be done in stages, from concept sketches to scripting to layout sketches to mockup pages to final product Many of the in-class sessions and homework assignments will be geared toward completing this comic This final comic will be shared with the medical school community with a published anthology and/or public display of the artwork Participation in class discussions = 50 percent
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U

MSELCT 5611 - DISCOVERY WEEK 1

Minimum Credits: 0
Maximum Credits: 0
Discovery Weeks are intersession weeks that are designed to support students during the Clerkships and Bridges phases-periods marked by rapid professional transition, increased clinical responsibility, and dispersion across multiple sites. These five weeks, interspersed across the final 2.5 years of the clinical curriculum, will allow for completion of required educational experiences, support of professional identity formation, and promotion of a positive learning environment. In person intersessions reconvene the entire Clerkship and Bridges phases cohorts to address content not easily delivered within rotations, facilitate advising and near peer mentorship between class cohorts, and integrate wellness and reflective practices that sustain student development, continuity, and well-being across the clinical years. Discovery Week 1 will run when students are midway thru clerkships, AI's and electives. This is also the time when students are preparing for residency applications.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MSELCT 5622 - DISCOVERY WEEK 2

Minimum Credits: 0
Maximum Credits: 0
Discovery Weeks are intersession weeks that are designed to support students during the Clerkships and Bridges phases-periods marked by rapid professional transition, increased clinical responsibility, and dispersion across multiple sites. These five weeks, interspersed across the final 2.5 years of the clinical curriculum, will allow for completion of required educational experiences, support of professional identity formation, and promotion of a positive learning environment. In person intersessions reconvene the entire Clerkship and Bridges phases cohorts to address content not easily delivered within rotations, facilitate advising and near peer mentorship between class cohorts, and integrate wellness and reflective practices that sustain student development, continuity, and well-being across the clinical years. Discovery Week 2 occurs towards the end of the clerkship phase, when students are involved in pre-match preparations.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MSELCT 5633 - DISCOVERY WEEK 3

Minimum Credits: 0
Maximum Credits: 0
Discovery Weeks are intersession weeks that are designed to support students during the Clerkships and Bridges phases-periods marked by rapid professional transition, increased clinical responsibility, and dispersion across multiple sites. These five weeks, interspersed across the final 2.5 years of the clinical curriculum, will allow for completion of required educational experiences, support of professional identity formation, and promotion of a positive learning environment. In person intersessions reconvene the entire Clerkship and Bridges phases cohorts to address content not easily delivered within rotations, facilitate advising and near peer mentorship between class cohorts, and integrate wellness and reflective practices that sustain student development, continuity, and well-being across the clinical years. Discovery Week 3 occurs during the late Bridges phase, as students prepare to transition to residency.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MSELCT 5642 - ETHICAL ISSUES IN REPRODUCTIVE AND PEDIATRIC CARE

Minimum Credits: 0
Maximum Credits: 0
This entirely online, discussion-focused course will equip students to address ethical issues and conflicts arising in reproductive healthcare and pediatrics, including: Relationship and potential conflicts between interests of pregnant persons and fetuses Management of abortion and miscarriage Prenatal testing and newborn screening Neonatal health Conflicts among a pediatric patient, parents, and healthcare team members, including those stemming from differing value systems and cultural backgrounds Vaccination Parental permission and assessment of adolescents' decisional capacity Adolescents' decision-making regarding end-of-life, mental health, and reproductive health Gender-affirming care Fertility preservation Conscientious objection and conscientious provision
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MSELCT 5700 - CHANGING SCIENCE, CHANGING SOCIETY: A GUIDE TO 21ST CENTURY MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Biomedical knowledge is evolving at an ever-increasing pace. The environments where our graduates will practice are also changing, in response to society's needs and fiscal and policy influences. The most effective medical care of patients will be inextricably linked to the application of the most up-to-date knowledge. Optimal care will be patient-centered, and take fully into account the social determinants that influence health, illness and well-being. This new course directly supports learning about these subjects, at an opportune point in students' professional development.
Academic Career: Medical School

Course Component: Lecture
Grade Component: Grad SN Basis

MSELCT 5720 - SCHOLARLY PROJECT ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
Analytical thought and rational decision-making are the hallmarks of modern medical practice. The ability to read and critically evaluate medical literature and to think through a patient's medical concerns or a biomedical problem from first principles is an essential component of undergraduate medical education in the current era. The design, performance, and presentation of an independent project and the critical evaluation of the projects of others represent one outstanding way to develop and crystallize analytical thinking skills and the tools for rational decision-making. Students are given an opportunity to read and critically evaluate scientific and medical literature, present a research proposal and get direct feedback from faculty and other students on that proposal, perform a research project under direct mentorship from an expert in that field, present the research project in both informal and formal collegial venues, and discuss, trouble-shoot, and critique the research and presentations of their colleagues in their medical school class. Students must spend the equivalent of eight weeks in pursuit of their mentored project during the final two years of medical school. Students may participate during a block of time or over an extended period of time. When a block of time is used, this course is registered. The grading and evaluation for this course is completed by the student mentor.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3, School of Medicine Year 4

MSELCT 5721 - PSTP RESEARCH MONTH

Minimum Credits: 0
Maximum Credits: 0
This research elective month works in cooperation with the Scholarly Research Project (SRP) course, a longitudinal research experience throughout the four years of the medical school curriculum. This elective affords the student an opportunity, within the scope of their schedules, to set aside periods of time (for credit) to work solely on their Scholarly Research Project or Non- Scholarly Research Project.
Academic Career: Medical School
Course Component: Thesis Research
Grade Component: S/U Basis

MSELCT 5722 - PSTP RESEARCH MONTH

Minimum Credits: 0
Maximum Credits: 0
This research elective month for students in the Physician Scientist Training Program (PSTP) enables them to continue needed research associated with longitudinal PSTP scientific training during the MS2/MS3/MS4 years. Notably, the student's participation in the PSTP fulfills the school's Scholarly Research Project (SRP) requirement, and any research elective month(s) that PSTP students engage receive elective credit as training compatible with the SRP goals. The time set aside for this elective can be focused on either the longitudinal project undertaken in their PSTP research plan (which encompasses 2 summer laboratory rotations and 10-12 months of directed research) or on an independent research project.
Academic Career: Medical School
Course Component: Thesis Research
Grade Component: S/U Basis

MSELCT 5730 - MENTORED PROJECT COMPLETION

Minimum Credits: 0
Maximum Credits: 0
The design, performance, and presentation of an independent project and the critical evaluation of the projects of others represent one outstanding way to develop and crystallize analytical thinking skills and the tools for rational decision-making. Students are given an opportunity to read and critically evaluate scientific and medical literature, present a research proposal and receive direct feedback from

faculty and other students on their proposal, perform a research project under direct mentorship from an expert in that field, present the research project in both informal and formal collegial venues, and discuss, trouble-shoot, and critique the research and presentations of their colleagues in their medical school class. The completion of a mentored project is a graduation requirement. This course is registered by all fourth-year students to verify that this graduation requirement has been met. The final grade is assigned by the Mentored Project Steering Committee and the Associate Dean for Student Research.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3, School of Medicine Year 4

MSELCT 5745 - REMEDIATE MENTORED PROJECT

Minimum Credits: 0
Maximum Credits: 0
The mentored project (aka scholarly project) is a graduation requirement. MSELCT 5745 will be registered when an unsatisfactory grade is assigned to MSELCT 5730, mentored project completion. The scholarly project (SP) committee will outline a plan to remediate the deficiency. The plan will include a specific period of time in which the student must successfully complete the remediation to the satisfaction of the SP committee. The student transcript will record that MSELCT 5745 is a repeat of MSELCT 5730.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5765 - PRE CLERKSHIP MONTH

Minimum Credits: 0
Maximum Credits: 0
This course combines three elements: 1) the traditional required Preclerkship Week, 2) a segment of content related to Covid-19 readiness, and 3) didactics and skill-building for ambulatory medicine. Students will learn remotely, with a mix of synchronous didactics and asynchronous learning - including podcasts, online modules, and readings. Some activities may involve remote use of standardized patients. Synchronous didactics will take place from 10 am to 12 pm at most during the first three weeks of the course, with asynchronous learning as per student preference at other times. During the final week, students will attend class activities 6/1-3 for full days 8:30 am to 5 pm. Reflective Writing (2 assignments) Self-Assessment of Exam Skills Completion of and Success in Simulation Activities Participation in synchronous discussions Attendance will be taken at all sessions. Students will be able to miss three sessions with permission but will have to complete make-up work. Two unexcused absences will lead to an unsatisfactory grade.
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U

MSELCT 5805 - INTERPROFESSIONAL HEALTH CARE TEAMS

Minimum Credits: 0
Maximum Credits: 0
Course objectives: clarify the knowledge base, skills and resources different professions contribute to a health care problem, and develop understanding and respect for those contributions; explore overlapping roles and responsibilities of HC team members; clarify boundaries and responsibilities unique to individual professions; learn to communicate constructively with other HC team members; learn to design patient care plans based on shared input; identify ways of managing team members with shared / different responsibilities; realize one's own limitations and recognize when it is appropriate to seek advice or assistance from another profession. This elective course will bring together advanced level students in medicine, nursing and pharmacy to learn about and actively practice interprofessional, team-based health care. Clinically based, experiential learning will be emphasized and interwoven with didactic and reflective sessions. The course will begin with presentations and discussions to explore the meaning of interprofessional teamwork; to introduce students to the backgrounds and contributions of different professions on teams; to provide examples of highly functional vs.. Dysfunctional team interactions; and to consider the consequences of team behavior for patient care. The experiential components are organized around two disease models, heart failure and renal disease, and include inpatient and outpatient settings. Each student team will be paired with patients and participate in various aspects of care including, for example, assessment of a patient's disease and ongoing status, development of management plans

responsive to the patient's evolving state, discharge planning, follow-up and care in outpatient settings, etc. Students will interact with health care teams at various sites, as well as receive instruction and feedback from core teaching faculty. Evaluation and grading will consist of attendance and participation; presentation of a written assessment, care plan and patient summary for each "disease unit," to include a team oral presentation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5808 - ADVANCED INTERPROFESSIONAL NURSING HOME HEALTH CARE TEAMS

Minimum Credits: 0
Maximum Credits: 0
This elective course brings together advanced level students in medicine, nursing, and pharmacy to learn about and actively practice interprofessional, team-based health care in nursing home (NH) environments. Clinically based, experiential learning is emphasized and interwoven with didactic and reflective sessions. The course entails presentations and discussions to explore the meaning of interprofessional team work; to introduce students to the backgrounds and contributions of different professions and teams; to provide examples of functional vs. Dysfunctional team interactions; and to consider the consequences of team behavior for patient care. The experiential components are organized around a NH model and include patients in various care stages in this overall setting. Each student team will be paired with patients and participate in various aspects of care including, for example, assessment of a patient's history (medical, nursing, pharmacy, social/family, financial, etc.) And ongoing status, development of management plans, and evaluation of outcomes. Students will interact with health care team members at a local nursing home site, as well as receive instruction and feedback from core teaching faculty. The course will run Monday through Friday. Evaluation and grading will be done on both an individual and a team participation level. Included will be attendance, written assessments, care plans and patient summaries. A team oral presentation will be evaluated by core faculty and representative health care experts.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5850 - PEPTIDE HORMONE RECEPTORS

Minimum Credits: 0
Maximum Credits: 0
This four to eight week senior elective is available for one student per month. Research is in the general area of the mode of action of polypeptide hormones, the isolation of hormone receptors and structure function studies of biologically active polypeptide hormone receptors.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5851 - RESUSCITOLOGY

Minimum Credits: 0
Maximum Credits: 0
Research opportunities are provided for one student per month at the international resuscitation research center under the direction of the director. Laboratory studies range from the cellular level to long-term animal outcome experiments on total circulatory arrest (cardiac arrest) and shock states.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5853 - HEALTH POLICY

Minimum Credits: 0
Maximum Credits: 0
The objectives of this course are to expose medical students to current health policy issues and to methods used in analyzing them. Medical students do independent studies of issues of interest to them. They may also join teams of researchers in the health policy institute in conducting institute-sponsored studies.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5854 - ETHICS IN CLINICAL PRACTICE

Minimum Credits: 0
Maximum Credits: 0
The aim of the four week elective is to help physicians identify, analyze and resolve the ethical dilemmas they face in clinical practice. Students will meet in small group seminars with faculty to discuss readings which emphasize the central issues in medical ethics. Students will also participate in one of several in-patient services, identifying patients about whom ethical issues arise. The students will present these cases at ethics rounds for discussion. Students will also be involved in formal hospital ethics counsels.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5855 - CLINICAL GENETICS

Minimum Credits: 0
Maximum Credits: 0
A tutorial experience is tailored to the interests of the student with the advice of senior faculty. The experience is modeled after the diverse responsibilities of a clinical fellow in medical genetics, with some consultations on clinic and hospital patients, attendance at selected seminars and classes in genetics, and participation in a research project, including in the molecular genetics, biochemical genetics, or cytogenetics laboratories or with clinical or mathematical geneticists.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5856 - MILITARY SCHOLARSHIP ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This course will accommodate health profession scholarship students who must do an active duty tour during each year of medical school for which they have a scholarship. These clinical experiences do not always conform to a specific course offered by the medical school, such as flight surgeon and aerospace medicine. This generic course will cover all military exposures for credit.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5857 - EVIDENCE-BASED MEDICINE

Minimum Credits: 0
Maximum Credits: 0
A 4 week elective to introduce graduating students to the latest techniques in EBM as they apply to the clinical practice of medicine. EBM is the conscientious, explicit, and judicious use of the best available evidence in making decisions about the care of individual patients. It is an approach to problem solving based on information gathering and analysis. The course consists of a clinical rotation, small group

workshops, computer lab sessions and independent study. Each student will present the results of their analysis of one clinical question.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5858 - PUBLIC HEALTH FIELD PRACTICUM

Minimum Credits: 0
Maximum Credits: 0
This elective is a hands-on public health practicum that is appropriate for 3rd and 4th year medical students. Prior public health experience, while useful, is not required. Under faculty guidance, students will be placed at a local or state public health agency and participate in on-going activities. These may include disease surveillance and early warning; communicable disease control including outbreaks and food safety; environmental health (air, water, and ground); disaster preparedness, planning and response; health policy and planning; vector and pest control; and applied epidemiology. Specifics of the activities will vary depending on site and student interest. Students wishing to develop their own field-placement opportunity may arrange alternative sites with the advance approval of the course director. Students will also participate in a series of focused seminars on public health topics, presented on one half-day per week, on topics such as: public health practice; epidemiology in clinical practice; disasters, outbreaks and emergencies; avian and pandemic influenza. A short presentation and paper (3 - 5 pages) summarizing key aspects of the experience is also required. Through these activities, students will gain the opportunity to work closely with experienced public health professionals and to develop a fuller understanding of the intersection of clinical medicine and public health.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5860 - EDUCATIONAL TECHNOLOGY

Minimum Credits: 0
Maximum Credits: 0
This 4-week elective combines medical science with new technology in the information and computer sciences. The student will study a wide variety of aspects of technology as it relates to research, clinical medicine and/or medical education. The elective will provide an opportunity for expansion of the student's knowledge base and allow the student to create and/or evaluate a new implementation of technology in medicine. This elective assumes basic understanding of current computer software, the internet and general use.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 4

MSELCT 5890 - EXTRAMURAL RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Students will register for this four-week elective when they have arranged to do research with a preceptor who is not a faculty member of the university of Pittsburgh school of medicine. The research will be completed within the United States. The research prospectus will be vetted by the student research administrative office and a copy of the approval will be maintained in the student record.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5895 - INTERNATIONAL RESEARCH

Minimum Credits: 0
Maximum Credits: 0

Students will register for this four-week elective when they have arranged to do research with a preceptor outside of the United States. The research prospectus will be vetted by the student research administrative office and a copy of the approval will be maintained in the student record.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5900 - TRANSLATING KNOWLEDGE INTO ACTION: THE BASIC SCIENCE OF CARE

Minimum Credits: 2
Maximum Credits: 2
The "basic science of health care" course was designed to help all health science students understand that: 1) the delivery of excellent medical care requires an interdisciplinary approach; 2) there are many barriers in the current health-care environment to the delivery of safe, effective, evidence-based care, and that these problems can be remedied; 3) the health care delivery system is buffeted by many structural and economic constraints that inhibit the delivery of excellent, efficient medical care; 4) information systems play an essential role in improving and delivering cost-effective, error-free medical care; and 5) professionalism includes the personal obligation of all health care professionals to work together to remove the barriers to the delivery of safe, effective, and evidence-based care.
Academic Career: Medical School
Course Component: Lecture
Grade Component: Grad HSU Basis

MSELCT 5901 - INTERDISCIPLINARY COLLABORATION, PROBLEM SOLVING, AND CREATIVITY IN HEALTH CARE DELIVERY

Minimum Credits: 1
Maximum Credits: 1
The "interdisciplinary collaboration, problem solving, and creativity in health care delivery" course was designed to help all health science students understand that: 1) the delivery of excellent medical care requires an interdisciplinary approach; 2) there are many barriers in the current health-care environment to the delivery of safe, effective, evidence-based care, and these problems can be remedied; 3) the health care delivery system is buffeted by many structural and economic constraints that inhibit the delivery of excellent, efficient medical care; 4) information systems play an essential role in improving and delivering cost-effective, error-free medical care; and 5) professionalism includes the personal obligation of all health care professionals to work together to remove the barriers to the delivery of safe, effective, and evidence-based care.
Academic Career: Medical School
Course Component: Lecture
Grade Component: Grad HSU Basis

MSELCT 5910 - AREA OF CONCENTRATION

Minimum Credits: 0
Maximum Credits: 0
This four-week elective will allow the student a dedicated period of time to complete the area of concentration (AOC) requirements. The AOC program at the university of Pittsburgh school of medicine offers the opportunity for students to pursue an area of personal interest, over their four years of medical school. This is accomplished with a series of longitudinal, elective experiences which supplement the required core curriculum. These para-curricular education tracks provide an opportunity for interested students to explore a potential career plan and uniquely enhance their medical education. The AOC may be utilized to meet the scholarly project, which is a graduation requirement.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

MSELCT 5920 - INTRODUCTION TO HEALTH SYSTEMS SCIENCE

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to support and engage students during their residency interviews, while building on and codifying themes introduced during pre-clinical education and often informally during the clerkship years. A 90-minute introductory Zoom meeting one evening during the first week will preview content and allow students a forum to discuss goals for the month. Students will asynchronously participate in the AMA Health Systems Science Learning Series at their convenience. They will spend 2-3 hours per week completing online content modules. The modules include lectures, case-based scenarios, quizzes, and self-reflection components. Additionally, they will independently create a list of questions for residency interviews related to the 11 domains of health systems science. Finally, in a brief (1-2 page) report they will also reflect on specialty-specific literature in HSS and how it will contribute to their professional development. A 90-minute virtual debrief session during the last week of the month will provide a forum to discuss lessons learned and opportunities for additional preparation for residency vis-a-vis HSS topics and skills.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Satisfactory/No Credit

MSELCT 5950 - PSTP WORK IN PROGRESS SEMINAR

Minimum Credits: 0
Maximum Credits: 0
This course meets monthly throughout the year and is designed for all physician scientist training program students. The purpose of this course is to provide each PSTP student a forum to present his or her research and to discuss their research ideas, designs and results, and to give and to obtain peer feedback. Each student has the opportunity to present at all stages of a project, whether it is starting a project, planning the design, analyzing the data, or getting ready to present the results at conferences or in manuscripts. This course encourages all students to engage in scientific discussion and feedback on each project.
Academic Career: Medical School
Course Component: Seminar
Grade Component: H/HS/S/LS/U

MSELCT 5975 - CLINICAL SCIENTIST TRAINING PROGRAM RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Students who apply and are accepted to the clinical scientist training program (CSTP) participate in a course of study leading to either a certificate or a master of science in clinical research. Participants will devote one year of dedicated study to clinical research following the third year of the professional medicine (md) program. During the fourth year of the md program, a maximum of twelve (12) weeks may be scheduled to complete CSTP course work or the research project. This experience will be graded by the director of the CSTP program and will be recorded on the student's official university transcript. A course subtitle form will be processed to record the specific amount of time (in weeks) to be given credit, e.g., CSTP-related research 12 weeks.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

Medical Scientist Training Program

MSTP 2010 - MSTP LABORATORY RESEARCH ROTATION

Minimum Credits: 1
Maximum Credits: 1
THIS LAB IS DESIGNED TO INTRODUCE THE STUDENT TO RELEVANT LABORATORY METHODS AS WELL AS THE LAYOUT AND CONCEPTUALIZATION OF EXPERIMENTS. THE COURSE WILL SERVE TO ACQUAINT THE STUDENT WITH THE LABORATORY PROCESS, AND TO FACILITATE HIS/ HER SELECTION OF A LAB FOR DISSERTATION RESEARCH. STUDENTS ARE REQUIRED TO REGISTER FOR AND COMPLETE ROTATIONS THROUGH THREE DIFFERENT LABORATORIES, THEREBY ENSURING BROAD EXPOSURE TO METHOD AND PRACTICE.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

MSTP 5010 - CAREER AND INVESTIGATIVE SCIENCE SKILLS

Minimum Credits: 0
Maximum Credits: 0
This course is designed for entering MSTP students. The purpose of this course is to highlight contemporary questions in biomedicine and how different scientific fields approach these questions. After surveying appropriate background material the students analyze scientific papers from the primary literature under the mentorship of different department faculty. Presentation of these papers provides a forum for discussion of experimental design, technique, laboratory and clinical observations. Exposure to the primary scientific literature will prepare the students for entry into the Ph.D. component of the combined degree. Exposure to different departments and faculty will help the students select laboratories for their thesis work.
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U

MSTP 5015 - MSTP LABORATORY RESEARCH ROTATION

Minimum Credits: 0
Maximum Credits: 0
This lab is designed to introduce the student to relevant laboratory methods as well as the layout and conceptualization of experiments. The course will serve to acquaint the student with the laboratory process, and to facilitate his/ her selection of a lab for dissertation research. Students are required to register for and complete rotations through three different laboratories, thereby ensuring broad exposure to method and practice.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U

MSTP 5290 - RESEARCH BASIS OF MEDICAL KNOWLEDGE

Minimum Credits: 0
Maximum Credits: 0
This small group session is restricted to MD/Ph.D. students during their first two years of medical school. Class meets to review primary literature linked to current first and second year curricula. Before each session, a faculty member and one student meet and review the paper assigned for that week. Students learn about the research basis of medical knowledge and how to present and critically review primary literature.
Academic Career: Medical School
Course Component: Seminar
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 2

MSTP 5298 - TRANSLATING DISCOVERY TO THE CLINIC

Minimum Credits: 0
Maximum Credits: 0
The Translating Discovery into the Clinical Realm (Discov2Clinic) MSTP course provides a broad overview of how scientific discoveries are put into clinical practice. The primary objective of this course is to educate future physician-scientists about the scope and complexities of the translational science pipeline early in their careers so they can consider how factors downstream of an initial scientific discovery affect its societal impact.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: S/U Basis

MSTP 5955 - MSTP WORKSHOPS

Minimum Credits: 0
Maximum Credits: 0
This discussion-based course, guided by faculty preceptors, meets eight (8) times per year over dinner and is attended by MSTP students from all years. Each class begins with description of a topic related to training on being a physician scientist. The topic for discussion is developed by students from different years in order to assure good representation of the challenges offered at various stages of training. After presentation of the topic, students work in groups of 8-10 at assigned dinner tables and each table reports a summary of the discussion followed by group discussion. Every student must complete a class evaluation at the end of each session. The goals of the course are to provide a forum in which students can openly discuss training and ethically challenging situations with their peers; to provide a venue in which junior students can learn from senior students; to understand that responsible conduct of research and medicine is a critical aspect of research training and that it remains an important concern at all levels of a research career.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U

MSTP 5971 - MSTP PROFESSIONAL DEVELOPMENT

Minimum Credits: 0
Maximum Credits: 0
This course is required of the students participating in the md/Ph.D. program medical student training program (MSTP), at the end of their first graduate school year. Career expectations are discussed and framed in the perspective of grant writing and the review process. A small amount of lecture material is linked to a series of workshops, where each student composes a biosketch, specific aims, experimental plan and training plan related to their Ph.D. thesis. Constructive peer critiquing of grant material provides a perspective on which to build grant writing skills.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U

MSTP 5973 - STATISTICS, CODING AND DATABASE ANALYSIS

Minimum Credits: 0
Maximum Credits: 0
This seminar style course is designed for MSTP students during the summer between the first and second year of medical school with one or two faculty facilitators. The learning objectives of the course are to foster social and scientific collaboration between students; to expose students to different scientific methods, techniques, and analyses; to create an environment where students can voice difficulties with their research, labs or mentors and seek constructive feedback; to develop habits of daily writing/presenting. The students are required to present three times during the course and assessed on the clarity and quality of their MSTP retreat poster.
Academic Career: Medical School
Course Component: Seminar
Grade Component: H/HS/S/LS/U

MSTP 5975 - CAREER-RELATED RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Students apply and are accepted to the medical scientist training program (MSTP) during which they participate in the first two years of the professional medicine program before taking leave to pursue a doctor of philosophy degree of their choosing. They must defend their thesis before reentry to the professional program. They then participate in the combined third and fourth years of the professional program, which will grant a maximum of six months of credit for being granted the Ph.D. degree. A number of these physician-scientists will chose to spend all or part of this six months of the fourth year in the pursuit of research related to their Ph.D. field of study. The proposal for this research is vetted by the dean of the MSTP and when approved the student will be registered for this elective course. This experience will be graded by the research preceptor and recorded on the student's official university transcript. A course subtitle form will be processed to record the specific amount of time (in weeks) to be given credit.
Academic Career: Medical School

Course Component: Independent Study
Grade Component: H/HS/S/LS/U

MSTP 5983 - ETHICS FOR MEDICAL SCIENTISTS

Minimum Credits: 0
Maximum Credits: 0
Offered to md/Ph.D. students in the first three Ph.D. years. Part one is a 4-hr introductory workshop with emphasis on principles in ethical decision-making and formulating conceptual frameworks for evaluating situations with ethical implications. Part two consists of student participation in upper-level case-based workshops. Facilitation will be by university faculty and will apply the principles and methods of general ethics problem solving covered in the introductory workshop. The scenarios will be of specific import to the physician scientist.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U

MSTP 5990 - LONGITUDINAL CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
20 - 1/2 days are given 2 weeks outpatient credit. Students evaluate patients in a specialty outpt clinic. Plan and conduct appropriate evaluations and therapeutic approaches. Attending physician oversee student's learning of adv clinical skills in interviewing and physical diagnosis, with emphasis on symptom-based exam. Students involved in decision-making regarding the need for hospitalization and longitudinal care. Extensive opportunity for followup care of patentswith chronic disorder both for eval of new symptoms and for health maintenance. Emphasis on role of clin investigator in care of pt.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MSTP 5993 - LONGITUDINAL CLN CLERKSHIP 3

Minimum Credits: 0
Maximum Credits: 0
2 weeks junior hospitalist service are given for preparation of return to medical school. This course is not graded (pass/fail) and is not credited. This course is a General medicine service with 3 residents and 1 attending. Each MSTP student will be paired with a resident on this internal medicine clerkship following up 1-2 patients, interviewing and examining patients, writing notes, presenting patients to residents and attending during rounds.Â Students receive structured feedback from resident and attending during these 2 weeks. To be eligible for this course, a student must have completed LCC1 and LCC2. In addition, 8 additional hours of formal preparation either by attending Clinical Reasoning mini elective (taught evenings in Winter) or attending 8 Clinical Reasoning Conferences or M&Ms in the most recent year, is a prerequisite to participate in LCC3. Attendance at Pre Clerkship week (held in May) is strongly recommended for students returning to medical school in May or September for LCC 3, while it is highly recommended for students returning to medical school in January and can be done in the prior year.
Academic Career: Medical School
Course Component: Clinical
Grade Component: No Grade Required

Medicine

MED 2024 - SCHOOL OF MEDICINE GRADUATE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 9
This course provides graduate students with the opportunity to gain experiential professional learning. This course is open to all School of Medicine graduate students, and can span a large variety of career areas such as administration, business development and entrepreneurship, clinical research management, clinical services, data analytics, intellectual property and law, regulatory affairs, science

policy, science writing and communication, etc. Course work will entail experiential training within or outside the University of Pittsburgh and additional work that will be developed and approved by the course instructor.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

MED 2100 - FUNDAMENTALS OF PRECISION AND REGENERATIVE MEDICINE

Minimum Credits: 4
Maximum Credits: 4
Fundamentals of Precision and Regenerative Medicine will be a team-taught course designed to reinforce core concepts in precision and regenerative medicine, including pharmacogenomics, rare diseases, gene therapy and genetic engineering, oncology, computational biology and AI, regenerative medicine, stem cells, biomaterials and regulatory concerns. This course will serve to strengthen and extend undergraduate level coursework in this area, which is covered only to a limited degree in most undergraduate programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MED 5101 - WELCOME TO PITT MED: THE PURPOSE AND PRACTICE OF BECOMING A PHYSICIAN

Minimum Credits: 0
Maximum Credits: 0
The Purpose and Practice of Becoming a Physician course welcomes incoming students to UPSOM and upholds four student-centered tenets - I Know Where I Am; I Know Why I'm Here; I Know What I Am Becoming: I Know Where I Belong. Students will engage with the community structures and logistical foundations that will support and guide their academic and professional development throughout their medical education. Students will also meaningfully engage with professional identity formation and the physician-patient relationship.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5102 - KEYSTONE FUNDAMENTALS

Minimum Credits: 0
Maximum Credits: 0
Keystone Fundamentals serves as the introduction to foundational science and integrates the core disciplines of anatomy, histology, immunology, genetics, pharmacology, biochemistry, pathology, hematology and microbiology into a case-based, clinically relevant curriculum. The course will explore the body and its functions to prepare students for Organ Systems ahead of Clerkships.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5103 - PATIENT, PHYSICIAN, AND SOCIETY 1

Minimum Credits: 0
Maximum Credits: 0
This course focuses on the development of skills needed for effective interactions with patients and on increasing student understanding of the many roles physicians fill in society, in the health professions, and in the lives of their patients, including integrated instruction on cross-cutting themes such as ethics, professionalism, cultural competence, quality, patient safety, health care systems, racism in medicine, and legal aspects of healthcare.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5104 - MEDICAL INTERVIEWING

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide a life-like learning environment in which medical students will be able to develop and practice effective medical interviewing skills.
Academic Career: Medical School
Course Component: Seminar
Grade Component: S/U Basis

MED 5105 - EVIDENCE, DISCOVERY, AND REASONING 1

Minimum Credits: 0
Maximum Credits: 0
The skills of reading biomedical literature, interpreting data, and evaluating clinical studies are the focus of this course, integrating themes of clinical expertise and scientific reasoning. Students learn basic statistical methods and how clinical trials, medical databases, and translational medicine are foundations of evidence-based medicine and patient-centered care.
Academic Career: Medical School
Course Component: Seminar
Grade Component: S/U Basis

MED 5106 - LONGITUDINAL ALLIANCE PROGRAM

Minimum Credits: 0
Maximum Credits: 0
The purpose of the Longitudinal Alliance Program is to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5107 - COMMUNITY ALLIANCE PROGRAM

Minimum Credits: 0
Maximum Credits: 0
CAP fosters community-engaged approaches to learning by helping students connect with Pittsburgh-area organizations working to improve health for populations; students will work in teams on projects designed to improve health equity and the overall health of the community.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5107 - MEDICAL ANATOMY IMMERSION COURSE

Minimum Credits: 0
Maximum Credits: 0
The Medical Anatomy Immersion course is an intensive three-week experience that covers gross structures of the human body. In this Fall MS1 course, students will gain experience with anatomic structures and three-dimensional relationships that are fundamental to considerations of function, physical diagnosis, trauma, and disease. In Spring MS1 and Fall MS2, anatomy is directly integrated into Organ Systems courses to reinforce a student's prior knowledge and deepen their specialized understanding of the body's anatomical connections including and not limited to: Cardiology (thoracic/heart), Pulmonology (upper airway and digestive tract), and Rheumatology (joints), Musculoskeletal (extremities), Reproduction, Sexual Health, & Gynecology (pelvis and perineum) and Neuroscience (brain hemispheres).
Academic Career: Medical School

Course Component: Practicum
Grade Component: S/U Basis

MED 5108 - PHYSICAL EXAMINATION

Minimum Credits: 0
Maximum Credits: 0
This course is dedicated to teaching the art and science of performing a physical examination.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5109 - CARDIOLOGY

Minimum Credits: 0
Maximum Credits: 0
This course helps students understand normal cardiac anatomy, cardiovascular physiology, and cardiac electrophysiology; gain a basic comprehension of common pathophysiological conditions which affect the cardiovascular system; know the mechanisms of action and clinical uses of common-cardiovascular medications; and learn the physical findings, clinical presentation, diagnostic tools and basic treatments used in the management of cardiovascular disease.
Academic Career: Medical School
Course Component: Seminar
Grade Component: S/U Basis

MED 5112 - FOUNDATIONS OF MEDICINE 1

Minimum Credits: 0
Maximum Credits: 0
Medical anatomy - section 1 of the basic science block introduces themes from anatomy, as well as providing an introduction to imaging and radiology. Instructional modalities in this intensive course include lecture, dissection and problem based learning exercises.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5116 - FOUNDATIONS OF MEDICINE 3

Minimum Credits: 0
Maximum Credits: 0
Section 3 of the basic science block begins with a segment that elucidates the systems of communication that are activated upon challenge by disease causing organisms and physiologic stressors (immunology). The final course in this section is the study of disease-causing organisms, their occurrence, preferred hosts and the diseases they cause. Evaluation is based on laboratory exercises, problem-solving sessions and written examinations.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5118 - DIGESTION & NUTRITION

Minimum Credits: 0
Maximum Credits: 0
This course covers the normal function and pathophysiology of the several organs that comprise the gastrointestinal tract. In general, part one covers hollow organs and part two covers solid organs.

Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5120 - NEPHROLOGY

Minimum Credits: 0
Maximum Credits: 0
The nephrology course helps students understand the relationship between structure and function in the renal organ system, learn the embryologic basis of structure-based malfunctions in the kidney, learn primary cellular processes that mediate the actions of pharmaceutical agents that are active in the renal system and how kidneys participate in establishing drug levels in circulation, understand the etiology and treatment of common diseases of the renal system, and gain a good understanding of salt and water balance and the critical importance of this function to homeostasis.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5124 - PATIENT, PHYSICIAN AND SOCIETY 1

Minimum Credits: 0
Maximum Credits: 0
This section consists of two courses: 1) introduction to being a physician has case problems on public health and medicine, breast cancer and HIV/AIDS with patient interviews, group exercises, lectures, independent study and self-directed learning; 2) ethics, law and professionalism addresses the basic concepts and methods for analysis of ethical and legal issues in the physician-patient relationship. The course's sessions are structured as seminars with both didactic and interactive components. Videotapes, email case discussions, and debate will complement the lectures.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5125 - PATIENT, PHYSICIAN & SOCIETY 2

Minimum Credits: 0
Maximum Credits: 0
This course continues to focus on the development of skills needed for effective interactions with patients and on increasing student understanding of the many roles physicians fill in society, in the health professions, and in the lives of their patients, including integrated instruction on cross-cutting themes such as ethics, professionalism, cultural competence, quality, patient safety, health care systems, racism in medicine, and legal aspects of healthcare.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5127 - FOUNDATIONS OF MEDICINE 2

Minimum Credits: 0
Maximum Credits: 0
Section 2 of the basic science block is a multi-disciplinary section that introduces students to core principles and terminology of cell and tissue biology and pathology, genetics and metabolism. It introduces students to the biochemical and molecular basis of cell function in the context of normal physiologic function, and to the processes of disease at the cellular level. Cellular, individual and population genetics builds on this course and study of the principles governing energy metabolism of cells and organisms necessary to maintain homeostasis complete this sequence of courses. Lectures, workshops, laboratory exercises and small group problem-solving sessions comprise this section.
Academic Career: Medical School
Course Component: Lecture

Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5128 - PATIENT, PHYSICIAN AND SOCIETY BLOCK - SECTION 2: BEHAVIORAL MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Section 2 of this block consists of the course - behavioral medicine - which is a multi-faceted consideration of human behavior from the perspectives of both the patient and the physician. The course uses the biopsychosocial model to consider defining elements of the patient-physician relationship, showing how neurobiological, behavioral and social factors can have determinative and interactive impacts in the causation and course of human disease, how they contribute to health, and how they can be modified. Topics are introduced in large group format via patient interviews, videos and panel discussions, each followed by breakout small group sessions featuring case-based scenarios to further the understanding of this complex topic. Student evaluations are based on small group participation, a writing assignment and an exam.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5129 - EVIDENCE, DISCOVERY AND REASONING 2

Minimum Credits: 0
Maximum Credits: 0
The skills of reading biomedical literature, interpreting data, and evaluating clinical studies are the focus of this course, integrating themes of clinical expertise and scientific reasoning, and showing how students can keep up with new science.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5130 - RHEUMATOLOGY

Minimum Credits: 0
Maximum Credits: 0
This course introduces students to the underlying pathophysiology and phenomenology of rheumatologic disorders, presenting basic approaches to assessment and management, to prepare them for clinical rotations.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5133 - NEUROSCIENCE/PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
This first organ systems block includes two courses: neuroscience and introduction to psychiatry. The neuroscience course provides a detailed, comprehensive survey of nervous system structure, function and dysfunction. Topics include sensory and motor systems, learning and memory, language, sleep and epilepsy, as well as brain imaging methods, vascular disorders, neoplasms, and infections of the central nervous system. Material is integrated across multiple disciplines including neurophysiology, neurology, pharmacology, neuropathology and neuroradiology. The goal is to provide a mechanistic understanding of normal and pathological brain function, and to teach methods of identifying and localizing major disease processes. The learning formats are lectures, laboratories, PBLs, case-based neurology conferences and self-study. Student evaluation is based on two written exams and PBL participation. The introduction to psychiatry course introduces students to common psychiatric illnesses and their assessment and treatment. There is a written exam and a final paper or presentation due at the end of the course. Student group attendance and small group participation are also included in the overall course grade, which will combine the two courses.

Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5134 - LONGITUDINAL RESEARCH PROJECT

Minimum Credits: 0
Maximum Credits: 0
This course is designed to expose students to the mechanics of scientific investigation; teach them how to develop a hypothesis and how to collect, analyze, and interpret data to support it; encourage them to pursue research opportunities; and help them understand the structure of thought underlying the practice of medicine.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5136 - DERMATOLOGY

Minimum Credits: 0
Maximum Credits: 0
This course introduces students to the underlying pathophysiology and phenomenology of skin disorders, presenting basic approaches to assessment and management, to prepare them for clinical rotations.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5137 - INTRODUCTION TO PATIENT CARE 1

Minimum Credits: 0
Maximum Credits: 0
The medical interviewing course assists the student in developing interviewing skills using patient simulators. The introduction to physical examination course provides the first introduction to the techniques of performing a history and physical examination. Practicing on peers, students learn the skills of a normal physical exam and how to conduct it in an orderly and sequential fashion. Emphasis is on technique and normal findings with little discussion of pathophysiology. Use of the stethoscope, oto-ophthalmoscope, reflex hammer and tuning fork are demonstrated and practiced. The goal is to familiarize students in the use of their instruments and prepare them to be observers in physician offices during the remainder of the first year.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5138 - INTRODUCTION TO PATIENT CARE 2

Minimum Credits: 0
Maximum Credits: 0
The clinical experience course is designed to familiarize students with how physicians practice medicine in their offices and to expose students to the various aspects of health care delivery in the community. The advanced physical examination course spans the first two years. Pathophysiology and its correlation to hx and ph skills are stressed. Students will record and synthesize the information collected during the clinical encounter as a written history, physical exam, and patient assessment with a goal to do complete and accurate history-taking and physicals.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5139 - INTRODUCTION TO CLINICAL MEDICINE 1

Minimum Credits: 0
Maximum Credits: 0
Combining advanced physical exam practice with complex communication skill development, and utilizing both simulated and real patient encounters, this course builds on introductory courses in those areas and prepares students for clinical rotations in the clerkship phase.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5140 - PULMONOLOGY

Minimum Credits: 0
Maximum Credits: 0
This course helps students learn the structure and physiology of the pulmonary system, how structural and functional changes secondary to disease alter normal physiology, and how to best evaluate and treat patients for those diseases.
Academic Career: Medical School
Course Component: Seminar
Grade Component: S/U Basis

MED 5142 - COMMUNITY ALLIANCE INTERIM GRADE 1

Minimum Credits: 0
Maximum Credits: 0
CAP fosters community-engaged approaches to learning by helping students connect with Pittsburgh-area organizations working to improve health for populations; students will work in teams on projects designed to improve health equity and the overall health of the community.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5153 - LONGITUDINAL ALLIANCE INTERIM GRADE 1

Minimum Credits: 0
Maximum Credits: 0
The purpose of the Longitudinal Alliance Program is to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5162 - COMMUNITY ALLIANCE INTERIM GRADE 2

Minimum Credits: 0
Maximum Credits: 0
CAP fosters community-engaged approaches to learning by helping students connect with Pittsburgh-area organizations working to improve health for populations; students will work in teams on projects designed to improve health equity and the overall health of the community.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5173 - LONGITUDINAL ALLIANCE INTERIM GRADE 2

Minimum Credits: 0
Maximum Credits: 0
The purpose of the Longitudinal Alliance Program is to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5180 - EVIDENCE AND DISCOVERY 1

Minimum Credits: 0
Maximum Credits: 0
The first course of this block, introduction to medical decision making, teaches critical thinking regarding diagnosis, treatment and prevention of disease as well as statistical methods applicable to clinical studies. This course uses lecture, small group learning sessions, and final individual presentations by students.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5181 - EVIDENCE AND DISCOVERY 2

Minimum Credits: 0
Maximum Credits: 0
The second section of this block is the first part of a two-year course intended to prepare students for their four- year, mentored scholarly project. In this segment, students will use the tools and skills obtained during the preceding course to analyze seminal literature in science and medicine. Evaluation will be based on student critiques of assigned papers as well as on a formal presentation, to their small group, of a problem of interest to them, methods of approaching it and feasibility of their proposed approach.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 1

MED 5207 - COMMUNITY ALLIANCE PROGRAM

Minimum Credits: 0
Maximum Credits: 0
CAP fosters community-engaged approaches to learning by helping students connect with Pittsburgh-area organizations working to improve health for populations; students will work in teams on projects designed to improve health equity and the overall health of the community.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5218 - ORGAN SYSTEMS PATHOPHYSIOLOGY SECTION 2: INTRODUCTION TO PATHOBIOLOGY - BODY FLUID HOMEOSTASIS

Minimum Credits: 0
Maximum Credits: 0
This second section of the organ systems pathophysiology block consists of four segments: a week long study of principles of pharmacology, followed by courses on the cardiovascular, renal, and pulmonary systems. The course is interdisciplinary. In addition to the basic science components, the subject matter includes clinical aspects of diseases and their medical management. The learning format is in small groups, laboratories, lectures, tutorials/conferences and self-study. Student evaluation is based on written exams and small group problem-solving participation.

Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 2

MED 5223 - ORGAN SYSTEMS PATHOPHYSIOLOGY 3: GI/ENDOCRINE/HEMATOLOGY/SKIN/MUSCULOSKELETAL/REPRO AND DEVELOPMENT

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 2

MED 5225 - ORGAN SYSTEMS PATHOPHYSIOLOGY SECTION 4: PHARMACOLOGY

Minimum Credits: 0
Maximum Credits: 0
This course begins with the neuroscience segment of organ systems pathophysiology (OS) and runs through all of the courses in organ systems 1, 2 and 3, including a concentrated week of principles of pharmacology with an emphasis on adrenergic pharmacology at the beginning of os2. At appropriate times in those courses, basic mechanisms of pharmacologic agents are taught in the context of each organ system. This course covers classes of agents, mechanisms and drug targets as well as potential side effects and future developments. The format is primarily lecture with some workshops, as well as material incorporated into problem-based learning sessions.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 2

MED 5227 - ORGAN SYSTEMS PATHOPHYSIOLOGY SECTION 5: INTEGRATED CASE STUDIES

Minimum Credits: 0
Maximum Credits: 0
The course objective of this fifth section of the organ systems block is to apply information acquired during the first two years to patient cases as presented on the computer, further developing independent active learning and data acquisition skills. In addition, the course serves as a bridge to the direct patient responsibilities of the final two years of medical school. The format is exclusively problem-based learning. There is no final examination. The course is honors/pass/fail based on small group participation.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 2

MED 5233 - INTRODUCTION TO PATIENT CARE SECTION 3: ADVANCED PHYSICAL EXAMINATION 2 AND CLINICAL EXPERIENCE 2

Minimum Credits: 0
Maximum Credits: 0
The advanced physical examination course of the introduction to patient care block is an extension of the introduction to physical examination course. During this course, which spans the first two years, students will expand their knowledge of history taking and physical examination skills by examining patients both in adult medicine and in the pediatric setting. Patho-physiology and its correlation to history and physical examination skills are stressed. Students are also expected to record and synthesize the information collected during the clinical encounter as a written history, physical exam, and patient assessment. The goal is to prepare students to do complete and accurate history-taking and physical examinations during their clerkships. This course is integrated with the clinical experience course. There are seven, month-long sessions, four of which will be physical examination sessions and three will be the clinical experience

rotations described below. There is a written examination, a clinical performance grade from instructors, and a required performance-based assessment at the end of the course. The clinical experience course is designed to familiarize students with how physicians practice medicine in their offices and to expose students to the various aspects of health care delivery in the community. Each student will be scheduled for three, month-long rotations, one month of one afternoon a week in a physician's office, one month of once a week afternoon visits to an assigned community site for underserved populations, and one month with a student-selected ambulatory sub-specialty office or an additional month at a primary care physician's office. There will also be full class sessions on health care disparities, alcohol and substance abuse, and health care to the underserved. No textbook is required but a syllabus is provided. Completion of weekly teaching and learning logs is required. Grading is determined by attendance and passing the final examination.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 2

MED 5234 - INTRODUCTION TO PATIENT CARE-SECTION 4: ADVANCED MEDICAL INTERVIEWING - CLINICAL PROCEDURES

Minimum Credits: 0
Maximum Credits: 0
The first four weeks of the final section of the introduction to patient care block will be the advanced medical interviewing course. This course is designed to move students from the basic patient interviewing skills that were introduced in the first year medical interviewing course to a higher skill level in patient communication which will be required during the clinical clerkship years. Using patient simulators, and with guidance from a faculty facilitator and peers in small groups, students will learn and practice ""hard to ask questions"" and deal with specific ""content-sensitive"" cases (e.., Abuse, anger, drug use and sexuality). The second four weeks of the block will consist of the clinical procedures course, which will introduce students to basic diagnostic, therapeutic, invasive, and non-invasive procedures commonly performed in clinical medicine. This course gives students the opportunity to practice clinical procedures in a laboratory setting, through interactive small-group sessions with the faculty, using equipment and supplies normally found on patient care units. The goal is to familiarize students with basic clinical procedures that they may be asked to perform on patients during their clinical rotations.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 2

MED 5235 - ENDOCRINOLOGY

Minimum Credits: 0
Maximum Credits: 0
The contribution of endocrine systems to hormonal regulation of growth and development, reproduction, metabolism, and homeostasis is the focus of this course. It also examines common clinical presentation and treatment of endocrine disease.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

MED 5237 - REPRODUCTION, SEXUAL HEALTH, AND GYNECOLOGY

Minimum Credits: 0
Maximum Credits: 0
This course examines reproductive and developmental biology from fertilization through sexual development and senescence.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5239 - MUSCULOSKELETAL

Minimum Credits: 0
Maximum Credits: 0
The Neuroscience course provides the first exposure to the organ system approach to pathophysiology. The first of nine such courses, it covers normal and abnormal structure and function of the central nervous system and peripheral innervation of muscle.
Academic Career: Medical School
Course Component: Seminar
Grade Component: S/U Basis

MED 5241 - NEUROSCIENCE

Minimum Credits: 0
Maximum Credits: 0
The Neuroscience course provides the first exposure to the organ system approach to pathophysiology. The first of nine such courses, it covers normal and abnormal structure and function of the central nervous system and peripheral innervation of muscle.
Academic Career: Medical School
Course Component: Seminar
Grade Component: S/U Basis

MED 5242 - PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
This course introduces students to the underlying pathophysiology and phenomenology of psychiatric disorders, presenting basic approaches to assessment and management, to prepare them for clinical rotations.
Academic Career: Medical School
Course Component: Seminar
Grade Component: S/U Basis

MED 5243 - HEMATOLOGY - ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
This course introduces students to the underlying pathophysiology and phenomenology of cancer, presenting basic approaches to assessment and management, of both blood and solid tumors.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis

MED 5244 - PATIENT, PHYSICIAN, AND SOCIETY 3

Minimum Credits: 0
Maximum Credits: 0
This course continues to focus on the development of skills needed for effective interactions with patients and on increasing student understanding of the many roles physicians fill in society, in the health professions, and in the lives of their patients, including integrated instruction on cross-cutting themes such as ethics, professionalism, cultural competence, quality, patient safety, health care systems, racism in medicine, and legal aspects of healthcare.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis

MED 5246 - INTRODUCTION TO CLINICAL MEDICINE 2

Minimum Credits: 0
Maximum Credits: 0

Combining advanced physical exam practice with complex communication skill development, and utilizing both simulated and real patient encounters, this course builds on introductory courses in those areas and prepares students for clinical rotations in the clerkship phase.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis

MED 5247 - EVIDENCE, DISCOVERY, AND REASONING 3

Minimum Credits: 0
Maximum Credits: 0
This course helps students finalize their longitudinal research projects, through group discussion and faculty mentorship around the scientific method.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5254 - LONGITUDINAL ALLIANCE INTERIM GRADE 3

Minimum Credits: 0
Maximum Credits: 0
The purpose of the Longitudinal Alliance Program is to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5261 - PATIENT, PHYSICIAN AND SOCIETY: POPULATION HEALTH

Minimum Credits: 0
Maximum Credits: 0
This course has been developed to bring students essential and timely content on selected topics in population health. The course will address issues of: health care finance from the patient's perspective; public health overview; social determinants of care; global health issues with an emphasis on the global burden of disease and related financial issues; financial preparedness for physicians (student debt and looking ahead to specialty choice); health care reform. Learning modalities will be large group didactic sessions, self-study segments, and small group exercises. Evaluation will be determined by: completion of assigned self-study units; attendance at large group sessions; completion of course segment assignments.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 2

MED 5265 - EVIDENCE AND DISCOVERY 3

Minimum Credits: 0
Maximum Credits: 0
The third section of this block is the second part of a two-year course (methods and logic in medicine) intended to prepare students for their four-year, mentored scholarly project. In this segment, students will use the tools and skills obtained during the preceding course to analyze seminal literature in science and medicine. Evaluation will be based on students' critiques of assigned papers as well as on a formal presentation, to their small group, of a problem of interest to them, methods of approaching it and feasibility of their proposed approach.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 2

MED 5274 - LONGITUDINAL ALLIANCE INTERIM GRADE 4

Minimum Credits: 0
Maximum Credits: 0
The purpose of the Longitudinal Alliance Program is to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5322 - ADULT INPATIENT MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This is an 8 week interdisciplinary clerkship divided into 2 blocks of 4 weeks each. During each block, the student is assigned to an inpatient rotation either at Montefiore, the Oakland V.A. medical center or Shadyside hospital. On the first day of each block, the student is required to attend didactic sessions given by faculty in emergency medicine and geriatric medicine. During the inpatient rotation, students are assigned their own patients and are taught, under supervision, to apply acquired skills to clinical situation. Usmle in medicine is given at end of rotation and exam in CCM.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MED 5323 - ADULT INPATIENT MEDICINE CLERKSHIP 3RC

Minimum Credits: 0
Maximum Credits: 0
This 8-week interdisciplinary clerkship is divided into two blocks of 4 weeks each. During each block the student is assigned to an inpatient rotation at a local hospital. During this inpatient rotation, students are assigned their own patients and apply their clinical skills under resident and faculty supervision. Students learn how to take an accurate and pertinent history, conduct a physical examination, recognize patterns of illness, and acquire approaches to disease management. All students participate in four critical care medicine simulation sessions at the WISER Center, where they have hands-on experience evaluating and treating acute cardiopulmonary conditions.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5325 - ENDOCRINOLOGY

Minimum Credits: 0
Maximum Credits: 0
The contribution of endocrine systems to hormonal regulation of growth and development, reproduction, metabolism, and homeostasis is the focus of this course. It also examines common clinical presentation and treatment of endocrine disease.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

MED 5328 - COMBINED AMBULATORY MEDICINE AND PEDIATRIC CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
The eight week combined ambulatory medicine and pediatrics clerkship provides a combination of four week experiences in the disciplines of internal medicine and pediatrics. One half-day per week the students participate in a multi-faceted, interactive didactic session learning advanced skills and discussing issues common to both of these disciplines. Student's clinical experiences in internal medicine and pediatrics

are at office or clinic sites where they will be exposed to the spectrum of care that is provided in the ambulatory setting. Sites may include hospital-based practices and community locations. This is a required clerkship.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MED 5329 - ADULT OUTPATIENT MEDICINE CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
Description of course Adult Outpatient Medicine Clerkship provides four weeks of internal medicine training focused in the outpatient clinical setting. Students will participate in multi-faceted, interactive didactic sessions learning advanced skills and discussing issues common to this discipline. Students' clinical experiences in Internal Medicine are at office or clinic sites where they will be exposed to the spectrum of care that is provided in the ambulatory setting. Sites may include hospital-based practices and community locations. Students are evaluated by their preceptors.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5330 - ADULT OUTPATIENT MEDICINE 3RC

Minimum Credits: 0
Maximum Credits: 0
Adult Outpatient Medicine provides four weeks of internal medicine training focused in the outpatient clinical setting. Students will participate in multi-faceted, interactive didactic sessions learning advanced skills and discussing issues common to this discipline. Students' clinical experiences in Internal Medicine are at office or clinic sites where they will be exposed to the spectrum of care that is provided in the ambulatory setting. Sites may include hospital-based practices and community locations. Students are evaluated by their preceptors.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5336 - ACUTE CARE

Minimum Credits: 0
Maximum Credits: 0
This required selective gives students the choice of either Emergency Medicine or Critical Care Medicine month-long clinical experiences, which help students prepare for acute care situations they will encounter in residency.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5345 - CLERKSHIP REPEAT COURSE

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when the necessity to record a student's unsuccessful makeup is required. The course will be used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MED 5346 - AMBULATORY CLERKSHIP REPEAT

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when the necessity to record a student's repeat of an unsatisfactory performance in the ambulatory care clerkship of the third year. This course is used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MED 5350 - DEATH, DYING AND THE DOCTOR

Minimum Credits: 0
Maximum Credits: 0
This elective offers medical students the opportunity to explore in depth some of the philosophical, cultural, religious, and existential aspects of human beings' encounter with death. The course will employ short stories and poetry, the visual arts, and more traditional scholarly work in the humanities and social sciences. Though the course is not a clinical introduction to palliative care, it is intended to enhance students' preparation for intelligent, self-aware, and skillful care of critically ill and dying patients. While students will have some contact with the palliative care consultation service during the elective, the primary goal of the course is to enrich students' appreciation of the meanings of death and dying as experienced and expressed by human beings throughout history, and in various cultural settings. Requirements will include weekly meetings to discuss assigned reading, observation with the palliative care service, and a personal reflection paper of 7 to 10 pages.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MED 5355 - LONGITUDINAL ALLIANCE INTERIM GRADE 5

Minimum Credits: 0
Maximum Credits: 0
The purpose of the Longitudinal Alliance Program is to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5374 - LONGITUDINAL ALLIANCE INTERIM GRADE 4

Minimum Credits: 0
Maximum Credits: 0
The purpose of the Longitudinal Alliance Program is to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5375 - LONGITUDINAL ALLIANCE INTERIM GRADE 6

Minimum Credits: 0
Maximum Credits: 0
The purpose of the Longitudinal Alliance Program is to create meaningful relationships between patients and medical students to develop

empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5398 - CLINICAL MILITARY CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
Medical students who are on military scholarship and must do an active duty tour, will be given credit provided it is approved by the school as a worthwhile education experience. This is a third year level, four week experience.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MED 5399 - NON-CLINICAL MILITARY CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
Medical students who are on military scholarship and must do an active duty tour, will be given credit provided it is approved by the school as a worthwhile experience. The course will be given a course title appropriate to the contents at the time of evaluation. This is a third year level, four week experience.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MED 5401 - MEDICINE ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
Elective provides student with exceptional insight into the practice and theory of internal medicine and serves as preparation for other intensive primary care oriented specialties. Student will have an advanced degree of primary patient involvement. Sub intern will perform initial patient evaluation and institute appropriate diagnostic, therapeutic measures under direct guidance and supervision of resident and attending physician and begin to learn order-writing skills. This experience serves as a bridge between basic clerkship and internship year. Also available at hospitals outside the health center.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5402 - ACTING INTERNSHIP IN MICU

Minimum Credits: 0
Maximum Credits: 0
Course designed to actively involve students in evaluation and therapy of critically ill patients with shock, respiratory failure and other acute life-threatening disorders. Students have primary responsibility for a limited number of patients in the ICU under direct supervision of medical residents and pulmonary critical care fellows. Student will perform initial evaluation of patient with a resident and assist in resuscitation and life support procedures. Students will formulate diagnosis and therapeutic plan of management.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5403 - CARDIAC INTENSIVE CARE UNIT

Minimum Credits: 0
Maximum Credits: 0
Course is designed to actively involve qualified students in evaluation and therapy of critically ill patients with acute myocardial infarction, unstable angina pectoris, disorders of cardiac rate and rhythm, heart failure, cardiogenic shock, and other life-threatening cardiac disorders. Students have primary responsibilities for limited number of patients under direct supervision of residents and cardiology fellows. Students perform initial evaluation with resident/fellows and assist in all aspects of acute care with members of cicu-team.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5406 - EXTRAMURAL ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
Students will register for this course when participating in an internal medicine acting internship at an institution outside of the university of Pittsburgh school of medicine. This experience will not fulfill the required acting internship experience to meet graduation requirements.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5407 - DIAGNOSTICS 1

Minimum Credits: 0
Maximum Credits: 0
This course, along with Diagnostics II & III, will ensure that every UPSOM medical student graduates with the knowledge and skills to appropriately order common diagnostic tests, to interpret and utilize test report results to personalize clinical care of the patient, to know the limitations of such tests, to establish an appropriate threshold for consulting specialists, and to develop an understanding of value as it applies to health care. Students will be required to attend six two-hour large/small group sessions, engaging in activities that build knowledge and patient care skills.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5408 - LONGITUDINAL CLINICAL EXPERIENCE

Minimum Credits: 0
Maximum Credits: 0
This longitudinal experience occurs during the Bridges phase of the curriculum, embedding learners into ambulatory practices, supervised by faculty preceptors, as they hone clinical skills around assessment and management and learn principles and practices of advanced ambulatory medicine that will help prepare them for residency.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5409 - DIAGNOSTICS II

Minimum Credits: 0
Maximum Credits: 0
This course, along with Diagnostics I & III, will ensure that every UPSOM medical student graduates with the knowledge and skills to appropriately order common diagnostic tests, to interpret and utilize test report results to personalize clinical care of the patient, to know

the limitations of such tests, to establish an appropriate threshold for consulting specialists, and to develop an understanding of value as it applies to health care. Students will be required to attend six two-hour large/small group sessions, engaging in activities that build knowledge and patient care skills.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5411 - DIAGNOSTICS III

Minimum Credits: 0
Maximum Credits: 0
This course, along with Diagnostics I & II, will ensure that every UPSOM medical student graduates with the knowledge and skills to appropriately order common diagnostic tests, to interpret and utilize test report results to personalize clinical care of the patient, to know the limitations of such tests, to establish an appropriate threshold for consulting specialists, and to develop an understanding of value as it applies to health care. Students will be required to attend six two-hour large/small group sessions, engaging in activities that build knowledge and patient care skills.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5419 - INTRODUCTION TO ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
The overall goal of this course is to expose students to the multidisciplinary field of cancer diagnosis, treatment, patient follow-up and ongoing research. The "multidisciplinary" nature of this course reflects the practice of patient care and cancer research in oncology. First, the faculty involved, both as part of the lecture series as well as in the clinical sites, have diverse training backgrounds in; medical oncology, surgical oncology, radiation oncology, pediatric oncology, gynecologic oncology, pathology, and radiology. Second, a significant number of the faculty involved in this course conduct clinical translational and/or basic science research in addition to their roles as clinicians, exemplifying translational medicine from bench to clinic to community. Third, students will have the traditional didactic lectures but more importantly will get a flavor from various settings and stages involved in the care of a cancer patient. Over the years, the course has been modified to meet previous requests of students seeking "more practical knowledge that will benefit them whichever direction they follow in medicine". Lectures have been shortened to 30 minutes, highly specialized topics have been minimized, and more prevalent cancers have been expanded. Students will have the opportunity to shadow physicians in clinic and/or in the hospital (patient experience). LECTURES: The lecture series will attempt to cover the principles of practice solid tumors, hematologic malignancies and pediatric oncology. Lectures will over cover key principles in palliative care, cancer diagnostics, cancer survivorship and clinical trials that apply to any oncologic setting. Lectures will focus on high yield, practical knowledge in each of these areas. Organ-specific lectures will attempt to be grouped in order to provide thematically consistent didactics. Lectures will be given virtually over 5-9 hours per week. CLINICAL EXPERIENCE: Students will have the opportunity to round on the inpatient oncology services at Shadyside Hospital or in the oncology clinics at Hillman Cancer Center. Students will also have the opportunity to join virtual organ-specific tumor boards each week EVALUATION: Students will be evaluated on the basis of their participation, performance and attendance of the above described activities. Particular emphasis will be given to attendance at lectures and clinics. Not more than three (3) absences are allowed without permission from the course director. Students are expected to notify the course director by e-mail if they expect to miss a course related activity.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U

MED 5421 - NEUROSCIENCE

Minimum Credits: 0
Maximum Credits: 0
The Neuroscience course provides the first exposure to the organ system approach to pathophysiology. The first of nine such courses, it covers normal and abnormal structure and function of the central nervous system and peripheral innervation of muscle.
Academic Career: Medical School

Course Component: Seminar
Grade Component: S/U Basis

MED 5422 - ONLINE WOMEN'S HEALTH

Minimum Credits: 0
Maximum Credits: 0
2-3 HPW discussion plus independent reading on gender and health, with a focus on breast/cervial cancer, contraception, and menopause.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5423 - RACE AND MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Race-based differences in health outcomes have long been documented in the literature, but only recently has the concept of structural racism gained traction as a driver for these observed differences. This elective will introduce the history of race and its origin as a social construct that puts into place a power structure favoring one group over others. Students will be asked to research and present a historical event illustrating how racism has affected health outcomes (e.g., Tuskegee experiment, death of Charles Richard Drew, cardiac catherization for acute myocardial infarction, etc.) both in the remote and recent pasts. The disparities elucidated by the COVID-19 pandemic will be discussed as a class. Students will read and discuss excerpts from literary fiction, poems, and essays that explore historical and contemporary accounts of race in America, challenge the structures and politics that perpetuate health disparities, and highlight the perspectives of writers from marginalized communities. Additionally, students will present journal club presentations of articles demonstrating the effects of structural racism on health outcomes. The report on Pittsburgh's Inequities Across Gender and Race will be presented, and students will be asked to brainstorm solutions for addressing the disparities observed. Through assigned readings from selected texts (e.g., White Fragility, How to be an Anti-Racist, etc.) students will longitudinally develop skills to become anti-racist physicians who work to mitigate health disparities in their communities. They will receive implicit bias training and learn to identify stigmatizing language in oral presentations and written documentation. Cases taken from Diversity and Inclusion in Quality Patient Care will be used for the students to practice these skills.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5425 - COMBINED MEDICINE/PEDIATRICS HEALTH CARE TRANSITIONS

Minimum Credits: 0
Maximum Credits: 0
The goals of this elective are to introduce medical students to the specialty of combined internal medicine-pediatrics. In particular, this elective focuses on understanding the issues of patients with special health care needs as they transition from pediatric to adult-centered care. Students will be involved in numerous educational activities, including attending several outpatient specialty clinics, visiting pediatric rehabilitation facilities, performing home visits with patients, performing independent learning activities, and reading the current literature about transitions in care. Students are supervised by internal medicine, pediatric, and med/peds faculty members who are involved in caring for patients with special health care needs of all ages. If students have a particular interest in a certain subspecialty clinic, every effort will be made to accommodate a request made to the course director.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5430 - CLINICAL PHARMACOLOGY AND HYPERTENSION

Minimum Credits: 0
Maximum Credits: 0
During a 4 week elective, students will engage in daily patient care activities; seeing hypertensive patients and patients with treatment-

related problems (adverse reactions, drug abuse, drug interaction problem, therapeutic misadventures). Student has opportunity to study diagnosis and treatment in hospitalized patients at PUH and VAH only, as well as in hypertensive clinics at both hospitals. Proper evaluation of specific therapy will be emphasized to the student indicating the role of clinical pharmacology in the internist's activities with reference to ongoing research whenever applicable.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5440 - CARDIOLOGY

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective offers broad experience in clinical cardiology and exposure to current research problems at the health center as well as at hospitals outside health center. Activities center on cardiology teaching service, noninvasive graphics, coronary care unit, intensive cardiac monitoring area, central heart station (ECG), and nuclear cardiology. Students participate in daily activities including inpatient and outpatient consultations of the initial workup on patients. Students observe pacemaker insertions, cardioversions, cardiac catherizations, etc.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5445 - ENDOCRINOLOGY, DIABETES AND METABOLISM CLINICAL CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
The elective is structured to expose students to a variety of endocrinologic diseases in the inpatient setting. Students will be exposed to a wide variety of acute endocrinologic problems including diabetes mellitus, thyroid dysfunction, pituitary disease, adrenal disorders, and disorders of calcium and bone metabolism. During this rotation, students will participate in providing consultations in Endocrinology on patients admitted to the hospital. Day-to-day supervision is provided by the fellow on the endocrine service, who assigns new consults to the students to evaluate and provides the first level of instruction. The cases are presented to the Faculty member in charge of the endocrine service on work rounds every day, providing further opportunities for in-depth discussion and teaching. Formal didactic instruction is also provided during weekly conferences that include the Patient Care Conference, where a single clinical problem is presented and discussed in-depth by the fellows and faculty, University-wide Endocrine Grand Rounds, Endocrine Research Conference, Bone Club, Diabetes Journal Club, Multidisciplinary Thyroid Cancer Conference, Adrenal Conference, and Pituitary Conference. During these conferences, a wide variety of formats are employed for discussion, providing extensive opportunities for learning and interaction with faculty. Most conferences and lecture are currently virtual meetings through MS Teams or Zoom.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

MED 5456 - LONGITUDINAL ALLIANCE INTERIM GRADE 7

Minimum Credits: 0
Maximum Credits: 0
The purpose of the Longitudinal Alliance Program is to create meaningful relationships between patients and medical students to develop empathetic, compassionate physicians and increase awareness of what a patient goes through in today's health care system.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5460 - ENDOCRINOLOGY AND METABOLISM

Minimum Credits: 0
Maximum Credits: 0
Emphasis is placed on clinical and lab evaluation and treatment of patients with endocrine disorders during 4 week elective. Under supervision of resident and fellow, student will perform initial workups of all patients seen in consultation by endocrinology service. Patients will be presented to attending physician and discussed in depth on rounds held 3-4 days/week. Students will perform initial evaluation of outpatients seen in endo-diabetic clinic. Goal is to provide student with knowledge of endocrinology that is expected of a general internist. The elective is also available at hospitals outside the health center.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5470 - GASTROENTEROLOGY AND NUTRITION

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective gives students the exposure to the wide variety of diseases referable to the gastrointestinal tract, liver, biliary system and pancreas. Student is offered the opportunity to perform initial consultation workups of patients, observe and/or participate in special procedures as procto proctosigmoidoscopy, colonoscopy, endoscopy, liver biopsy and endoscopic retrograde cholangiopancreatography and attend clinical conferences and seminars for discussion of case findings, x-rays and histologic material for patient management. Also available at hospitals outside the health center.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5471 - OUTPATIENT GI AND HEPATOLOGY

Minimum Credits: 0
Maximum Credits: 0
This is a unique ambulatory care experience in a nonhospital setting. Students will take medical histories and perform physical examinations under supervision of a gastroenterologist. Student will observe the clinical evaluation as well as performance of endoscopic procedures in patients with gastrointestinal disorders.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5479 - ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
Elective provides opportunity to be involved in care of patients with diverse oncologic diseases. Students participate in consults at PUH, MUH, VAH, and PGH cancer institute outpatient clinic. Consults and rounds are supervised by residents and fellows. Objectives are to provide an in-depth understanding of patho-physiology of cancer and metastasis, as well as the principles of systemic treatment with standard anti-neoplastic agents and rationale and approach of clinical investigation of new approaches to cancer diagnosis and therapy.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5480 - HEMATOLOGY/ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0

This 4 week elective provides an opportunity to be involved in the care of patients with diverse hematologic and oncologic diseases. Consultations are supervised by the fellows with formal rounds being made on all patients seen, resident and fellows with formal rounds being made on all patients seen in consultation. Clinical and research conferences and morphology review conferences are held weekly. Also available at hospitals outside the health center.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5481 - BLOOD COAGULATION

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective offers a number of interesting and useful experiences. Student is exposed to both outpatient and inpatient bleeding problems. In addition, student learns to evaluate and interpret clotting tests. There is also an opportunity to meet, examine and become involved in the treatment of 200 hemophiliacs followed in the hemophilia center of Western pa.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5484 - LONGITUDINAL ALLIANCE PROGRAM 8

Minimum Credits: 0
Maximum Credits: 0
This longitudinal experience occurs during the Bridges phase of the curriculum, embedding learners into ambulatory practices, supervised by faculty preceptors, as they hone clinical skills around assessment and management and learn principles and practices of advanced ambulatory medicine that will help prepare them for residency.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U

MED 5485 - STEM CELL TRANSPLANTATION SERVC

Minimum Credits: 0
Maximum Credits: 0
This 4-week elective supervised by a hematology fellow and a dedicated nurse practitioner manages patients receiving high dose chemotherapy and the complications of stem cell transplantation (eg. Graft versus host disease, opportunistic infections). Clinical and research conferences are held weekly.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5490 - INFECTIOUS DISEASES

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective will acquaint the student with the clinical and laboratory aspects of infectious diseases, with varying emphasis on one or the other, may be tailor-made to the interest of the individual student. Student will be supervised by resident or fellow and will make daily rounds on patients. Students will workup cases and present them to a senior staff member with whom they will also have daily contact. Student will learn to correlate and evaluate laboratory findings. Formal rounds are held weekly where pathogenesis, diagnosis and treatment are discussed.
Academic Career: Medical School
Course Component: Clinical

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5491 - WOMEN'S HEALTH

Minimum Credits: 0
Maximum Credits: 0
The Women's Health Elective is a multidisciplinary elective facilitated by the Department of General Internal Medicine. Students will rotate primarily with the General Internal Medicine Women's Health Faculty in the Montefiore Outpatient Clinic. They will also have the opportunity to work with several other disciplines including gynecology, urogynecology, gastroenterology, cardiology, rheumatology, endocrinology, maternal fetal medicine, genetics, pelvic floor physical therapy, breast oncology, and cancer survivorship. Clinical preceptors have a passion for women's health and gender-based care. These experiences are not guaranteed every rotation and are subject to clinic availability. Students will also partake in a core women's health didactic curriculum and weekly lunch lectures hosted by the Section of Women's Health. Topics vary by year but tend to cover advanced women's health topics such as care of the pregnant patient, interpersonal violence, hypercoaguable disorders in women, challenging contraception cases, gynecologic issues (endometriosis, fibroids, chronic pelvic pain), depression/anxiety/PTSD, migraines, thyroid disorders, and other conditions that have a gender predisposition. Students will be involved in basic bedside gynecologic procedures such as IUD insertion/removal, endometrial biopsy, nexplanon insertion/removal, and participate in routine and acute gynecologic care. Students will be asked to review a journal article toward the end of the rotation in a small group setting. This rotation counts as part of the Women's Health AOC Elective requirement. Away students are encouraged to apply but will need to be granted permission to ensure a good fit with this elective.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5492 - MED-PEDS AMBULATORY

Minimum Credits: 0
Maximum Credits: 0
Our elective will immerse students in our combined Med-Peds clinic and introduce them to Med-Peds primary care - the most intrinsic and fundamental basis of what it means to be Med-Peds. They will see patients in the AM with Med-Peds faculty (including Dr. Allie Dakroub, the rotation coordinator and Assistant Program Director for Ambulatory Education of the Med-Peds Residency Program) and will also assist our senior residents in the PM as an "assistant clinic supervisor". [Our Med-Peds senior residents all serve as "clinic supervisor" wherein they manage the clinic. Students on this rotation will assist them in an attempt to gain an understanding of the logistics and benefits/challenges of our primary care clinic]. They will have a hand in helping manage the clinic (participating in education of junior students and residents, helping call patients and provide lab results/patient counseling, helping field acute-care visits, helping determine appropriate vaccinations and screening services and result interpretation thereof, among other daily clinical tasks). Additionally, they will partake in all Med-Peds educational experiences (noon conferences, journal clubs, and quality improvement). As a capstone of their rotation, they will be required to compose an essay regarding Med-Peds and social determinants of health. We also aim to facilitate experiences in subspecialty care with respect to Med-Peds practice for our students in whom that interest lies. Students will have an introductory email sent to them weeks prior to the rotation. Should they declare an interest in subspecialty Med-Peds care, we are more than happy to reach out to our Med-Peds colleagues across domains of Pitt IM and Pitt Peds to provide them experience in such clinics, wherever possible, and to help facilitate mentorship and career counseling connections, when possible, for such career trajectories. Students will work from 8am until 5pm M-F. There are no weekend, night, nor "call" experiences as part of this rotation. An introductory and closing session will occur with Dr. Allie Dakroub on the first Monday and last Friday of the rotation. Essay will be submitted at this time. Throughout the rotation, the student will also have 1 fully observed encounter each week (to be completed by either the clinic supervisory resident or a faculty member) and will be provided immediate feedback on pre-identified learning goals and communication style/technique.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5500 - PULMONARY MEDICINE

Minimum Credits: 0
Maximum Credits: 0

Elective is aimed at acquainting student with the diagnostic and therapeutic approaches to the common pulmonary diseases, including lung cancer, asthma, chronic bronchitis, emphysema, etc. Student will become acquainted specifically with chest roentgenogram and subtleties of its interpretation through daily rounds with staff and fellows. Student will work as a team with a fellow and staff attending seeing consultations and developing therapeutic and diagnostic plans which will be reviewed and critiqued by the fellow and attending. This is a 4 week elective.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5510 - RHEUMATOLOGY AND IMMUNOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four week elective is engaged in an integrated program of patient care, teaching and research with emphasis on clinical evaluation and treatment of patients with a variety of rheumatic and immunologic disorders. Students perform initial exam of patients seen under the supervision of a fellow and rotating residents and take an active role in teaching rounds with a member of the faculty specifically assigned to this service. Students may share in responsibility for primary care of patients admitted to hospital and several outpatient clinics.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5520 - RENAL DISEASE

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective provides exposure to a full range of renal and fluid-electrolyte disorders. Students interview and examine patients admitted to the care of the renal staff physician or referred consultation, will follow the patients jointly with the nephrology fellow and participate in daily rounds with faculty. Attending also conducts ad hoc discussions regarding renal pathophysiology, diagnosis and management of acute and chronic renal diseases, and electrolyte disorders. Students attend regularly scheduled conferences. This elective is also available at hospitals outside the health center.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5530 - NUTRITION AND INTESTINAL HEALTH

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to offer students a learning experience in both the science and practice of medical nutrition. Under the supervision of faculty and fellows, students will be given responsibility for evaluation and management of patients seen in nutrition clinics, admitted to the medical and surgical services. Daily work and teaching rounds are supplemented with regular conferences and seminars on basic and clinical topics in nutrition. Students will be required to participate in weekly journal club to review current literature pertinent to nutrition.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5535 - MEDICAL NUTRITION: PAST & PRESENT THEORIES AND PRACTICE

Minimum Credits: 0
Maximum Credits: 0
This is an elective course for M3-4s, or students returning from dual-degree work, combining medical history with clinically useful

knowledge about common nutritional and dietary problems in pediatrics, internal medicine/ general practice (including geriatrics), and the surgical fields. It will involve daily pre-class reading, lectures, case-based learning, guest visits from specialists, and student-directed research components. There will be 2 hours of classroom activities per day, 5 days a week, for 4 weeks.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5540 - GERIATRIC MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective will introduce students to fundamentals of practice of geriatric medicine. Students will participate in all aspects of a multidisciplinary clinic, working primarily with interests but also with geriatric psychiatrists and geriatric social workers. Primary care of the elderly will be stressed, but consultative work will also be done. Conference will be held to discuss cases with all team members and for more didactic teaching, including weekly geriatric psychiatry conferences. Also participate in evaluation and care of nursing home patients, in home visits, family conferences and WPIC.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5560 - PULMONARY INTENSIVE CARE UNIT

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to actively involve qualified students in evaluation and therapy of critically ill medical patients with shock, respiratory failure and other acute life-threatening disorders. Students have primary patient responsibilities for a limited number of patients in the ICU under direct supervision of medical residents and pulmonary critical care fellows. Student will perform initial evaluation of patient with a resident and will assist in resuscitation and life support procedures. Students will formulate diagnostic and therapeutic plan of management.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5565 - PALLIATIVE/HOSPICE CARE

Minimum Credits: 0
Maximum Credits: 0
A structured clinical rotation to increase awareness, knowledge and clinical skills when dealing with terminally ill patients and their families. Time will be spent doing consults and seeing patients and families in outpatient clinics and their homes. The objectives include assess, diagnose and effectively manage common problems and symptoms of terminal illness; recognize and know how to deal with symptoms of normal and complicated grief; recognize common psychosocial and spiritual issues faced; understand the impact on the family and friends; develop appropriate communication skills.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5570 - LIVER TRANSPLANT

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective offers an opportunity to participate in the workup and evaluation of prospective liver and gut transplant candidates. Student will work closely with GI fellow and senior staff of the division. Student will be taught the criteria utilized to make a decision for

transplantation and an appreciation of the care required in the management of such patients.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5590 - SUBSTANCE ABUSE IN PRIMARY CARE

Minimum Credits: 0
Maximum Credits: 0
This elective is offered to explore diagnosis and treatment of substance abuse disorders in primary care setting (both inpatient and outpatient). A variety of clinical sites will be used to accomplish objectives of identifying common presenting symptoms, become familiar with diagnostic criteria for dependence vs hazardous use, become familiar with variety of screening and assessment instruments, participate in patient detox, experience inpatient rehabilitation, implement brief interventions for hazardous drinkers, experience 12 step program, participate in smoking cessation counseling.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5595 - SUBSTANCE USE DISORDERS IN GENERAL MEDICAL SETTINGS

Minimum Credits: 0
Maximum Credits: 0
Students on this rotation will work primarily with general internists with expertise in addiction medicine, caring for patients with substance use disorders in general medical settings, such as the acute care hospital and the Primary Care and Addiction Recovery Engagement Services (PCARES) clinic, with additional exposure to a methadone clinic setting and the care of women with opioid use disorders at Magee.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5600 - OUTPATIENT MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective will introduce students to the practice of outpatient medicine. Student will have the opportunity to evaluate new patients in the outpatient setting and plan appropriate investigative and therapeutic approaches. Student will also provide follow-up care of patients with chronic illness in an attempt to maintain their maximum wellbeing and also evaluate new symptoms in patients with chronic illness. Student will be involved in decision-making regarding the need for hospitalization and how to minimize this aspect of patient care.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5601 - COMMUNITY HEALTH

Minimum Credits: 0
Maximum Credits: 0
The community health elective is a four-week course designed to expose fourth-year medical students to health care access and public health issues among underserved populations in the Pittsburgh area. The curriculum will include assigned readings/research on health issues for underserved populations, particularly in community organizing and health promotion/disease prevention. Clinical experience involves supervising patient care in many locations, such as: community health centers (squirrel hill community health center, hilltop clinic, Mt. Oliver, McKeesport, and Wilkinsburg); family links; Beth haven; wellspring; jubilee kitchen. Also included are those homeless clinics or outreach locations operated by the program for health care to underserved populations (PHCUP): (operation safety net;

Birmingham clinic; the salvation army Northside). Exposure will be given to multi-disciplinary outreach efforts by the health care for the homeless project and other social services agencies. Students will also spend one-half day at the health law clinic assisting law students and their clients on disability cases, tenant-landlord dispute and other legal services. Students may also have the opportunity to assist clients at their court hearings. Students will also have the opportunity to lead health talks at community agencies and present at the community health forum. Very interested and motivated students will be taught the basics of designing survey, conducting focus groups and community needs assessment. There are also opportunities to participate in ongoing research projects by PHCUP. Students participating in the underserved area of concentration are given time to pursue their longitudinal projects. A short self-reflective or advocacy paper is also required. Patient care is sixty percent of the elective with thirty percent of that spent at the Birmingham clinic. Twenty percent is spent within multi-disciplinary outreach. Twenty percent of the four-week elective will be spent doing research, attending or giving health talks and a presentation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5605 - BRIDGING THE GAPS ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
Bridging the Gaps (BTG) internship is a long-standing program at the University of Pittsburgh. BTG is an 8-week long summer immersive experience that pairs health professional students with community-based organizations and structures the service-learning experience with weekly reflective and didactic sessions. Interns will learn about the health needs of Pittsburgh's communities and the structural factors causing health inequities. Interns work directly with underserved populations including vulnerable children, homeless women, people in recovery and gain leadership experience in community engagement. Working with community mentors, interns complete a project that leaves the host organization with a tangible product such as a resource guide or needs assessments to improve program quality.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5610 - BONE MARROW TRANSPLANTATION

Minimum Credits: 0
Maximum Credits: 0
Provides an introduction to adult bone marrow transplantation for the treatment of acute and chronic leukemia, aplastic anemia, other hematologic diseases and treatment of solid tumors. Student has an opportunity to participate in initial selection of patients, the intake interview, and the marrow harvesting procedure and become familiar with various marrow preparative regimens. Student participates in daily patient management rounds, treatment of complications, including graft vs host disease, interstitial pneumonia and various infectious problems.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5620 - INTERNAL MEDICINE CONSULTATION

Minimum Credits: 0
Maximum Credits: 0
This consult service provides consultation for patients on the psychiatric service. Students participate as partners with a senior medical resident under direct supervision of the course director. Objectives are that student be proficient in HX, PE and assessment required of GIM consultant; be proficient in fiscally responsible diagnosis and treatment; be proficient in clinical pharmacology of psychiatric patient and develop skills required to participate as a member of the psychiatric therapeutic team.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5630 - ADVANCED CLINICAL REASONING

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U

MED 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department of internal medicine to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5655 - INTERNAL MEDICINE SUBSPECIALTY

Minimum Credits: 0
Maximum Credits: 0
This elective will be divided into two (2) periods for two (2) weeks each. Students taking this elective will chose any two of the subspecialties listed: rheumatology & immunology; pulmonary medicine; gastroenterology & nutrition; endocrinology & nutrition; cardiology, infectious disease; palliative/hospice care; geriatric medicine; renal disease and hematology/oncology.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5688 - DIVERSITY IN SEXUAL ORIENTATION AND GENDER IDENTITY AND EXPRESSION EXPERIENTIAL ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
The majority of this course will be conducted as clinical experiences in addition to a weekly didactic session on pertinent topics relating to SOGIE-diverse health. The course will strive to provide both medical and surgical opportunities for patients; however, this is dependent on availability of procedures. At the conclusion of the experience, the students will be asked to write a reflective essay on their educational experience.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5710 - CLINICAL PHARMACOLOGY (ILS)

Minimum Credits: 0
Maximum Credits: 0
The integrated course program consists of four overlapping components; general clinical pharmacology; disease-specific clinical topics; workshops; and four sessions on recently developed drugs. The format of the course includes traditional lectures, case discussions, and discussions of current articles, problem-based learning, and workshops. Computer assisted techniques will be utilized.
Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5711 - INTEGRATED LIFE SCIENCE

Minimum Credits: 0
Maximum Credits: 0
This course helps students revisit aspects of basic science after they have had several years of clinical experience, helping them better understand the relevance of basic science to clinical problems and appreciate novel approaches to precision medicine that will impact clinical care in the future.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5715 - NEOPLASIA & NEOPLASTIC DISEASE

Minimum Credits: 0
Maximum Credits: 0
Selective will emphasize principles of neoplastic and neoplastic disease. There will be an emphasis on interactive participation in a variety of clinical and basic activities. Format will include traditional as well as interactive lectures, case discussions, discussion of current articles, problem-based learning, workshops and clinical/basic science experiences.
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5750 - GET READY FOR RESIDENCY INTERNAL MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This elective is an intensive preparation for students who are about to enter residency. Students will be provided with a combination of general and specialty-specific, clinically relevant content in a variety of modalities. The focus will be on content that will prepare the student to function at the starting level of an intern (and meet the expected intern-level milestones) after graduation. Teaching modalities will include simulation, small group sessions, skills workshops, standardized patient cases, and a limited number of high-yield lectures.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

MED 5760 - GET READY FOR RESIDENCY BOOT CAMP ALTERNATIVE TRACK

Minimum Credits: 0
Maximum Credits: 0
This course is by invitation-only from the school of medicine and is a miniature version of the boot camp course which runs each Spring for the graduating class. This alternative course is specifically for students who are graduating off-cycle or students pursuing non-traditional pathways (or otherwise assigned by the Dean of Medical Education).
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5765 - PRECLERKSHIP COURSE

Minimum Credits: 0
Maximum Credits: 0

The course is an introduction and transition for rising third year medical students to provide necessary skills and information. The daily sessions include large and small group formats. Topics include: an introduction to the combined clinical years, industry relations, communication skills, roundsmanship, honor council, infection control, clinical logs, general rules for a successful clerkship, and using the electronic patient record training. Clerkship directors will meet the students in skills workshops to and instruct in writing prescriptions, order writing, history and physical write-up reviews, and soap (subjective data, objective data, assessment, and plan) notes. Exercises will include a hands-on hospital simulation on pandemic and disaster preparedness, patient assessment workshops and interdisciplinary teamwork presentations (allied health professional presentation and panel, and a clinical presentation on resident team/nursing support). All students will participate in a CPR recertification course, with respiratory n95 mask fit testing. There will also be a lecture on professionalism followed by humanism honor society group read vignettes presented by student members of the Watson humanism honor society. Faculty facilitators will then conduct humanism in medicine small group sessions. Attendance at all sessions is required to satisfactorily complete the course. Grades will be based on attendance, course participation, and completion of homework assignments.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5771 - ASSESSMENT WEEK

Minimum Credits: 0
Maximum Credits: 0
The overall goal of this course is for students, who are entering the fourth year of the first professional medicine program, to complete a series of structured assessments and participate in focused review sessions designed to enhance preparation for the National Board of Medical Examiners (NBME) United States Medical Licensing Examination (USMLE), step 2 clinical knowledge and clinical skills exams. Specific objectives include: reviewing common important dermatological conditions and how to describe skin lesions. Reviewing common radiologic findings that every graduating student should know how to identify. Reviewing targeted areas in obstetrics and gynecology in preparation for step 2 CK. Interpreting clinical pathological lab values to provide better patient care. Interpreting common and life-threatening EKG findings. Practicing with step 2 CK exam questions to better understand content and timing of the exam. Practicing common clinical procedures often performed in acting internships.
Academic Career: Medical School
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Attributes: School of Medicine Year 4

MED 5772 - CLINICAL SKILLS REFRESHER ELECTIVE FOR STUDENTS RETURNING FROM EXTENDED LEAVES OF ABSENCE

Minimum Credits: 0
Maximum Credits: 0
UPSOM students are occasionally approved for extended leaves of absences to complete graduate programs outside of UPSOM or for entrepreneurial purposes. Leaves longer than 2 years in duration are associated with a loss of both interviewing, physical exam, and clinical reasoning skills. This elective was designed to incorporate clinical experiences in inpatient and ambulatory settings to refresh communication and exam skills while working with dedicated clinician-educators. Students will participate in educational sessions (e.g., IM resident morning report, Department of Medicine Clinical Reasoning Conference, and completion of VPsim clinical reasoning modules) to refresh and further develop clinical reasoning skills. Objectives: 1. Review and enhance medical interviewing skills 2. Review and enhance physical exam skills 3. Refresh components of a standard history and physical exam 4. Refresh and enhance clinical reasoning skills
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5777 - GERIATRICS AND ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
This one week course provides an update for clerkship students in the related areas of cancer diagnosis and treatment and in the recognition

and approach to common problems in older adults in various environments. Updates on specific advances in both fields are presented as well as several sessions on the intersection of cancer diagnosis and care as specifically relevant to aging populations. Teaching modalities include lecture, small group sessions and interactive skill sessions.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5778 - CLINICAL FOCUS COURSE: GERIATRICS AND ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
The week-long geriatrics and oncology course focuses on the critical issues of aging and cancer. This course is placed in the curriculum at the mid-point of the third year, which is a unique teachable moment where students can benefit from focused instruction on key topics which are commonly encountered during the core clerkships. The coverage of both topics is designed to build on the clinical exposure that students have had; both to the impact of the aging population on clinical practice as well as the pervasiveness of cancer as a medical challenge. Both topics address practical issues related to care of these patients, recent advances in clinical care, and also have an experiential component. Students visit with patients at the Hillman Cancer Center during the oncology segment and visit one of three local nursing homes to meet with the patients and the people who care for them during the geriatrics section. Conferences follow these experiences to allow faculty-guided discussions of the experience.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5779 - CLINICAL FOCUS: GERIATRICS

Minimum Credits: 0
Maximum Credits: 0
The week-long geriatric course focuses on an interprofessional team approach to complex issues related to aging, which span the basic sciences, clinical acumen, and profound socioeconomic issues for our society. The course is intended to help medical students, as well as selected nursing and pharmacy students, understand the critical issues of aging, and the importance of team-based health care for geriatric patients in long term care facilities. The course is placed in the curriculum at the mid-point of the third year, which is a unique teachable moment where students can benefit from focused instruction on key topics which are commonly encountered during the core clerkships. The course is designed to provide students with the knowledge, skills, and experience to recognize and approach common problems in older adults in inpatient and outpatient settings as well as in the nursing home.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5810 - MEDICAL RESEARCH

Minimum Credits: 0
Maximum Credits: 0
A number of pure research opportunities are available to interested students and such arrangements should be made with individual members of the department. Research elective experiences may be intellectually rewarding and afford the opportunity to determine their aptitude for research and teach them a life-long way of thinking about the approach to biological problems whether or not they intend to make research a career. A few that are available are research in renal electrolyte physiology, investigative gastroenterology and research in hematology/oncology.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5815 - RESEARCH IN CLINICAL PHARMACOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective offers participation in research activities within the center for clinical pharmacology. The student will be integrated into an ongoing research project being conducted at the center, with the type and degree of participation appropriately adjusted for prior research experience. The objective of the course is to acquaint students with career opportunities in clinical pharmacology; introduce students to modern biomedical research and increase student's knowledge of a specific area in clinical pharmacology.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5826 - LONGITUDINAL APPRENTICE CLINICAL ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
LACE is a LEE (longitudinal elective experience) that takes place from June to January in the bridges phase of the Three Rivers Curriculum. LACE aims to enhance clinical skills necessary for residency level care, support professional identify formation and allow students the opportunity to form mentoring relationships with a faculty member while contributing meaningfully to patient care. The structure of LACE draws on the theory of communities of practice and situated learning which emphasize the importance of a longitudinal, stable clinical environment and teaching relationship to allow students to progress from peripheral participation to increasing responsibility within a community of practice. Elective directors will pair students to work in a clinical setting with a faculty preceptor from their chosen specialty.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

MED 5830 - INVESTIGATIVE GASTROENTEROLOGY

Minimum Credits: 0
Maximum Credits: 0
Areas of investigation include clinical studies of constipation and defecatory disorders, fecal incontinence, gastric emptying, lab studies of changes in bile and liver chemistry occurring during liver regeneration, partial obstruction of common bile duct, or biliary lithotripsy. This 4 week elective is conducted at Montefiore hospital.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5831 - MEDICAL ONCOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
This 8 week elective is available to students interested in laboratory and/or clinical research experience in medical oncology. An approved prospectus must be prepared prior to the start of project.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5833 - RENAL PHYSIOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Intended for the student with special interest in renal physiology especially as it applies to human medicine. Exposure to techniques employed in the study of human and animal renal physiology and body fluid metabolism, including standard clearance techniques, total balance study and renal micro puncture. Assistance with and direct involvement in an ongoing research project and in certain cases, the student may initiate a related project. Adequate time will be reserved for literature research and data analysis. Optimum time for this elective is 16 weeks.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5835 - RHEUM & CLINICAL IMMUNO RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Students may participate in either clinical or laboratory based research projects. Student will complete background reading on selected area of concentration. Goal is for student to present findings at a research seminar, a regional or national meeting or as a publication in a professional journal.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5837 - LONGITUDINAL APPRENTICE CLINICAL 2-WEEK ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
LACE is a LEE (longitudinal elective experience) that takes place from June to January in the bridges phase of the Three Rivers Curriculum. LACE aims to enhance clinical skills necessary for residency level care, support professional identify formation and allow students the opportunity to form mentoring relationships with a faculty member while contributing meaningfully to patient care. The structure of LACE draws on the theory of¿communities of practice and situated learning¿which emphasize the importance of a longitudinal, stable clinical environment and teaching relationship to allow students to progress from peripheral participation to increasing responsibility within a community of practice. Elective directors will pair students to work in a clinical setting with a faculty preceptor from their chosen specialty.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

MED 5848 - HUMAN RIGHTS CLINIC

Minimum Credits: 0
Maximum Credits: 0
The Human Rights Clinic (HRC) is a 6-month longitudinal experience elective (LEE) designed to provide students with training in conducting asylum evaluations and writing medical advocacy letters. Each student is expected to participate in 4 cases ranging from doing interviews, reviewing medical records and drafting affidavits and letters to advocate for human rights locally, nationally, and globally. Students will work in teams with other students, physicians and legal partners to verify accounts of trauma, advocate for appropriate healthcare, life-saving treatments and compassionate release from detention facilities. The Social Medicine Fellows and student leader(s) of the Pitt's chapter of the Human Rights Clinic will coordinate sign-up and case supervision for participants and ensure that deadlines are met.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MED 5896 - INTEGRATED LIFE SCIENCES ALTERNATIVE TRACK

Minimum Credits: 0
Maximum Credits: 0
The integrated course program consists of five overlapping components: Evidence-Based Pharmacotherapy Critical Appraisal of Literature on Pharmacotherapy Rational Drug Prescribing Theme: "How to Prepare Your Own Personal Formulary" The Personal Formulary Concept: Criteria for drug selection Legal Aspects of Prescribing and Safe Medication Non-Rx Pharmacotherapy and Patient Self-care Disease-specific Clinical Topics Hypertension (Antihypertensive Drugs) Congestive Heart Failure Ischemic Heart Disease (Anti-ischemic Drugs) Hyperlipidemia (Antilipemic Drugs) Pulmonary Disorders (Anti-asthmatic Drugs) Neurological Disorders (Antiepileptic Drugs) Psychiatric Disorders (Antidepressant Drugs, Anxiolytics) Endocrinologic Disorders (Antidiabetic Drugs) Rational Use of Antibiotics Pharmacotherapy of HIV/AIDS General Clinical Pharmacology Theme: Individualization of Therapy Adverse Drug Reactions Drug Use in Children Drug Use in the Elderly Drug use in Pregnancy Allergic Drug Reactions Nephrotoxic Drugs Special-Attention Topics Pharmacokinetics Toxicology Dialysis Pain Treatment Allergies Sedation
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5900 - EXTRAMURAL INTERNAL MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This pertains to all senior electives taken at other schools.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5901 - INDEPENDENT STUDY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience. This course is for students outside the school of medicine and will be specifically titled to define content of experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

MED 5902 - ADVANCED GENERAL MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective will introduce medical students to a wide variety of health care experiences in general internal medicine. This will include opportunities to evaluate patients in the in- and out-patient settings, review physical diagnosis skills, improve interviewing skills, evaluate and analyze laboratory, radiology and pathology data, attend a variety of didactic lectures and participate in case presentations. Settings will include a community medicine program, a veteran's health care system and a tertiary care medical center.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5910 - NARATV, LIT & EXPRN OF ILLNESS

Minimum Credits: 0
Maximum Credits: 0
Will explore culture and practice of medicine from perspective of an outside observer through use of various types of medical literature (poetry, fiction, non-fiction and essays). Clinical experiences traditionally considered to lie outside physician's role designed to complement exploration of perceptions patients have of hospitals and doctors. Sessions focus on assigned readings, with attention to

journal entries and weekly short essays. Clinical experiences, for two half days per week, complement participant's interests, seminar readings, and goals of experiencing clinical setting through a non-medical lens.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5911 - PRINCIPLES OF MEDICAL EDUCATION

Minimum Credits: 0
Maximum Credits: 0
The course comprises AM half days of didactic and interactive workshops from Dr. Dakroub and Dr. Klein and various key institutional faculty educators. Examples include: How to give a lecture; How to precept a medical student; How to give Feedback; How to evaluate students; Dealing with struggling learners; Teaching clinical reasoning and Teaching. Two PM half days per week will involve teaching physical diagnosis which includes Intro to physical exam (1st year students) and may include Advanced Physical Exam (2nd year students) and working with standardized patients. Additionally, all participants in the electives are asked to deliver an interactive workshop of their choice on a topic in Medical Education that interests them (this can be done in small groups). Common workshop topics include: Bias in Medical Education, Bias in Feedback in Med-Ed, P/F grading in Med-Ed, USMLE relevance to Med-Ed, Work Hours, Hidden Curriculum, The art of "debriefing", etc. Objectives: This is a four (4) week elective with two primary goals: Introducing fourth year students to the skills of teaching. Enhancing their physical diagnosis skills while practicing the skills of effective teaching.
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U

MED 5913 - INTRODUCTION TO COMMUNITY HEALTH, PATIENT CARE, AND HEALTH SYSTEMS

Minimum Credits: 0
Maximum Credits: 0
Students entering UPSOM as part of the Primary Care Accelerated Track (PCAT) will rapidly begin clinical and other experiences, to help them prepare for graduation and residency entry after just three years. To ensure readiness, and to foster a sense of community and professional identity, this summer course will orient learners to clinical care skills, health systems science, and overall health in the Pittsburgh community.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis

MED 5915 - SCIENTIFIC LITERACY, NUMERACY, &CLINICAL DECISION-MAKING

Minimum Credits: 0
Maximum Credits: 0
This elective explores the common sources of human cognitive errors and fundamental concepts of numeracy to permit comprehension of scientific literature and allow sound clinical decision making. Students will learn how to critically appraise and systematically review randomized controlled trials applying the knowledge to decision making process as well as learn how cognitive biases, conflicts of interest, group dynamics, financial and other incentives can adversely influence clinical decisions.
Academic Career: Medical School
Course Component: Seminar
Grade Component: H/HS/S/LS/U

MED 5920 - GLOBAL HEALTH PREPARATORY SEMINAR

Minimum Credits: 0
Maximum Credits: 0
This is a four (4) week seminar designed to prepare a student or resident for an international clinical experience and to provide a foundation for future global health advocacy and activism. The seminar will consist of 1/3 didactic instructions, 1/3 team-based learning and 1/3

practical experiential learning. It is organized into 4 tracks: 1) global health public policy 2) ethics & human rights 3) evidence based medicine for developing countries and clinical skills and 4) tropical infections. Faculty from SPIA will provide guest lectures on selected topics regarding NGOS, global actors, development, policy analysis, corruption and transnational governance. Dr. Barnard will coordinate the bioethics and human rights track which highlights important documents regarding the right to health, policy and system factors contributing to health inequalities, social determinants of health and research ethics through case studies. Dr. Veldkamp coordinates the tropical medicine track that provides in-depth exploration of the diagnosis and treatment of common parasitic diseases, HIV, TB, and malaria according to international guidelines and local context. Participants will be exposed to hands-on sessions in basic microscopic examination. Lastly, Dr. Bui will cover EBM in developing countries reviewing existing literature, physical exam skills/tools including ultrasound, low cost/bedside diagnostics, algorithms and clinical procedures relevant for the general practitioners in developing countries.
Academic Career: Medical School
Course Component: Seminar
Grade Component: H/HS/S/LS/U

MED 5921 - GLOBAL HEALTH PREP SEMINAR (2-WEEK ELECTIVE OPTION)

Minimum Credits: 0
Maximum Credits: 0
This two-week elective is designed to prepare senior medical students for clinical work in resource-limited settings, either domestically or abroad. Through case-based learning, students will explore the diagnosis and management of common infectious diseases in tropical regions-such as malaria, tuberculosis, HIV/AIDS, and parasitic infections-as well as non-communicable diseases in the context of prevention, public health campaigns, and health systems. The course includes hands-on review of point-of-care ultrasound (POCUS), with applications including FASH, cardiac, pulmonary, and abdominal imaging. Broader global health topics-such as research ethics, cultural and historical contexts, governance, sustainability, international funding mechanisms, disease eradication efforts, and strategies for health systems strengthening-will be discussed. Students are expected to complete two deliverables: (1) a PowerPoint presentation on country-specific health statistics, (2) a critically appraised topic (CAT) relevant to clinical decision-making in low- and middle-income countries (LMIC), or (3) health system sustainability quality improvement proposal
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MED 5923 - ADVANCED COMMUNITY HEALTH, PATIENT CARE, AND HEALTH SYSTEMS

Minimum Credits: 0
Maximum Credits: 0
Students in the Primary Care Accelerated Track (PCAT) will continue their focus on clinical care skills, health systems science, and overall health in the Pittsburgh community.
Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis

MED 5925 - STREET MEDICINE - OPERATION SAFETY NET

Minimum Credits: 0
Maximum Credits: 0
This one month clinical elective will focus on the health care of those sleeping on the streets of Pittsburgh. This group presents significant challenges in terms of access to care, continuity of care, cultural barriers, as well as a variety of medical issues. By working directly with the street homeless in their environment, students will see the health care system "from the outside" and learn to partner with a largely alienated population to improve their health. Operation safety net (OSN) is a unique program of the Pittsburgh mercy health system, located at UPMC Mercy, in which walking teams visit the unsheltered homeless in the alleys, under the bridges and along the river banks where they live. Follow-up care, including medical, psychiatric, social and housing services are provided by a dedicated case management team. An inpatient consult service specializes in the interface of the street homeless with the medical system.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MED 5991 - FRESHMAN YEAR

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Clinical
Grade Component: No Grade Required
Course Attributes: School of Medicine Year 1

MED 5992 - SOPHOMORE YEAR

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Clinical
Grade Component: No Grade Required
Course Attributes: School of Medicine Year 2

MED 5993 - JUNIOR YEAR

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Clinical
Grade Component: No Grade Required
Course Attributes: School of Medicine Year 3

MED 5994 - SENIOR YEAR

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Clinical
Grade Component: No Grade Required
Course Attributes: School of Medicine Year 4

MED 5996 - PROLOGUE TO MEDICINE PROGRAM

Minimum Credits: 0
Maximum Credits: 0
The five week prologue to medicine program promotes academic achievement and retention by introducing students to the courses that they will take during the first year of medical school. The program features a non-graded instruction in the following areas: introduction to medical gross anatomy, cell biology, and introduction to professionalism. Problem-based learning (PBL) exercises and learning/study strategies instruction supplement the curriculum. All classes are designed to model the content and pace of the actual courses. The courses are taught by the same medical school faculty who teach the courses during the school year.
Academic Career: Medical School
Course Component: Lecture
Grade Component: No Grade Required

MED 5999 - FULL TIME RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Students may participate in a research fellowship with a basic science or clinical researcher at the University of Pittsburgh or at another

University for a period of one year. The fellowship must be competitive (open to other students with the best qualified student chosen) and must be approved by the associate dean for student affairs in the medical school.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: No Grade Required

Medicine Anesthesiology

MSANE 5372 - ANESTHESIA CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
Two-week rotation in anesthesia runs in tandem with general surgery (SURG 5372). Goals of clerkship include developing skills to evaluate patients in the perioperative period and optimize their medical conditions in preparation for surgery. Instructional focus on airway management (intraoperative), post-operative recovery and pain management. Registration must be accompanied by registration in SURG 5372.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MSANE 5374 - ANESTHESIOLOGY (BRIDGE)

Minimum Credits: 0
Maximum Credits: 0
This 2-week bridge course is designed to help the student develop proficiency in common anesthesiology procedures, including airway management and intravenous cannulation. Teaching with attending physicians and residents occurs in conferences, the operating room, at the bedside, and in small groups.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MSANE 5381 - PAIN EVALUATION AND TREATMENT

Minimum Credits: 0
Maximum Credits: 0
This junior elective will be located at the pain evaluation and treatment institute (PETI). Students will observe and participate in the clinical evaluation of chronic and acute pain patients as well as help to formulate treatment plans.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MSANE 5382 - RESEARCH OR INDIVIDUAL STUDY

Minimum Credits: 0
Maximum Credits: 0
This junior elective will provide an opportunity for students to learn basic research methodology; including conceiving hypotheses, experimental design, protocol development, data analysis, and statistical evaluation of research results. The student may participate in ongoing research, either in the laboratory or in the clinical setting.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MSANE 5420 - ANESTHESIOLOGY

Minimum Credits: 0
Maximum Credits: 0
Four week elective designed to provide information and skills required to care for patients in the perioperative period. At the end of this elective, student should have sufficient knowledge and skill to plan and administer anesthesia in a straightforward case under the direct supervision of faculty. Core content of the third year, but material covered in greater depth. Specific material varies depending upon selected institution. Teaching is on a one-to-one basis in the operating room and during rounds. The course can be tailored to satisfy the needs and goals of the individual.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5440 - SUBSPECIALTIES ANESTHESIOLOGY

Minimum Credits: 0
Maximum Credits: 0
This course is being offered for two types of medical students: 1) those who have completed a general anesthesia elective and who would like to develop expertise in an anesthesia sub-specialty and 2) those who have a special interest in non-anesthesia specialty areas such as internal medicine, pediatrics, cardiology, neurosurgery, otolaryngology, obstetrics, transplantation medicine, pain therapy or outpatient/preoperative consultation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5445 - PAIN MEDICINE

Minimum Credits: 0
Maximum Credits: 0
The pain evaluation and treatment institute (PETI) staff physicians will introduce you to the interdisciplinary approach of dealing with patients with chronic pain of nonmalignant origin. You will interface with other PETI disciplines of occupational, physical, and psychological therapy as well as be exposed to nerve block techniques when appropriate. Examples of commonly seen problems are myofascial pain, headaches, and reflex sympathetic dystrophy. You will learn about post-op pain. Epidural and patient controlled analgesia will be highlighted.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5450 - MD/OMS ANESTHESIA SPECIALTIES

Minimum Credits: 0
Maximum Credits: 0
This four month rotation for third or fourth year medical students who are participants in the md/oral maxillofacial surgery program, provides exposure to patients undergoing a variety of procedures under general anesthetics and monitored anesthesia care. Clinical experience and didactics are under the supervision of the anesthesia attending physicians for an experience that includes basic principles of planning an anesthetic, pre-operative evaluation of risk, intra-operative techniques, and post-operative care including pain management. Graduated and supervised exposure is expected over the term of the course that includes care of trauma and neurosurgical patients with a particular emphasis on head and neck procedures. Cognitive objectives: 1) recognize and explain the pre-operative work-up for patients undergoing surgery requiring an anesthetic; 2) develop and explain the concept of an anesthetic plan; 3) recognize common complications of anesthesia and their management; 4) recognize and explain safe anesthesia practices and systems-based practice of care in a team environment; 5) evaluate and understand the use of various anesthetic agents and techniques; 6) recognize the issues present in difficult airways and their management techniques. Skill objectives: 1) demonstrate competency for iv placement; 2) demonstrate competency for

intubation including experience with nasal intubations and fiber optic intubation for the difficult airway; 3) assist in the application of general anesthetic techniques and the overall anesthetic plan with the supervising attending.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5840 - ANESTHESIOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
These electives provide opportunities to learn basic research methodology, including approach to experimental design, protocol development, data analysis and evaluation of results. Student participates in ongoing research in the lab and on patients. Opportunities for research in resuscitation, high frequency jet ventilation, patient monitoring, hemorheology, brain pathophysiology, and pharmacology of anesthesia-related drugs are available. Many other topics are also possible.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5900 - INDEPENDENT STUDY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5901 - EXTRAMURAL ANESTHESIOLOGY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in anesthesiology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the UPSOM course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Microbiology and Immunology

MSMI 2000 - PRINCIPLES OF MICROBIOLOGY AND IMMUNOLOGY

Minimum Credits: 6
Maximum Credits: 6
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 2005 - PRINCIPLES OF IMMUNOLOGY

Minimum Credits: 2
Maximum Credits: 2
This is a team-taught course designed to introduce and reinforce core concepts of the immunological sciences. Both innate and adaptive immunity in mammals will be covered, including self-nonself discrimination, antigen receptor formation, immune memory and immune responses to infection, self and cancer. These concepts will be explored at both the cellular and molecular level. Previous coursework in biochemistry, molecular biology and cell biology is highly recommended.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 2010 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 9
Laboratory projects to fulfill the requirements for the Masters of Science degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSMI 2100 - FIRST PMI LABORATORY ROTATION

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade

MSMI 2110 - SECOND PMI LABORATORY ROTATION

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade

MSMI 2200 - ADVANCED MICROBIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course stresses basic concepts of animal virology and bacterial pathogenesis. Bacterial pathogenesis covers the subject of attachment, invasion, secretion, toxin activity, antibiotics, gene regulation and highlights infections in a range of host systems. The virology section covers attachment and entry, mechanisms of regulation at the RNA protein levels, viral nucleic acid replication, assembly and egress as well as antivirals and immune evasion.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 2200 - COMPREHENSIVE MICROBIOLOGY: MOLECULAR VIROLOGY & MOLECULAR PATHOGENESIS

Minimum Credits: 4
Maximum Credits: 4
This course stresses basic concepts of animal virology and bacterial pathogenesis. Bacterial pathogenesis covers the subject of attachment, invasion, secretion, toxin activity, antibiotics, gene regulation and highlights infections in a range of host systems. The virology section covers attachment and entry, mechanisms of regulation at the RNA protein levels, viral nucleic acid replication, assembly and egress as well as antivirals and immune evasion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 2200 - COMPREHENSIVE MICROBIOLOGY: MOLECULAR VIROLOGY & MOLECULAR PATHOGENESIS

Minimum Credits: 4
Maximum Credits: 4
This course stresses basic concepts of animal virology and bacterial pathogenesis. Bacterial pathogenesis covers the subject of attachment, invasion, secretion, toxin activity, antibiotics, gene regulation and highlights infections in a range of host systems. The virology section covers attachment and entry, mechanisms of regulation at the RNA protein levels, viral nucleic acid replication, assembly and egress as well as antivirals and immune evasion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 2210 - ADVANCED IMMUNOLOGY

Minimum Credits: 2
Maximum Credits: 2
This is a second-tier lecture course that will cover fundamental concepts of modern immunology. The course will cover cells, tissues and organs of the immune system. Furthermore, in depth analyses of the development, activation, effector functions, and regulation of the immune response will be presented in a variety of contexts, such as infection, cancer, autoimmunity, transplantation and allergy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 2230 - EXPERIMENTAL BASIS OF IMMUNOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course will expose the students to classical and con temporary literature in modern immunology. Emphasis will be on paper analysis and critical evaluation of primary data. This course will parallel the topics presented in comprehensive immunology lecture course which must be taken before or simultaneously with experimental basis of immunology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMI 2240 - INTRODUCTION TO IMMUNOBIOTHERAPEUTICS

Minimum Credits: 2
Maximum Credits: 2
This course will provide a comprehensive overview of the principles and the technology upon which immunobiotherapeutics are based. The course will focus on the overall aims of using small molecules, antibodies, genes and cells as immunotherapeutic agents. It will cover the use of viral and non-viral agents as gene delivery vehicles, cells as therapeutic agents and small molecules as delivery and therapeutic vehicles. The course will also cover diseases and disorders in which immunobiotherapy has proven safety and demonstrated successful outcomes like cancer, Mendelian disorders and autoimmunity. Lectures and student presentations will cover: genes and cells as drugs, peptides, antibodies and small molecules as therapeutics and delivery vehicles, viral and non-viral vectors, stem cells, and specific diseases where immunotherapy has shown safety and efficacy. Students may also be educated on bioethical issues and existing laws governing biotechnology and molecular medicine approaches.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMI 2250 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

MSMI 2290 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in immunology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

MSMI 2300 - SCIENTIFIC WRITING IN MICROBIOLOGY AND IMMUNOLOGY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

MSMI 2350 - INTRODUCTION TO BIOSTATISTICS FOR MICROBIOLOGY AND IMMUNOLOGY GRADUATE STUDENTS

Minimum Credits: 2
Maximum Credits: 2
This is a self-contained, three-credit course on basic principles and practices of statistical inference and data analysis for students whose primary work is in the laboratory. After completing the course, students will be able to perform basic statistical analyses, and be aware of the principles and limitations associated with those analyses. The course will also give them the background necessary to effectively use GraphPad software. The course meets twice a week for two hours, and classes will usually consist of a computer-based practicum sandwiched between two half-hour lectures. Topics include: discovery and validation in the laboratory; data management; graphics; probability concepts; probability distributions; one- and two-sample statistical tests; point estimates and confidence intervals; analysis of cross-tabulations; statistical modeling; other topics in which the class is interested. The prerequisite is proficiency with pre-calculus college algebra.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 2420 - EXPERIMENTAL PATHOGEN BIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course is designed for PhD graduate students training in microbiology research and is designed to provide a more in-depth study of bacteriology and virology through a critical analysis by the student of seminal research publications. The first half of the course deals with bacteriology, while the second concerns virology. Paper discussion format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMI 2450 - IMMUNOLOGY RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSMI 2460 - MICROBIOLOGY AND RELATED TOPICS SEMINAR SERIES

Minimum Credits: 1
Maximum Credits: 1
Beginning in the second year of the program, microbiology leaning students students will be required to attend a seminar series and turn in at least two seminar summaries. Seminars are held approximately once a week throughout the fall and spring semesters and include presentations by nationally and internationally recognized visiting researchers, as well as internal researchers, in microbiology and related fields.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSMI 2480 - MECHANISMS OF VIRAL PERSISTENCE AND PATHOGENESIS

Minimum Credits: 2
Maximum Credits: 2
Viruses have evolved a vast array of mechanisms to avoid detection and/or elimination by host defenses and to establish persistent infections that not only ensures their survival in the human population but can also contribute to pathogenesis. While effective antivirals and vaccines have been developed against many viral infections, threats from viruses remain. This is largely due to the development of drug resistance, antigenic shift and drift, emerging viruses, and persistent or latent infections that are invisible to the immune system and current antiviral drugs. Alternate Fall semesters.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 3200 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSMI 3220 - CONTEMPORARY TOPICS - IMMUNOLOGY

Minimum Credits: 1
Maximum Credits: 1
This is an advanced level course in which students will read, present and evaluate the primary literature in immunology. Each semester will feature an integrated set of papers addressing a current issue of interest to modern immunologists. The course may be taken more than once by each student, since the topic addressed will change each semester.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSMI 3230 - MICROBIOLOGY RESEARCH IN PROGRESS

Minimum Credits: 1
Maximum Credits: 1
Students present their research to date. The course meets weekly during which the student presents his/her research in progress. Emphasis is placed on the development of teaching and speaking skills needed for scientific presentation. The student is expected to answer questions from other graduate students and faculty related to their research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSMI 3240 - IMMUNOLOGY RESEARCH IN PROGRESS

Minimum Credits: 1
Maximum Credits: 1
Students present their research to date. The course meets weekly during which the student presents his/her research in progress. Emphasis is placed on the development of teaching and speaking skills needed for scientific presentation. The student is expected to answer questions from other graduate students and faculty related to their research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSMI 3260 - ADVANCES IN SYSTEMS IMMUNOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will focus on advanced topics in Systems Immunology. Topics will include discussion of systems approaches, the general framework for applying approaches to biological problems, and specific immunologically relevant examples. The course is primarily intended to teach systems immunology techniques to graduate students in their second and third years so that they can adopt these approaches in their own research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 3270 - INNATE IMMUNITY

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the several aspects of host innate immunity against infection. Topics will include the conceptual basis for innate versus adaptive immunity, induction of innate immunity by pathogens, signaling by innate immune receptors, effector cells of the innate immune system, secreted effectors of innate immune signaling, and subversion of innate immune signaling by pathogens. Courses like molecular virology and comprehensive immunology are highly recommended but not a prerequisite for the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMI 3280 - IMMUNOLOGY OF INFECTIOUS DISEASE

Minimum Credits: 2
Maximum Credits: 2
This course examines the immune responses to pathogens, as well as on immune evasion of microbes. The organisms studied include bacteria, parasites, and viruses. Topics focus on host-pathogen interaction and include innate immunity, modulation of antigen processing and presentation, pathogenic strategies for subversion of immune responses, effector functions of immune cells, and immunopathology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: MSMI 2210

MSMI 3290 - AUTOIMMUNITY & IMMUNPATHOLOGY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: MSMI 2210 and 2230

MSMI 3410 - COMPREHENSIVE MICROBIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course is an introduction to the molecular basis of bacterial and parasitic pathogenesis. Topics include: 1) introduction to microbial pathogens, 2) molecular and classical Koch's postulates, 3) pathogen adhesion strategies, 4) molecular mechanisms of invasion 5) microbial strategies for immune evasion 6) genetics and action of bacterial toxins 7) coordinate regulation of virulence factors 8) antibiotics and antibiotic resistance 9) host responses to infection 10) vaccines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMI 3435 - TUMOR VIROLOGY

Minimum Credits: 2
Maximum Credits: 2
The purpose of the course is to introduce students to viruses known or suspected of causing tumors and with special emphasis on viruses causally linked to human cancer. Polyomaviruses, Epstein-Barr virus, Kaposi's sarcoma-associated herpesvirus, adenoviruses, papillomaviruses, hepatitis viruses, human t-cell lymphotropic virus and their relevant gene products will be covered in detail during weekly two-hour lectures. Lectures will be given by experts in each virus. Criteria for establishing causal links between a virus and human cancer will be discussed. Focus will be on how viral mechanisms of transformation can provide key mechanistic insight on cellular

pathways that drive tumorigenesis including in malignancies with non-viral etiology. Topics covered will include oncogenes, tumor suppressors, oncogenic cofactors, disruption of innate/ adaptive immune responses, latency, viral mimicry/ piracy of cellular regulatory genes, genomic instability and role of non-coding RNAS in viral pathogenesis. Techniques for novel tumor virus discovery will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMI 3440 - IMMUNOLOGY AND IMMUNOTHERAPY OF CANCER - PRINCIPLES AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
It is now generally appreciated that cancer is an immune-mediated disease, such that therapeutic modalities aimed at reinvigorating or stimulating immune responses to cancer can have immense clinical benefit. In this course, students will learn the history of the study of cancer immunity, including the analysis of both seminal and modern literature. Further, we will also discuss the various immunotherapeutic modalities for cancer treatment and their underlying scientific principles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: MSMI 2005 or 2000

MSMI 3475 - IMAGING HOST-PATHOGEN INTERACTIONS

Minimum Credits: 1
Maximum Credits: 1
This course will provide an introduction to fluorescence microscopy with an emphasis on the study of host-pathogen interactions. Experts in the fields of bacterial pathogenesis, viral entry, viral protein signaling, fungal pathogenesis, polymicrobial infections will present lectures on the use of imaging in their fields of research and lead a journal club discussion of relevant papers from the literature. The goal is to provide students with a basic understanding of fluorescence microscopy for the purpose of properly designing their own experiments and effectively evaluating the work of others.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

MSMI 3600 - ADVANCES IN SYSTEMS IMMUNOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will include discussion of systems approaches, the general framework for applying approaches to biological problems, and specific immunologically relevant examples. The course is primarily intended to teach systems immunology techniques to graduate students in their second and third years so that they can adopt these approaches in their own research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Medicine Microbiology

MSMIC 5835 - MOLECLR GENETC & BIOCHMST RSRCH

Minimum Credits: 0
Maximum Credits: 0
Comprehensive laboratory research rotation in the department of molecular genetics and biochemistry with rotations available in biochemistry, immunology, molecular genetics, molecular pathogenesis, and virology.

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

Modern Greek

GREEKM 0200 - GREEK (MODERN) 2

Minimum Credits: 3
Maximum Credits: 3
This course builds on the speaking, listening, writing, and reading skills acquired in GREEKM 0100: Modern Greek 1. Through numerous individual, pair, and group activities, students will continue to build confidence in using a wider variety of sentence patterns and an expanded vocabulary, and further develop their communication skills. Classes emphasize the use of language as a tool for real-life communication skills in the cultural context within which Greek is used. By the end of this course, students should be able to present and discuss the world that surrounds them, talk about their hobbies and daily routine, and use Greek to perform tasks encountered in daily life. This course can be applied towards the minor in Modern Greek.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

GREEKM 2909 - SPECIAL TOPICS IN MODERN GREEK

Minimum Credits: 3
Maximum Credits: 3
This course will be a Topics course, meaning that the specific content of the course will change each time the course is offered. The course is at a graduate level so that graduate students interested in the offered topic can more easily take the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Molecular Biophysics

MOLBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE

Minimum Credits: 3
Maximum Credits: 3
This is the first of three (3) courses, which together constitute the common core of the first year of the molecular biophysics graduate program. Here, the emphasis is on the structural foundation, especially that of proteins and nucleic acids. Fundamental results are covered together with experimental techniques (x-ray diffraction, NMR, EM/CryoEM, AFM, CD/ORD, Raman and fluorescence spectroscopy), as well as structural systematics and informatics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MOLBPH 2010 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in molecular biophysics.
Academic Career: Graduate
Course Component: Directed Studies

Grade Component: Grad SN Basis
Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD)

MOLBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS

Minimum Credits: 4
Maximum Credits: 4
Core course of the molecular biophysics & structural biology (MBSB) graduate program. Students learn about the integration of different techniques to elucidate molecular mechanisms of disease, through the study of biomolecular structure, interatctions and dynamics. The course includes hands-on demos of x-ray crystallography and other essential tools in structural biology. With the help of MBSB faculty experts, students prepare and present a research seminar on primary research. Students also gain experience in the writing of grant/fellowship applications to support their research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MOLBPH 2013 - MOLECULAR BIOPHYSICS 3: THEORY AND SIMULATION

Minimum Credits: 4
Maximum Credits: 4
This course will introduce students to computational structural biology, primarily relying on physical and chemical principles, as well as associated computational approaches. The course is a core class for both (a) the joint program in computational biology and (b) the molecular biophysics program. The course will cover biomolecular structure, statistical mechanical phenomenon in biophysics, simulation of biomolecular behavior, and key applications of computations in the field of structural biology. Specific topics: probability theory, statistical mechanics and thermodynamics, simulation methods, electrostatic phenomena, biochemical kinetics, binding, coarse-grained modeling, computations for structure determination, drug design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MOLBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOPHYSICS SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This course comprises weekly lectures by nationally renowned guest speakers as well as faculty from the Pittsburgh schools engaged in the development and application of biophysical and structural techniques towards important biomedical questions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MOLBPH 2030 - DATA AND LITERATURE CLUB

Minimum Credits: 1
Maximum Credits: 1
This course, designed for students in the molecular biophysics graduate program, will alternate between 'data sessions' in which postdocs and students present research results for feedback and critique, and 'literature sessions' in which students will lead discussions and critiques of the current literature. The course is designed to give students experience in presentation and critical analysis skills, as well as to create opportunities for broader learning and interaction.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MOLBPH 2040 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

MOLBPH 2051 - LABORATORY RESEARCH ROTATIONS

Minimum Credits: 3
Maximum Credits: 3
These rotations serve three (3) purposes: 1. Encourage the student to experience different research environments and methods. 2. Provide the students opportunities to optimize their choice of research advisor/lab through direct experience in different laboratory environments. 3. Provide faculty advisors with a basis for informed judgment regarding prospective students. Academic advisors provide help in suggesting a choice of lab rotations if necessary.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

MOLBPH 2055 - PRINCIPLES AND PRACTICES OF SOLUTION-BASED BIOMOLECULAR NMR

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide students with a working knowledge of the basic underlying theory of modern pulsed Nuclear Magnetic Resonance methods used to study the structures and internal dynamics of biological macromolecules in solution. The theoretical concepts covered will include an overview of pulse excitation, digital sampling, and fourier tranformation. The product operator formalism will be used to describe how modern multinuclear multidimensional pulse methods function to yield the desired signals. The practical concepts covered will include an overview of modern methods for obtaining sequential resonance assignments, determining high-resolution three-dimensional structures, and analyzing internal dynamics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MOLBPH 2090 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MOLBPH 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Integrative Molecular Biology (PHD)

MSMBPH 2000 - LABORATORY RESEARCH ROTATIONS

Minimum Credits: 1
Maximum Credits: 1
These rotations serve three (3) purposes: 1. Encourage the student to experience different research environments and methods. 2. Provide the students opportunities to optimize their choice of research advisor/lab through direct experience in different environments. 3. Provide faculty advisors with a basis for informed judgment regarding prospective students. Academic advisors provide help in suggesting a choice of lab rotations if necessary.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

MSMBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE

Minimum Credits: 3
Maximum Credits: 3
This is the first of three courses, which together constitute the common core of the first year of the molecular biophysics graduate program. Here the emphasis is on the structural foundations, especially that of proteins and nucleic acids. Fundamental results are covered together with experimental techniques (x-ray, diffraction, NMR, EM/CryoEM, AFM, CD/ORD, Raman and florescence spectroscopy), as well as structural systematics and informatics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMBPH 2010 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in molecular biophysics.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD)

MSMBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS

Minimum Credits: 4
Maximum Credits: 4
Core course of the molecular biophysics & structural biology (MBSB) graduate program. Students learn about the integration of different techniques to elucidate molecular mechanisms of disease, through the study of biomolecular structure, interatctions and dynamics. The course includes hands-on demos of x-ray crystallography and other essential tools in structural biology. With the help of MBSB faculty experts, students prepare and present a research seminar on primary research. Students also gain experience in the writing of grant/fellowship applications to support their research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMBPH 2013 - MOLECULAR BIOPHYSICS 3: THEORY AND SIMULATION

Minimum Credits: 4
Maximum Credits: 4
This course will introduce students to computational structural biology, primarily relying on physical and chemical principles, as well as associated computational approaches. The course is a core class for both (a) the joint program in computational biology and (b) the molecular biophysics program. The course will cover biomolecular structure, statistical mechanical phenomenon in biophysics, simulation of biomolecular behavior, and key applications of computations in the field of structural biology. Specific topics: probability theory, statistical mechanics and thermodynamics, simulation methods, electrostatic phenomena, biochemical kinetics, binding, coarse-grained modeling, computations for structure determination, drug design.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOLOGY SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This course comprises weekly lectures by nationally renowned guest speakers as well as faculty from the Pittsburgh schools engaged in the development and application of biophysical and structural techniques towards important biomedical questions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMBPH 2030 - DATA AND LITERATURE CLUB

Minimum Credits: 1
Maximum Credits: 1
This course, designed for students in the molecular biophysics graduate program, will alternate between 'data sessions' in which postdocs and students present research results for feedback and critique, and 'literature sessions' in which students will lead discussions and critiques of the current literature. The course is designed to give students experience in presentation and critical analysis skills, as well as to create opportunities for broader learning and interaction.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSMBPH 2040 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

MSMBPH 2050 - SPECIAL TOPICS IN MBSB: CRYOEM

Minimum Credits: 3
Maximum Credits: 3
Students will focus on a selected topic in molecular biophysics and structural biology: cryoem. This course is designed to enable graduate level students to understand the theoretical and practical aspects of Cryo-Electron Microscopy (cryoem). The course covers the basic anatomy of electron microscopes, the principles of image formation, and major cryoem techniques including tomography, single particle analysis and 2-d crystallography. The course emphasizes concepts rather than mathematical details, and is ideal for anyone who needs an introduction to the cryoem field to be able to understand the literature, the talks at meetings/seminars and conversations they will have with collaborators.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD)

MSMBPH 2051 - LABORATORY RESEARCH ROTATIONS

Minimum Credits: 3
Maximum Credits: 3

These rotations serve three (3) purposes: 1. Encourage the student to experience different research environments and methods. 2. Provide the students opportunities to optimize their choice of research advisor/lab through direct experience in different environments. 3. Provide faculty advisors with a basis for informed judgment regarding prospective students. Academic advisors provide help in suggesting a choice of lab rotations if necessary.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

MSMBPH 2055 - PRINCIPLES AND PRACTICES OF SOLUTION-BASED BIOMOLECULAR NMR

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide students with a working knowledge of the basic underlying theory of modern pulsed Nuclear Magnetic Resonance methods used to study the structures and internal dynamics of biological macromolecules in solution. The theoretical concepts covered will include an overview of pulse excitation, digital sampling, and fourier tranformation. The product operator formalism will be used to describe how modern multinuclear multidimensional pulse methods function to yield the desired signals. The practical concepts covered will include an overview of modern methods for obtaining sequential resonance assignments, determining high-resolution three-dimensional structures, and analyzing internal dynamics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMBPH 2090 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSMBPH 2100 - LABORATORY RESEARCH ROTATION 2

Minimum Credits: 1
Maximum Credits: 1
These rotations serve three (3) purposes: 1. Encourage the student to experience different research environments and methods. 2. Provide the students opportunities to optimize their choice of research advisor/lab through direct experience in different environments. 3. Provide faculty advisors with a basis for informed judgment regarding prospective students. Academic advisors provide help in suggesting a choice of lab rotations if necessary.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

MSMBPH 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD)

Molecular Genetics and Developmental Biology

MSMGDB 2500 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSMGDB 2525 - DEVELOPMENTAL MECHANISMS OF HUMAN DISEASE

Minimum Credits: 2
Maximum Credits: 2
This course covers principles of developmental biology and how embryonic developmental pathways impinge on human disease. Topics include congenital organ related disease, stem cell based and reproductive events relating to disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMGDB 2535 - MODEL ORGANISMS

Minimum Credits: 2
Maximum Credits: 2
This course covers the use of vertebrate and invertebrate model organisms in biomedical research. Topics include the use of several models including: mouse, rat, Zebrafish, Xenopus, c. Elegans, and Drosophila. Special emphasis will be placed on the strengths that specialized techniques of each organism provides the research community in understanding the etiology of disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMGDB 2550 - RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMGDB 2590 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in biochemistry and molecular genetics.
Academic Career: Graduate
Course Component: Directed Studies

Grade Component: Grad SN Basis
Course Requirements: PLAN: Interdis Biomedical (INTBP-UNK) or Biochem & Molecular Genetics (MSBMG-PHD) or Mol Genetics & Dev Biology (MGDB-PHD)

MSMGDB 3500 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Interdis Biomedical (INTBP-UNK) or Biochem & Molecular Genetics (MSBMG-PHD) or Mol Genetics & Dev Biology (MGDB-PHD)

MSMGDB 3510 - ADV TOPICS IN GENE EXPRESSION

Minimum Credits: 3
Maximum Credits: 3
This course consists of lectures and class presentations on recent advances in the molecular genetics. The emphasis of the course is on the regulation of gene expression at the DNA, RNA and protein levels. Regulation in eukaryotes is emphasized, including yeast, protozoan, and mammalian systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMGDB 3530 - GENOME INSTABILITY AND HUMAN DISEASE

Minimum Credits: 3
Maximum Credits: 3
Mechanisms that maintain genome stability allowed the origin of species. DNA damage is omnipresent and DNA repair and DNA damage tolerance mechanisms are interwoven in systems that control transcription, replication, cell division, signal transduction, cell death and evolution. More than 40 distinct human diseases are caused by defects in DNA repair, including syndRomes of impaired development, immunodeficiency, cancer predisposition, neurodegeneration, and premature aging. This course will emphasize the molecular biology and biochemistry of DNA repair, placing these mechanisms into the context of other cellular processes as they pertain to health and disease. Environmental, clinical and endogenous sources of DNA damage will be discussed. An understanding of the fundamental role of DNA repair mechanisms in immunology, oncology, neurology, and aging will be central to all lectures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMGDB 3535 - DNA REPAIR JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
The course is a journal club on current topics in DNA repair as it relates to human disease, DNA damage processing, genome stability, telomere biology, cancer and aging. Primarily designed for students in the second year of their graduate program and beyond. Presentations will be held twice per month during the fall and spring semester. In order to receive credit for the course, students must attend a minimum of 80% of the sessions, present once per semester, participate in class discussion and complete anonymous peer-evaluations for each presenter. One week prior to presentation, presenters will identify a recent publication in the field and distribute it to their classmates. Presenters must define the hypothesis of the paper, provide background and significance, describe experimental methods used, interpret the data, conclude whether the data support the authors' conclusions and propose future experiments. Grades will be determined by attendance (10%), class participation (20%) and quality of presentation (70%).

Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad LG/SNC Basis

MSMGDB 3540 - REPRODUCTIVE DEVELOPMENT FROM MODEL ORGANISMS TO HUMANS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the molecular aspects of the transition from gamete to a reproductive organism. The course progresses through the building of germ cells, fertilization and stem cell participation to sex determination, gonad morphogenesis, puberty, menopause and pregnancy. This course highlights both human and model organisms to bring together diverse aspects of the cell and developmental biology of reproductive tissues and their impact on disease pathology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INTBP 3000

MSMGDB 3560 - MOLECULAR MECHANISMS OF LONGEVITY & AGING

Minimum Credits: 2
Maximum Credits: 2
Aging is a fascinating biological process and a topic of profound public-health significance. While humans have searched for the 'Fountain of Youth' since times immemorial, the last three decades have created a phenomenal expansion in our knowledge of the biology of aging. Classical genetic studies in laboratory models coupled with advances in molecular biology, genomics and systems biology have provided unprecedented insights into the molecular mechanisms underlying the age-related decline of our cells, tissues and bodies. These discoveries have provided the solid foundation for the emerging field of Geroscience and the discovery of therapeutic and environmental approaches to delay or even reverse aging. This is a course for those interested in obtaining in-depth knowledge and critical understanding of the molecular underpinnings of aging and the current state of Geroscience research. The course will be conducted in four modules. Module I will provide a historical perspective on aging research with a focus on major discoveries in model organisms and human studies. Module II will involve detailed examination of the molecular hallmarks of aging and Module III will focus on the links between cellular, tissue and organismal senescence. In Module IV, contemporary studies on 'quality of life'/Healthspan and advances in anti-aging therapies will be explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Molecular Pharmacology

MSMPHL 2300 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Molecular Pharmacology (MSMPHL-MS)

MSMPHL 2310 - PRINCIPLES OF PHARMACOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course consists of a series of lectures and tutorial sessions that focus on the general principles of pharmacology. Major topics are principles of pharmacokinetics (including drug absorption, distribution, and metabolism), pharmacodynamics (quantitation of drug-receptor

interactions) and mechanisms of action of cardiovascular and autonomic drugs. In addition, this course will include both animal laboratory and human simulator demonstrations that illustrate important pharmacological principles discussed in class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMPHL 2350 - RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Beginning in the second year of the program students will be required to attend the departmental seminar series. These seminars are held approximately once a week throughout the fall and spring semesters and include presentations by nationally and internationally recognized visiting researchers in pharmacology and related fields. In order to receive credit for the course, students must attend a minimum of 80% of the seminars.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMPHL 2355 - PHARMACOLOGY SUMMER SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Beginning in the second year of the program students will be required to attend the departmental seminar series. These seminars are held approximately once a week throughout the fall and spring semesters and include presentations by nationally and internationally recognized visiting researchers in pharmacology and related fields. In order to receive credit for the course, students must attend a minimum of 80% of the seminars. Present once each summer and attend a minimum of 80% of the summer seminars in order to receive credit for the course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMPHL 2360 - BIOLOGY OF SIGNAL TRANSDUCTION

Minimum Credits: 3
Maximum Credits: 3
This course will explore different types of signaling pathways activated by receptor-ligand interactions. Topics to be covered include, but are not limited to: g-protein linked receptors, adenylate cyclases, small gtpases, kinases and phosphatases, nitric oxide, phospholipases, steroid hormone signaling, and pharmacological applications of signaling pathways.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMPHL 2370 - DRUG DISCOVERY

Minimum Credits: 3
Maximum Credits: 3
Drug discovery is an interdisciplinary science that seeks to identify small molecular and/or biologic probes and to understand at the molecular level how these probes affect macromolecular processes. This course will discuss various topics that are relevant to current approaches and principles in drug discovery including target validation, drug origins, cell based screening, high throughput screening, proteomic approaches to drug discovery, computational biological aspects of drug discovery, and pharmacoinformatics, as well as topics in preclinical drug development and intellectual property. The course will include case studies intended to aid students in a full understanding of the drug discovery process.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMPHL 2390 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides an opportunity for students to carry out a specific laboratory project in any area of interest in pharmacology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Molecular Pharmacology (PHD) or Interdis Biomedical (UNK)

MSMPHL 2609 - CHEMICAL TOXICOLOGY IN THE AGE OF GREEN CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
The design of safer chemicals is vital to reduce environmental and occupational health diseases. Molecular designers, toxicologists, chemists, and engineers require knowledge about the biochemical mechanisms of toxicity, predictive toxicology, and how chemical structures and properties impact toxicity and the environment. Green chemistry has been widely incepted into the curriculum in higher education to provide students with adequate skills in the fundamental principles of toxicology and structure-activity relationships for the design of safer chemicals. This course will present the concept of designing chemicals for reduced toxicity to promote synthesis of less hazardous chemical substances that possess little or no risks to human health and the environment. Students will be provided with fundamental understanding of how to apply in-silico modelling and QSARs, etc. to identify novel replacements for the generation of hazardous chemicals (such as 'forever chemicals') already persisting in the environment and also create the next generation of safe chemicals and products. This course will also present the concept of designing chemical products to preserve efficacy of the function while reducing toxicity so that at the end of their function they do not persist in the environment but instead breakdown into safe products. The course will be conducted by in class lectures, hands-on practices for in-silico modeling, and paper discussions. A college level background in chemistry or toxicology will be required for taking this course. A college level background in chemistry or toxicology will be required for taking this course. Courses such as: Environmental Health Chemistry (EOH 2309), Principles of Toxicology (EOH 2175), Transport & Fate of Environmental Agents (EOH 2122), Principles of Environmental Exposures (EOH 2504), Fate & Transport in Environmental Engineering (CEE 1522); OR Chemistry in Environmental Engineering (CEE 1504) are suggested
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMPHL 3300 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Molecular Pharmacology (PHD)

MSMPHL 3310 - CANCER BIOLOGY AND THERAPEUTICS

Minimum Credits: 3
Maximum Credits: 3
This course presents biochemical and clinical aspects of cancer biology and therapy, designed for graduate students training in the basic sciences or medicine. The lectures cover fundamental topics in cancer biology and pathology, the biology of major cancer types, viral oncogenesis, and an overview of cancer therapeutics including chemotherapy, DNA repair-based therapies, targeted therapies, hormonal therapies, and immunotherapy. This course also covers experimental models and databases used in cancer research and the process of cancer drug development.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMPHL 3320 - JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
Beginning in the second year of the program students will participate in the departmental Journal Club. Presentations will be held each week that the department hosts a seminar speaker (i.e. 2-3 times/month) during the fall and spring semester. Students entering their fifth year of study may petition the program director to be excused from the spring session of the Journal Club. Sixth year students and beyond are not required to enroll in Journal Club although their attendance is encouraged. A log-in sheet will be available at all Journal Club meetings. All students in attendance will complete an anonymous peer-evaluation sheet that will be provided to the presenter. Students must inform the program director in advance if they are unable to attend a specific Journal Club. Excusable absences from Journal Club include individual or family illness or presentation (i.e. poster, platform talk) at a major scientific conference. Students are allowed two unexcused absence/semester.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMPHL 3330 - GENOME INSTABILITY AND HUMAN DISEASE

Minimum Credits: 3
Maximum Credits: 3
Mechanisms that maintain genome stability allowed the origin of species. DNA damage is omnipresent and DNA repair and DNA damage tolerance mechanisms are interwoven in systems that control transcription, replication, cell division, signal transduction, cell death and evolution. More than 40 distinct human diseases are caused by defects in DNA repair, including syndRomes of impaired development, immunodeficiency, cancer predisposition, neurodegeneration, and premature aging. This course will emphasize the molecular biology and biochemistry of DNA repair, placing these mechanisms into the context of other cellular processes as they pertain to health and disease. Environmental, clinical and endogenous sources of DNA damage will be discussed. An understanding of the fundamental role of DNA repair mechanisms in immunology, oncology, neurology, and aging will be central to all lectures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMPHL 3335 - DNA REPAIR JOURNAL

Minimum Credits: 1
Maximum Credits: 1
The course is a journal club on current topics in DNA repair as it relates to human disease, DNA damage processing, genome stability, telomere biology, cancer and aging. Primarily designed for students in the second year of their graduate program and beyond. Presentations will be held twice per month during the fall and spring semester. In order to receive credit for the course, students must attend a minimum of 80% of the sessions, present once per semester, participate in class discussion and complete anonymous peer-evaluations for each presenter. One week prior to presentation, presenters will identify a recent publication in the field and distribute it to their classmates. Presenters must define the hypothesis of the paper, provide background and significance, describe experimental methods used, interpret the data, conclude whether the data support the authors' conclusions and propose future experiments. Grades will be determined by attendance (10%), class participation (20%) and quality of presentation (70%).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMPHL 3340 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 1

Minimum Credits: 1
Maximum Credits: 1
The goals of the fall and spring consecutive courses are to enhance the career development capacity and foster the life-long career management habits of graduate students and postdocs to maximize their scholarly training success and facilitate personal career outcomes. The courses will provide foundational background through experiential learning and small-group discussions, while facilitating peer mentoring. These approaches support the self-construction of individually relevant understandings of career development that is consistent with similar independence in scholarly expertise. The areas of focus include self-assessments, career exploration, goal setting, professional development, career planning and management, career adaptability, and additional topics identified by students. Participation in the subsequent spring course is expected for those enrolled in the fall prerequisite course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMPHL 3341 - CAREER DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
A series of about 8 monthly workshops designed to engage PhD students past their comprehensive exams to take steps to propel their post-PhD career planning through self-reflection, career exploration, relationship building, professional preparation, and networking. The overall goal I to give students the tools necessary to find and pursue their next job with clarity and confidence.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: MSMPHL 3340

MSMPHL 3360 - MOLECULAR PHARMACOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course examines molecular mechanisms of drug interactions with an emphasis on drugs that modulate cell signaling, cellular responses to drugs, and drug discovery. The course will include student participation through presentations and discussion of relevant contemporary scientific literature. Topics include: cell cycle checkpoints and anti-cancer drugs, therapeutic control of ion channels, and blood glucose, anti-inflammatory agents and nuclear receptor signaling, and molecular mechanisms of drugs used for the treatment of cardiovascular diseases.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMPHL 3375 - NEUROPHARMACOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will broadly review neuropharmacology and neurobiology, study monoamine, cholinergic and GPCR biology, and explore the blood-brain barrier and its significance to neuropharmacology. The course will focus on the molecular mechanisms of drug action for different classes of compounds including but not limited to; antidepressants, antipsychotics, anti-epileptics, anesthetics, weight loss, stimulants, neuroprotective, addiction, pain and migraine drugs. In addition to the formal lectures the course will emphasize critical reading of the primary literature through journal-club style discussions and cover the most recent treatment and therapeutic avenues being developed for a broad range of neurologic and psychiatric disorders. The course is ideally suited for Molecular Pharmacology and Neuroscience graduate students or any other graduate student with interest in neurological diseases and their treatments. The course is also appropriate for senior undergraduates who have completed 4 semesters of chemistry, 2 semesters of biology, and other relevant upper division course work (e.g. Cell Biology, Physiology or Biochemistry)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMPHL 3750 - ANGIOGENESIS

Minimum Credits: 3
Maximum Credits: 3
Angiogenesis/vasculogenesis is one of the important research areas in biomedical sciences. This course will provide extensive basic knowledge of the developmental, cellular, and molecular biology of angiogenesis and most recent advances in its clinical applications. Topics include: 1. Angiogenesis in physiological and pathological process; 2. Molecular and cellular regulation of angiogenesis; 3. Current advances in angiogenic therapies. Recent outstanding research publications will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Molecular Virology & Microbiol

MSMVM 2400 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSMVM 2410 - MOLECULAR VIROLOGY

Minimum Credits: 2
Maximum Credits: 2
This course stresses basic concepts of animal virology. Subjects include different viruses, the expression and regulation of viral genes, the mechanisms of viral-induced cytopathology, latency, and cell transformation, and the nature of viroids and prions. Supplementary reading assignments are required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMVM 2420 - EXPERIMENTAL VIROLOGY

Minimum Credits: 2
Maximum Credits: 2
This course is designed for graduate students training in molecular virology research and is designed to provide a more in-depth study of molecular virology through a critical analysis by the student of seminal research publications in various virus systems. Paper discussion format.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMVM 2430 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

MSMVM 2450 - RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMVM 2480 - MECHANISMS OF MICROBIAL PERSISTENCE

Minimum Credits: 2
Maximum Credits: 2
Microorganisms have evolved a vast array of mechanisms to avoid detection or elimination by host defenses, and to establish persistent infections that can lead to chronic or recurrent disease. The ability to establish persistent infections often complicates the successful therapeutic treatment of disease caused by such microorganisms. This course is designed to familiarize students with the mechanisms by which select bacterial and viral pathogens establish persistence in their host cells and/or organisms, and the subsequent considerations for pathogenesis and therapy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

MSMVM 2490 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in molecular virology and microbiology.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Molecular Virology & Microbiol (PHD) or Interdis Biomedical (UNK)

MSMVM 3290 - AUTOIMMUNITY & IMMUNPATHOLOGY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMVM 3400 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.
Academic Career: Graduate
Course Component: Thesis Research

Grade Component: Grad SN Basis
Course Requirements: PLAN: Molecular Virology & Microbiol (PHD)

MSMVM 3410 - MICROBIAL PATHOGENESIS

Minimum Credits: 2
Maximum Credits: 2
This course is an introduction to the molecular basis of bacterial and parasitic pathogenesis. Topics include: 1) introduction to microbial pathogens, 2) molecular and classical Koch's postulates, 3) pathogen adhesion strategies, 4) molecular mechanisms of invasion 5) microbial strategies for immune evasion 6) genetics and action of bacterial toxins 7) coordinate regulation of virulence factors 8) antibiotics and antibiotic resistance 9) host responses to infection 10) vaccines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMVM 3420 - VIRAL PATHOGENESIS

Minimum Credits: 2
Maximum Credits: 2
The goal of this course is to integrate the lectures given on a particular virus in the comprehensive virology course with two additional lectures which expand the basic biology of the virus life cycle to the level of virus-host interactions. The first lecture will address the pathogenic properties of the virus from the perspective of disease manifestations, immunology, and the natural history of infection. This will be followed by a second lecture which will address the molecular basis of viral pathogenesis and current advances in antiviral research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMVM 3435 - TUMOR VIROLOGY

Minimum Credits: 2
Maximum Credits: 2
The purpose of the course is to introduce students to viruses known or suspected of causing tumors and with special emphasis on viruses causally linked to human cancer. Polyomaviruses, Epstein-Barr virus, Kaposi's sarcoma-associated herpesvirus, adenoviruses, papillomaviruses, hepatitis viruses, human t-cell lymphotropic virus and their relevant gene products will be covered in detail during weekly two-hour lectures. Lectures will be given by experts in each virus. Criteria for establishing causal links between a virus and human cancer will be discussed. Focus will be on how viral mechanisms of transformation can provide key mechanistic insight on cellular pathways that drive tumorigenesis including in malignancies with non-viral etiology. Topics covered will include oncogenes, tumor suppressors, oncogenic cofactors, disruption of innate/ adaptive immune responses, latency, viral mimicry/ piracy of cellular regulatory genes, genomic instability and role of non-coding RNAS in viral pathogenesis. Techniques for novel tumor virus discovery will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: MSMVM 2410

MSMVM 3440 - VACCINES AND IMMUNITY

Minimum Credits: 2
Maximum Credits: 2
Vaccines are widely regarded as one of the major contributors to increased life expectancy. The purpose of this course is to (1) explore the history of vaccines; (2) under score the successful role of current vaccines in the management of infectious diseases; (3) present strategies for a new generation of safe and effective molecular vaccines; and (4) discuss the ethical and economic realities of vaccine use and development.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMVM 3471 - INNATE IMMUNITY

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the several aspects of host innate immunity against infection. Topics will include the conceptual basis for innate versus adaptive immunity, induction of innate immunity by pathogens, signaling by innate immune receptors, effector cells of the innate immune system, secreted effectors of innate immune signaling, and subversion of innate immune signaling by pathogens. Courses like molecular virology and comprehensive immunology are highly recommended but not a prerequisite for the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMVM 3475 - IMAGING HOST-PATHOGEN INTERACTIONS

Minimum Credits: 1
Maximum Credits: 1
This course will provide an introduction to fluorescence microscopy with an emphasis on the study of host-pathogen interactions. Experts in the fields of bacterial pathogenesis, viral entry, viral protein signaling, fungal pathogenesis, polymicrobial infections will present lectures on the use of imaging in their fields of research and lead a journal club discussion of relevant papers from the literature. The goal is to provide students with a basic understanding of fluorescence microscopy for the purpose of properly designing their own experiments and effectively evaluating the work of others.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

MSMVM 3480 - IMMUNOLOGY OF INFECTIOUS DISEASE

Minimum Credits: 2
Maximum Credits: 2
General mechanisms of immunity to microbial pathogens and common strategies of immune evasion will be discussed with emphasis on detailed examples from viral, bacterial and parasitic systems. An in depth examination of survival strategies of pathogens in intracellular and extracellular host environments will be addressed, as well as the consequences of inadequate and inappropriate immune responses.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: MSIMM 2210

Music

MUSIC 1253 - LISTENING TO LIVE MUSIC PERFORMANCE

Minimum Credits: 3
Maximum Credits: 3
Listening to Live Music Performance is a course that hopes to deepen the way you understand music and, through new understanding, inspire the way you experience music! Over the course of the semester, we will explore, without prejudice, a variety of live music performances that will help you develop a lifelong ability to analyze music performance, think critically about the act of listening to music, and to consider your critical role as a member of the audience. The purpose of this class is to transform your experience with music by focusing on live performance. Music is a ubiquitous part of our everyday lives, so much so that many people have lost the ability to listen critically to what they are hearing. In many contexts, we are not even aware that music is playing until it is brought to our attention! Recorded music accounts for much of this ubiquity and it's also changed many listeners' relationship with music. Throughout the semester, we will explore the experience of listening to live performances of music, which may include large ensembles, chamber ensembles, solo

concerts, and multi-media performances. Topics will include protocol and traditions of the audience, criteria for critical listening, and discrimination of basic elements of performance. Students will attend live performances, consider evaluative criteria for music performances, and develop critical listening skills. We will also have opportunities to speak with performers to learn about various ways of experiencing music. We are interested in developing critical skills to experience, analyze, and appreciate the myriad musical styles and contexts you will encounter over a lifetime of listening. To that end, this class is focused totally on the act of critical, experiential listening, how to do it, informed listening, and what it can tell the listener's not only about a piece of music, but about the culture and society that created that music, as well as the challenges faced by the increasing ubiquity of music in our world. You do not need a musical background to have a successful semester. Through listening, reading, and associated assignments, the objective is to deepen your experience of music.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212 or 0213 or 0214) or FP (0003 or 0006) *Applies to all WRIT Courses*

MUSIC 1901 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Independent study is elected by students who are making significant use of university resources in an independent project not related to any regularly offered course. The project is often off campus, but with some guidance from sponsoring faculty member(s).
Academic Career: Undergraduate
Course Component: Independent Study
Grade Component: LG/SNC Elective Basis

MUSIC 2000 - MA THESIS

Minimum Credits: 3
Maximum Credits: 3
Research and writing of a thesis for an MA degree in music.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MUSIC 2038 - MUSIC, CULTURE & TECHNOLOGY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MUSIC 2039 - THE SOUNDS OF ROMANTIC COMEDY

Minimum Credits: 3
Maximum Credits: 3
Sometime between Ernst Lubitsch's The Shop Around the Corner (1940) and Nora Ephron's You've Got Mail (1998), romance changed in the United States. Where class and wealth used to be deciding factors for romantic love, there now emerged the concept of the soulmate, who could be anyone. In this course, we will watch American romantic comedies of the last 100 years, paying particular attention to how the development of the soundtrack has changed what love sounds and feels like. Students will develop skills in closely analyzing sound and image in film, critically interpreting popular culture in relation to broader events in society, and thinking about the relation between music, identity, and politics. In particular, we will together develop answers to the following questions: how did capitalism, social justice movements, the changing nature of work, and other cultural transformations affect what people expected from intimate union? What aesthetic norms for representing romance changed alongside cultural norms? How is the narrative of love inflected by race, gender, ethnicity, sexuality, religious difference, ability difference, and/or economic disparity?
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2041 - MUSIC IN AFRICA

Minimum Credits: 3
Maximum Credits: 3
This course examines the historical social and cultural background of music in Africa with particular reference to music in community life, performing groups, the training of musicians, instrument structures in African music, and the interrelations of music and dance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2042 - MUSIC IN LATIN AMERICA

Minimum Credits: 3
Maximum Credits: 3
Mexico, Venezuela, Columbia, Panama, and Peru will be the major countries represented in this general survey of the music of Latin America. The course will be taught in a lecture-discussion format with extensive use made of recordings, slides, and films. Some actual performance of drumming traditions will be included.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2044 - MUSIC IN SOUTHEAST ASIA

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the musical cultures of SouthEast Asia; historical, social and cultural background of music, music theory, instruments, and selected musical genres from different countries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2045 - MUSIC IN SOUTH ASIA

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the musical cultures of South Asia; historical, social and cultural background of music, music theory, instruments, and selected musical genres from different countries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2046 - AFRICAN-AMERICAN MUSIC IN U.S.

Minimum Credits: 3
Maximum Credits: 3
This course is designed to familiarize the student with various phases of African-American music existing in North America; blues, gospel-spirituals, work songs, children's games songs, and classical compositions of ragtime composers Scott Jobin, JP Johnson, etc. Students will conduct field projects centered around "street recordings, locations, interviews of local and visiting artists, etc." A detailed study of great

Pittsburgh performers present and past will constitute a major portion of this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2047 - WOMEN AND MUSIC IN CROSS CULTURAL PERSPECTIVES

Minimum Credits: 3
Maximum Credits: 3
This course is concerned with music of, by, and about women from a cross-cultural perspective. Topics include, but are not limited to, traditional and ritual music, music as empowerment, sexual aesthetics, women as composers and performers, and feminist music criticism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)
Course Attributes: Gender, Sexuality & Women's St

MUSIC 2048 - INSTRUMENTATION AND ORCHESTRATION

Minimum Credits: 3
Maximum Credits: 3
A survey of different styles of instrumentation and orchestration in the European art music tradition. Focus of the course may change from year to year.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2051 - JAZZ COMPOSITION AND ARRANGING 1

Minimum Credits: 3
Maximum Credits: 3
This course develops the students' knowledge of the techniques of jazz-rock composition and arranging. The distinctive features of jazz-rock harmony are studied, and students write arrangements for various instrumental combinations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2052 - JAZZ COMPOSITION AND ARRANGING 2

Minimum Credits: 3
Maximum Credits: 3
A continuation of music 2051. The course develops the student's knowledge of the techniques of jazz-rock composition and arranging. The distinctive features of jazz-rock harmony are studied, and students write arrangements for various instrument combinations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2054 - GLOBAL HIP HOP

Minimum Credits: 3
Maximum Credits: 3
This seminar analyzes how diverse groups of musicians and listeners use hip-hop to express local and transnational claims of belonging through the appropriation of musical genres identified with the West and with African Americans in particular. A closer reading of global hip-hop practices offers insights into the genre's artistic goals and its social profile in a variety of contexts. Through analyses of locally distinct musical expressions, marketing trends within national and global music industries, and state-sponsored policies relating to hip-hop, this course sheds light on hip-hop's role in constituting cultural and political identities among diverse groups of people in the U.S. and abroad.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: African Studies

MUSIC 2057 - MUSIC IN CENTRAL ASIA

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MUSIC 2061 - JAZZ IMPROV 1

Minimum Credits: 3
Maximum Credits: 3
This course provides an analysis of the techniques of jazz-rock-pop improvisation. Students develop a repertoire of current standards and compose and analyze pieces in several styles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2062 - JAZZ IMPROV 2

Minimum Credits: 3
Maximum Credits: 3
A continuation of music 2061. The course provides an analysis of the techniques of jazz-rock-pop improvisation. Students develop a repertoire of current standards and compose and analyze pieces in several styles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2063 - CREATIVE ARTS PRACTICE AND ENSEMBLE

Minimum Credits: 3
Maximum Credits: 3
Creative Arts Practice and Ensemble is an exploratory performing and research multi-arts ensemble. In this course we will explore collaboration between music and expressive arts, including poetry, dance/movement, visual art and/or video. Artists whose primary practice includes video/film, visual art, poetry/prose and skilled musicians of diverse stylistic backgrounds are welcome. While the possibilities of multidisciplinary art are endless, this class will focus on works that explore social justice as a focus, and where music is a prioritized expression, i.e. music and video, music and poetry, music and dance, music and visual art, etc.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2071 - ELECTRONIC AND COMPUTER MUSIC 1

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to composing electronic music. It includes instruction in MIDI and audio sequencing, synthesis, sampling, effects, and other digital audio concepts. Course-work will primarily involve a series of creative projects utilizing a variety of techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2072 - ELECTRONIC MUSIC STUDIO

Minimum Credits: 3
Maximum Credits: 3
This is a fast-paced course on the creation of original electronic music in the University of Pittsburgh's Electronic Music Studio. It is intended for students with some prior experience in creating original music. The course will review electronic music basics (audio and MIDI sequencing, effects, synthesis, and sampling) while also introducing advanced and specialized techniques and concepts. Students will primarily be evaluated on a series of creative projects where they will utilize the studio on a weekly basis. Students will also engage in listening discussions of electronic music in both experimental and popular styles and will share their own work and provide peer feedback on a regular basis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2073 - PROGRAMMING ENVIRONMENTS IN MUSIC - AN INTRODUCTION TO MAX/MSP

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students who have little or no background in music related program environments such as Max/MSP, visual programming language for music and multimedia. During its history, it has been used by composers, performers, software designers, researchers, and artists to create recordings, performances, and installations. This will be a great atmosphere for students with a musical background who have no experience in computer programming, or for students with a computer background who have little experience with music.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2074 - JAZZ AND FILM

Minimum Credits: 3
Maximum Credits: 3
Ralph Ellison, the author of the American classic Invisible Man, asserted that all of American life was "jazz-shaped." By this he meant that jazz (and blues) were more than music, that jazz (and blues) had ubiquitously infiltrated American life, and that it served as a model for an expanding pluralist culture. Jazz and Film explores this notion in three areas: in representations of jazz culture on film, in the sonic presence of jazz in film, and the influence of jazz on filmmaking. Students will give weekly responses to readings, films, or recordings, and will write a research paper on a topic of their own choosing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2080 - MUSIC, ARTS, AND CONFLICT

Minimum Credits: 3
Maximum Credits: 3
As a special topics course, the precise subject focus may change from semester to semester. Please see the accompanying class notes for information on this semester's iteration of the course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

MUSIC 2099 - MUSIC & QUEER IDENTITY

Minimum Credits: 3
Maximum Credits: 3
In this course, we will explore critical perspectives on topics such as non-normative music history, queer modes of expression, subcultural music-making, and the implications of mainstream visibility. Along the way we will survey some notable lesbian/gay/bisexual/ transgender/queer composers and musicians in both art music and popular music.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2111 - PRINCIPLES OF RESEARCH AND BIBLIOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
This course is for all first-year graduate students, and introduces them systematically to the significant research and reference methods and their resulting tools within all major categories and formats of music research and publication. It treats music research as a unified field in which the major disciplines--historical musicology, ethnomusicology, theory/analysis and composition--necessarily interact to inform the most productive and significant results, even for narrowly defined research topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2121 - INTRODUCTION TO ETHNOMUSICOLOGY

Minimum Credits: 3
Maximum Credits: 3
The course is designed for all first graduate students in music and aims to give them an overall understanding of the discipline through a survey of its history, theory, and methodology, and of the writings of major scholars in the field. A series of specific research projects will be integrated with the theoretical discussions, and technical aspects of research such as field work, transcription, and analysis will be covered.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Music (MA or PHD)
Course Attributes: Asian Studies, Global Studies

MUSIC 2131 - INTRODUCTION TO MUSICOLOGY

Minimum Credits: 3
Maximum Credits: 3
The course is designed for all first year graduate students in music and aims to give them an overall understanding of the discipline through a survey of its history, theory, and methodology, and of the writings of major scholars in the field. A series of specific research projects will

be integrated with the theoretical discussions, and technical aspects of research such as notation, source studies, sketch studies, criticism, performance problems, and analysis will be covered.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Music (MA or PHD)
Course Attributes: Medieval & Renaissance Studies

MUSIC 2141 - MUSICAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Examination of issues in the invention and description of musical structures and the relation of these activities to each other, with attention given to such special problems as intersubjectivity, contextuality, the role of inference in perception, and introspection as a mode of empirical inquiry; examples will be drawn from a wide range of literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2151 - INTRODUCTION TO JAZZ STUDIES

Minimum Credits: 3
Maximum Credits: 3
This proseminar provides a critical review of writings on jazz, by analyzing and evaluating the development of the scholarly literature on jazz, focusing on the writings of some of the most influential critics and historians who have shaped the field. The writers will include Nat Hentoff, Ira Gitler, Leonard Feather, Mike Hennessey (England), Gunther Schuler, Andre Hodier (France) etc.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2200 - TEACHING & PROFESSIONALIZATION

Minimum Credits: 1
Maximum Credits: 3
Music 2200 is an introduction to pedagogy for graduate students in the Department of Music. The course focuses on principles and practices of good teaching and is designed to provide an opportunity to self-consciously reflect on and discuss the wide variety of methods, ideas, and techniques that can support effective teaching in music history, theory, and world music.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

MUSIC 2230 - SEMINAR IN TWENTIETH CENTURY MUSIC

Minimum Credits: 3
Maximum Credits: 3
The contents of this course change from year to year, but will consist either of an intensive survey of a limited chronological period, or of the exploration of a special Twentieth-Century topic.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

MUSIC 2232 - SEMINAR IN MUSIC SINCE 1945

Minimum Credits: 3
Maximum Credits: 3
The course studies postwar masterpieces and examines the modes of thought that produced them. Sessions, Berio, Boulez, Lutoslawski, Stockhausen, Babbit, and Carter. The scope and method of the course will be determined in part by the interests of the participants.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)
Course Attributes: West European Studies

MUSIC 2252 - THEORIES OF GENDER & SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of important current topics and controversies in gender and sexuality studies, emphasizing emerging directions in scholarship and the foundational readings that have prepared the way for them. Gender and sexuality studies are interdisciplinary fields in conversation with feminist theory and queer theory as well as a host of academic disciplines. Drawing on readings from a variety of disciplines and sampling a range of methodologies, this course works through some of the key moments, movements, and problems that shape contemporary thinking about gender and sexuality. The course invites students to think through materials and ideas in relation to their own research, interests, and commitments. Note: This course is required for GSWS graduate certificates but welcomes any students who want to get a foothold in gender and sexuality studies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

MUSIC 2271 - THE SOUNDS OF ROMANTIC COMEDY

Minimum Credits: 3
Maximum Credits: 3
Sometime between Ernst Lubitsch's The Shop Around the Corner (1940) and Nora Ephron's You've Got Mail (1998), romance changed in the United States. Where class and wealth used to be deciding factors for romantic love, there now emerged the concept of the soulmate, who could be anyone. In this course, we will watch American romantic comedies of the last 100 years, paying particular attention to how the development of the soundtrack has changed what love sounds and feels like.Students will develop skills in closely analyzing sound and image in film, critically interpreting popular culture in relation to broader events in society, and thinking about the relation between music, identity, and politics. In particular, we will together develop answers to the following questions: how did capitalism, social justice movements, the changing nature of work, and other cultural transformations affect what people expected from intimate union? What aesthetic norms for representing romance changed alongside cultural norms? How is the narrative of love inflected by race, gender, ethnicity, sexuality, religious difference, ability difference, and/or economic disparity?
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2321 - MUSIC, GENDER AND SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MUSIC 2339 - MUSICAL STYLES

Minimum Credits: 3
Maximum Credits: 3
A more detailed exploration of art music repertoire, with emphasis on societal context, compositional technique, and present-day relevance.

The subject matter of the course varies from semester to semester, and may focus on particular composers (e.g., Haydn, Mozart, and Beethoven), stylistic epochs (e.g., Romanticism), or locations (e.g. American music).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2341 - MUSIC IN AFRICA

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2396 - MUSIC IN SOCIETY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2397 - MUSIC AND RACE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MUSIC 2431 - INSTRUMENTATION & ORCHESTRATION

Minimum Credits: 3
Maximum Credits: 3
A survey of different styles of instrumentation and orchestration in the European art music tradition. Focus of the course may change from year to year.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2442 - FIELD AND LAB METHODS

Minimum Credits: 3
Maximum Credits: 3
A study of research designs, field procedures, recording and photographic possibilities, as well as some laboratory procedures will be related to actual field work conducted as a part of this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2494 - MUSIC AND COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
Music and communication is a team-taught, interdisciplinary graduate-level seminar on cultural studies approaches to music and communication. The course will be divided into two parts: the beginning of the course will map out some of the key intellectual and methodological issues arising at the intersection of music and communication studies. After this theoretical introduction, the second part of the course will consider recent scholarship that has attempted to address these concerns.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

MUSIC 2517 - MAJOR COMPOSER

Minimum Credits: 3
Maximum Credits: 3
This course examines the life and works of a major figure in Western art music. The content of the course changes, but it emphasizes music in its historical and cultural contexts, as well as individual genres and styles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2611 - MUSICOLOGY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The seminar focuses on selected research problems or theoretical issues for intensive study and discussion with students taking a major role in class presentation. Past topics have included American music before the Civil War, and source study of the Bach passions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2621 - ETHNOMUSICOLOGY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The seminar focuses on selected research problems or theoretical issues for intensive study and discussion with students taking a major role in class presentation. Past topics have included the writings of Charles Seeger.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)
Course Attributes: Asian Studies, Global Studies

MUSIC 2631 - COMPOSITION & ANALYSIS TUTORIAL

Minimum Credits: 3
Maximum Credits: 3
Tutorial instruction in composition and analysis; students in composition and theory normally enroll every semester.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2632 - COMPOSITION SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Issues of collective interest to composers; student's examination of one another's work; reading and performance of students' (and others') work.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2633 - COMPOSITION FORUM

Minimum Credits: 1
Maximum Credits: 1
The Composition Forum is for all members of the music composition community at Pitt, including graduate students, undergraduate composition majors, faculty composers, and other interested parties. This open forum is an opportunity for graduate students to present their dissertation research, to prepare for job talks, and to receive constructive feedback on their work. There will be guest composer talks, reading sessions of graduate composer works, masterclasses, workshop performances of contemporary works, and sessions in the electronic music studio focused on new technological approaches. Composers will present works-in-progress and discuss issues of general concern to composers in the 21st century.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

MUSIC 2710 - JAZZ STYLES AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This seminar will be an analytical examination of musical transcripts and composers' manuscripts of works by some of the most innovative jazz composers. Many of these manuscripts and transcriptions are held by the university of Pittsburgh jazz archives, which houses the music and recordings of jazz innovators who have participated in the university of Pittsburgh jazz seminar beginning in 1970. The course will also draw on the archival services of the Klaus Kuhnke-Archiv, in Bremen, Germany; and the Rutgers University Institute of Jazz Studies, Dan Morgenstern, director. (Morgenstern is a frequent participant in the Pitt annual jazz seminar and a contributor to Pitt's international jazz archive journal.) This course is primarily theory-based analysis, and will require that students understand and develop a thorough knowledge of accepted analytical techniques. It will examine works by major innovators such as Art Tatum, Bud Powell, Charlie Parker, Dizzy Gillespie, Sonny Stitt, Sonny Rollins, Wes Montgomery, Jim Hall, and Dodo Marmarosa in detail.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2720 - ADVANCED JAZZ COMPOSITION AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course offers tutorial instruction in jazz composition, orchestration and analysis to graduate students in music.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2721 - JAZZ STUDIES SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

MUSIC 2725 - JAZZ AND PROTEST

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MUSIC 2726 - MARY LOU WILLIAMS: STUDYING JAZZ, GENDER, AND RACE THROUGH A PITTSBURGH ICON

Minimum Credits: 3
Maximum Credits: 3
Few figures in jazz enjoyed a longer or more dynamic career than Mary Lou Williams. After emerging as a child prodigy in Pittsburgh in the 1920s, Williams became one of the most sought-after arrangers of the swing era and a germinal figure in the bebop movement. Her later work included compositions for chamber and symphonic orchestras, a full mass setting, and even concerts with avant-garde improvisers. At every turn, Williams cultivated a reputation for elegant arrangements, stalwart professionalism, and a fiercely swinging piano style. This course will examine Williams' storied life and work, paying particular attention to the larger contexts relating to jazz and gender in the 20th century. Like many women artists, Williams never wished to be reduced solely to her gender a trend too-frequently embedded in patronizing epithets like "the great female pianist" Our discussions will therefore seek to avoid framing her in overly-reductive ways. We will strive toward a deeper interrogation of how jazz's complex and often fraught discourses surrounding gender impacted Williams' career, as well as those of subsequent generations of artists. The course will explore a wide range of texts (some unrelated to Williams) in order to grapple with such issues. In doing so, we seek not only to celebrate the legacy of one major jazz composer, but also to think about the cultural landscapes that underlie the construction of such legacies in the first place.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

MUSIC 2731 - JAZZ SALON

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad Letter Grade

MUSIC 2740 - SMALL ENSEMBLE

Minimum Credits: 3
Maximum Credits: 3
This course is designed as a performance course that focuses on the repertoire of the small jazz ensemble from 1940 through 1960. The student will be expected to learn the repertoire of such major jazz innovators as Charlie Parker, Dizzy Gillespie, Art Blakey and the jazz messengers, Thelonious Monk, John Coltrane, Bill Evans, Oscar Peterson, Miles Davis, Sonny Rollins, Stan Getz, etc. Grades in this course will be based solely on the student's ability to perform from memory in a concert setting, works from the major artists listed above.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PhD)

MUSIC 2743 - AFRO-LATIN JAZZ ENSEMBLE

Minimum Credits: 1
Maximum Credits: 1
Afro-Latin Jazz Ensemble is a performance-based course open to undergraduate and graduate students that explores Afro-Latin and Latin American musical traditions through collective music-making. Students study and perform repertoire from Afro-Cuban, Afro-Caribbean, Brazilian, and related traditions that inform Latin jazz, with emphasis on groove, rhythmic feel, form, ensemble interaction, and stylistic interpretation. Through participatory and experiential learning, including singing, playing, listening, and movement, students develop an embodied understanding of musical structure and expression alongside relevant cultural and historical contexts. No prior experience is required, and the mixed-level format supports peer learning across diverse musical backgrounds.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Independent study is used only to allow time in the student's schedule to prepare for the comprehensive examination or prospectus meeting. It is not appropriate to register for independent study to complete the requirements for any other course; nor, as a rule, is independent study an appropriate option for first- or second-year students (or any other student having many outstanding course requirements). Grading: s/n. Note: for students in composition and theory and historical musicology, no more than six credits of independent study may be counted toward the 72 credits required for the Ph.D. Degree; for students in ethnomusicology, no credits earned in courses of independent study may be counted toward the 72 credits required for the Ph.D. Degree.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

MUSIC 3000 - PHD DISSERTATION

Minimum Credits: 1
Maximum Credits: 9
Research for and writing of the doctoral dissertation in music.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MUSIC 3902 - DIRECTED STUDY FOR PHD STUDENT

Minimum Credits: 3
Maximum Credits: 3
Directed study on musical topics for students in the Ph.D. program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Neurobiology

MSNBIO 2008 - PRO-SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Each member of the program faculty presents an overview of the topic on which s/he works and then leads a discussion of a research article

in that area. Critical analysis of experiments and of research is emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

MSNBIO 2010 - SCIENTIFIC ETHICS

Minimum Credits: 1
Maximum Credits: 1
The course is an introduction to basic ethical issues that arise in the course of conducting scientific research. It is intended for graduate students in the center for neuroscience who have completed at least one year of graduate work. The course will be composed of informal lecture presentations followed by class discussion of issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSNBIO 2014 - SPEAKING OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSNBIO 2018 - COMMUNICATING SCIENCE

Minimum Credits: 1
Maximum Credits: 2
This course will foster a student's skills in scientific communication and outreach through participation in the CNUP Brain Program. The Brain Program organizes outreach trips by CNUP students and faculty to area middle- and high-schools to foster interest in neuroscience through interactive presentations and demonstrations on a variety of topics. (Established presentations cover basic brain anatomy, mechanisms of memory and learning, traumatic brain injury, and basic neurophysiology.) An enrolled student will: (1) attend classes semi-weekly to prepare presentations, (2) participate in at least three school visits each semester, and (3) give presentations at least twice. The course is designed to help students refine their ability to deliver an audience-engaging 10-15 minute presentation on a neuroscience-related topic through brief hands-on demonstrations and/or Powerpoint presentations. On-campus class meetings will be devoted to lectures on effective communication of science to a general audience, individual practice of new or adopted presentations, and constructive feedback to presenters. Students enrolled in the 1-credit option may adopt and adapt existing presentation materials. Students enrolled in the 2-credit option are expected to develop their own presentation. Students will be evaluated by the instructor according to participation.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

MSNBIO 2020 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 1

Minimum Credits: 1
Maximum Credits: 1
This course for first-year students in the CNUP Graduate Training Program extends across fall and spring terms. It includes structured and semi-structured discussions on diversity training, ethical dilemmas scientists encounter in their professional lives, and presentations by individual faculty on their personal training histories (traditional and non-traditional), career challenges, positive influences, scientific thought processes, and research questions of deepest significance. Whenever possible, a few presentations will feature alumni from the graduate training program discussing alternate career paths. Each term ends with an opportunity for students to discuss issues of scientific ethics and professional development with the graduate and center co-directors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

MSNBIO 2021 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 2

Minimum Credits: 1
Maximum Credits: 1
This course for first-year students in the CNUP Graduate Training Program extends across fall and spring terms. It includes structured and semi-structured discussions on diversity training, ethical dilemmas scientists encounter in their professional lives, and presentations by individual faculty on their personal training histories (traditional and non-traditional), career challenges, positive influences, scientific thought processes, and research questions of deepest significance. Whenever possible, a few presentations will feature alumni from the graduate training program discussing alternate career paths. Each term ends with an opportunity for students to discuss issues of scientific ethics and professional development with the graduate and center co-directors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

MSNBIO 2070 - HUMAN PHYSIOLOGY

Minimum Credits: 4
Maximum Credits: 4
Lectures and reading on the following: (1) functions of the cardiovascular system; (2) respiration; (3) digestion and absorption in the gut; (4) kidney function and the regulation of body fluids; (5) the regulation of metabolism; and (6) reproduction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2072 - INTRODUCTION TO NEURAL ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSNBIO 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1

Minimum Credits: 5
Maximum Credits: 5
This course is the first component of the introductory graduate sequence designed to provide an overview of cellular and molecular aspects of neuroscience. This course covers nerve cell biology, protein chemistry, regulation of gene expression, receptor function, and second messenger signaling in a lecture format. A background in basic biology is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neurobiology (PHD) or Neuroscience (PHD or MS)

MSNBIO 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
This course is the second component of the introductory graduate sequence designed to provide an overview of cellular and molecular aspects of neuroscience. This course covers the electrical properties of neurons, synaptic transmission, and neural development. A background in basic biology is required.
Academic Career: Graduate
Course Component: Practicum

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neurobiology (PHD) or Neuroscience (PHD or MS)

MSNBIO 2102 - SYSTEMS NEUROBIOLOGY

Minimum Credits: 6
Maximum Credits: 6
This course is a component of the introductory graduate sequence designed to provide an overview of neuroscience. This course provides an introduction to the structure of the mammalian nervous system and to the functional organization of sensory systems, motor systems, regulatory systems, and systems involved in higher brain functions. It is taught primarily in a lecture format with some laboratory work.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neurobiology (PHD)

MSNBIO 2112 - NEUROBIOLOGY OF DISEASE

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide a survey of some of the major neurological and psychiatric disorders for the non-clinician. Each session will focus on a particular disorder and will include a patient presentation (live or by video tape), and a discussion of the etiology, epidemiology, pathophysiology, and treatment of that disorder. Participants will be asked to do some background reading each week, to prepare a short grant application on a topic of relevance to the neurobiology of disease, and to then participate in the peer review of an application of another course participant. Reading will consist of reviews and recent research articles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2135 - HISTORICAL PERSPECTV IN NEUROSCI

Minimum Credits: 2
Maximum Credits: 2
This seminar course explores the origins and evolution of modern neuroscientific concepts from the 17th and mid-20th centuries. Discussions of primary and secondary source material will focus on understanding the role of contemporary philosophical, scientific, social and technological factors in the development of neuroscientific thought. Another goal is to develop an appreciation of their contributions to current neuroscientific dogma.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2600 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSNBIO 2614 - NEUROPHARMACOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will broadly review neuropharmacology and neurobiology, study monoamine, cholinergic, and GPCR biology, and explore the

blood-brain barrier and its significance to neuropharmacology. The course will focus on the molecular mechanisms of a drug action for different classes of compounds including, but not limited to, antidepressants, antipsychotics, anti-epileptics, anesthetics, weight loss, stimulants, neuroprotective, addiction, pain, and migraine drugs. In addition to the formal lectures the course will emphasize critical reading of the primary literature through journal-club style discussions and cover the most recent treatment and therapeutic avenues being developed for a broad range of neurologic and psychiatric disorders. The course is ideally suited for Molecular Pharmacology and Neuroscience graduate students or any other graduate student with an interest in neurological diseases and their treatments. The course is also appropriate for pre-professional undergraduates who have completed 4 semesters of chemistry and 2 semesters of biology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2616 - METALS, GASES, FATS, IN NEUROTRANSMISSION

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

MSNBIO 2621 - PAIN MODELS: RATIONALE, TESTING, AND INTERPRETATION

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the design and analysis of animal and human pain models and will incorporate classroom presentations about various pain models (e.g. inflammatory, neuropathic, etc.). Classroom discussions will be based on assigned readings and include the relevant history and rationale for use of different tests/models, including critical assessment of strengths/weaknesses and limitations to interpretation of outcomes. Importantly, data acquisition, analysis and presentation will be included in evaluating the interpretability of outcomes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2622 - MECHANISMS AND CLINICAL PRESENTATION OF PAIN

Minimum Credits: 2
Maximum Credits: 2
This course provides attendees with vocabulary and knowledge about anatomy, physiology, mechanisms, and modulation of pain. This fundamental knowledge is complemented by assigned readings from literature and clinical presentations about pain syndromes and pain management. The course is offered in the fall term.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

MSNBIO 2623 - PAIN MODELS: RATIONALE, TESTING AND INTEPRETATION

Minimum Credits: 1
Maximum Credits: 1
This course will focus on the design and analysis of animal and human pain models and will incorporate classroom presentations about various pain models (e.g. inflammatory, neuropathic, etc.). Classroom discussions will be based on assigned readings and include the relevant history and rationale for use of different tests/models, including critical assessment of strengths/weaknesses and limitations to interpretation of outcomes. Importantly, data acquisition, analysis and presentation will be included in evaluating the interpretability of outcomes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2624 - GRANT WRITING

Minimum Credits: 3
Maximum Credits: 3
The course will cover the fundamentals of grant writing with a focus on NIH style pre-doctoral grants. Through a combination of lectures and student led critiques and discussions, students will work their way through the essential components of a fundable proposal starting with specific aims and ending with an introduction to a revised application. Students will generate each component of a grant application which will be critiqued by faculty and the other members of the class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Neurobiology (PhD) or Neuroscience (PhD)

MSNBIO 2625 - AUDITORY AND VESTIBULAR SYSTEMS

Minimum Credits: 2
Maximum Credits: 2
This course will cover the anatomy, molecular biology, physiology, and pathophysiology of the auditory and vestibular systems, as well as treatments for auditory and vestibular disorders. The course includes lectures and readings / discussions of key manuscripts. It is relevant for trainees with interests in auditory and vestibular research, as well as those focused on hearing and balance therapies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2626 - GENE THERAPY

Minimum Credits: 3
Maximum Credits: 3
This course will broadly review the basics of gene therapy and the skills required for viral and plasmid preparation, gene therapy administration, genome editing, optogenetics, deep sequencing, computational analysis, and data processing. Students will learn about the ethics of gene therapy and the current main approaches, as well as critically assess the main challenges faced in the field. In addition to formal lectures, the course will involve hands-on wet lab training, visits to local biotech companies, and shadowing opportunities. This course is ideally suited for graduate and post-doctoral students with an interest in gene therapy, with a biology, chemistry, or computer science background, who wish to learn the necessary skills for gene therapy as well as explore potential career opportunities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

MSNBIO 2627 - THE NEXT THREE YEARS: HOW TO DEVELOP YOUR OWN RESEARCH PROGRAM

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to help students learn how to identify important scientific questions, the art of generating a testable hypothesis, how to design experiments that test their hypothesis, and the interpretation of potential outcomes of the proposed experiments. We will also provide students with a complete understanding of the NIH grant writing and review process. These goals will be accomplished via different, integrated mechanisms. The course begins with a discussion of the grant review process and a viewing of an NIH-produced video that reenacts an actual study section review panel. Students will then participate in a mock study section review of successful and unsuccessful NIH applications. For this exercise the students will be given one week to read and write reviews of two F31 applications. The students will then present their reviews as they would in a real study section, discuss their reviews and score their applications. For the remainder of the course, students use the format of the NIH F31 application to develop a research plan that will guide the next three years of their graduate work. Please note that while students will be generating written documents, the focus of this course is on the concepts, ideas and strategies for designing a successful research program, not on sentence and paragraph structure that are also an essential component of scientific writing. The course will conclude with a study section-style review of the student's completed applications.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

MSNBIO 2632 - ADVANCED NEUROPHYSIOLOGY

Minimum Credits: 2
Maximum Credits: 2
The primary objective of this course is for students to develop critical scientific reasoning by learning to evaluate the essential components of classic research presented in well written papers. Secondarily, students will gain a solid foundation in neurophysiology by examining, in detail, the underlying principles underlying current flow through a neuron's membrane, the generation and propagation of action potentials, synaptic transmission at the neural muscular junction, and sensory transduction. Course material will consist of papers from Hodgkin, Huxley, Katz, Fatt and others. Complementing the classic papers will be contemporary work on the same topic. Students will be expected to have had basic neurophysiology and be familiar with electrostatics, electric circuits and differential equations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2650 - JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSNBIO 2651 - PAIN JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
This discussion-based course uses assigned readings to examine pain mechanisms and management with an emphasis on critical literature evaluation and topical developments in the field of pain.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSNBIO 2652 - TOPICS IN NEUROLOGICAL DISORDERS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSNBIO 2653 - CANCER NEUROSCIENCE JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
This is a discussion-based course evaluating current and critical literature in the emerging field of cancer neuroscience. Each week will include a presentation of a recent primary research publication, including assessment of background literature, evaluation of research

methods and study design, assessment of statistics and data, and discussion of the impact and translational implications of the study. This course will develop critical thinking, evaluation of primary literature, oral presentation skills, and cross-disciplinary collaboration.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSNBIO 2660 - NEUROBIOLOGY SEMINAR SERIES

Minimum Credits: 1
Maximum Credits: 1
Nationally and internationally recognized researchers in the field of neuroscience present scientific findings. Students meet informally with each speaker to discuss seminal topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSNBIO 2680 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 9
A series of special topics courses are offered by individual members of the department or by small groups of the faculty. The general format involves the detailed analysis of a specific research area, exploring its development and current status by the presentation and discussion of research papers.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

MSNBIO 2681 - SEMINAR IN CORTICAL CIRCUITS

Minimum Credits: 1
Maximum Credits: 1
This discussion-based course uses current readings to examine cortical function with an emphasis on circuit analyses using electrophysiological, computational, behavioral and/or developmental approaches.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSNBIO 2682 - CURRENT RESEARCH ON PAIN

Minimum Credits: 1
Maximum Credits: 1
An advanced graduate level course for students interested in current research on pain mechanisms, management and clinical presentation of pain. Presentations by course participants form the basis for class participation and discussion.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSNBIO 2690 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in neurobiology.
Academic Career: Graduate
Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Neurobiology (PHD)

MSNBIO 3030 - SEMINARS IN SYNAPTIC FUNCTION

Minimum Credits: 1
Maximum Credits: 1
This discussion-based course uses recently published research articles to examine synaptic function, including neurotransmitter release, receptor regulation, and different forms of synaptic plasticity.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSNBIO 3600 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Neurobiology (PHD)

Neurological Surgery

NSURG 2907 - INDEPENDENT STUDY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

NSURG 5383 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0
Maximum Credits: 0
The department of neurological surgery will arrange an individual study or research experience for third year medical students in an area of their interest.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

NSURG 5420 - NEUROSURGERY ADVANCED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
A clinical clerkship is offered for the full four-week rotation. A student will work as a subintern sharing in the full operation of the Neurosurgery Service with the house staff. Points of emphasis will be pathophysiology of neurological problems, neurological diagnosis and recognition and treatment of neurosurgical emergencies. The rotation may be personalized with various time intervals allowed in

UPMC and Children's Hospital of Pittsburgh, but it is preferred that the full rotation be taken in one hospital. The student will scrub at surgery and attend and participate actively in all conferences. In selected cases, students may elect to participate in ongoing research projects in the neurological laboratories.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NSURG 5422 - PEDIATRIC NEUROSURGERY

Minimum Credits: 0
Maximum Credits: 0
A four-week elective offering the student a sub internship sharing in the full operation of the neurosurgery service with the house staff. Points of emphasis will be pathophysiology of neurological problems, neurological diagnosis and recognition and treatment of neurosurgical emergencies. The student will scrub at surgery and attend and participate actively in all conferences. The elective objectives are: to perform a careful, problem-oriented, neurological examination; to recognize, evaluate and direct the diagnostic work up of common neurosurgical problems such as lumbar and cervical disc herniation, brain tumor, head trauma, intracranial aneurysm, etc.; to recognize and manage increased intracranial pressure, brain herniation, and electrolyte and metabolic disturbances, peculiar to neurological patients; and the basic principles of neurosurgical techniques as well as basic neurosurgical topographic anatomy.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NSURG 5430 - INTRO CLINICAL NEUROPHYSIOLOGY

Minimum Credits: 0
Maximum Credits: 0
During this four-week elective the student will be exposed to the use of electrodiagnostic tools with particular emphasis on the utilization of auditory, visual and somatosensory evoked potentials in the study of clinical neurological disorders in man. Computational analysis of ongoing EEG will also be utilized. Diagnostic assessment both intraoperative and ICU monitoring will be performed. Opportunities are available to participate in research in electrophysiology and computational analysis of data.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NSURG 5435 - INTRODUCTION TO CLINICAL NEUROSURGERY

Minimum Credits: 0
Maximum Credits: 0
This introductory clinical elective ill provide students with experiences in the care of neurosurgical patients. A student will work as a member of the clinical team, sharing in the full operation of the neurosurgery service with the house staff. Points of emphasis will be pathophysiology of neurological/neurosurgical problems, neurological diagnosis, and recognition and treatment of neurosurgical emergencies. The student will scrub at surgery and attend and participate actively in all conferences. Students will have the opportunity to be exposed to cutting edge specialized areas of neurosurgery including gamma knife radiosurgery, neuroendoscopy, and endovascular neurosurgery. In selected cases, students may elect to participate in ongoing research projects in neuro-oncology, neuro-trauma, spine biomechanics, functional neurosurgery, and neurophysiology.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NSURG 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NSURG 5705 - HEAD AND NECK DISSECTION (ILS)

Minimum Credits: 0
Maximum Credits: 0
This course fulfills the integrated life science (ILS) graduation requirement. The course is a four-week selective combining precepted anatomic dissection, various imaging modalities, lectures, operating room exposure, and clinical pathology in a systematic manner. The areas to be covered include anatomy of the head and neck. The course will include lectures in anatomy, pathology and imaging modalities; precepted anatomical dissections and clinical experiences. Clinical experiences will include, but are not limited to, exposure to neurosurgical and otorhinolaryngological procedures in the operating rooms, shadowing time in clinic, as well as assisting in neuropathological examinations. All students will be exposed to the diagnostic modalities appropriate for each anatomic area. They will also have the opportunity to see patients and follow their evaluations and management. To fulfill course requirements, each student will be expected to prepare a formal case presentation correlating the clinical findings, anatomy, diagnostic modalities, pathology and treatment plan.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NSURG 5810 - INJURY RESEARCH AND CONTROL

Minimum Credits: 0
Maximum Credits: 0
Students in four-week elective may join basic research projects or initiate their own research projects at center for injury research and control (circl). Center conducts injury control research, gathers and disseminates information on injuries, provides training for healthcare professionals and informs public and community leaders on injury control measures. Students work with epidemiologists to identify risk factors associated with specific injury types. Designed for those interested in gaining residency experience in epidemiologic methods with emphasis on surveillance and/or descriptive injury evaluation..
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NSURG 5880 - NEUROSURGICAL RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Student will participate in an ongoing research project in the department of neurosurgery under the supervision of an advisor. Objectives include training in basic neurosurgical research techniques and procedures as well as the opportunity to gain in-depth knowledge in the basic neurosciences. This elective is offered in four-week blocks and two blocks must be elected.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NSURG 5899 - INDEPENDENT STUDY IN NEUROLOGICAL SURGERY

Minimum Credits: 0
Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NSURG 5900 - EXTRAMURAL NEUROSURGERY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in neurological surgery may be arranged at an institution other than the university of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Neurology

NEURO 5366 - NEUROLOGY CORE CLERKSHP

Minimum Credits: 0
Maximum Credits: 0
The (3-week) neurology clerkship focuses on common neurological problems: presentation, diagnosis and treatment. NSURG, neuropath and neurorad experiences are also provided. Clinical teaching includes INPT and OPT settings. Exposure to NSURG or neuropath Brain cutting are required. Integrated teaching on two afternoons utilizes interactive lectures, case conferences, neurorad rounds, and critical reviews of literature. Performance-based evaluations and NBME shelf exam are main modes of student evaluation. Must accompany registration in PSYCH 5366.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

NEURO 5367 - NEUROLOGY CLERKSHIP 3RC

Minimum Credits: 0
Maximum Credits: 0
The Neurology Clerkship is 4 weeks and includes experience in neurology, neuropathology, and neuroradiology. Clinical teaching with attendings and residents occurs in inpatient and ambulatory settings and student can spend time at Children's Hospital on the pediatric neurology service.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

NEURO 5389 - CLINICAL NEUROLOGY ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This four week elective will provide a broad exposure to neurological disorders in an inpatient and outpatient setting. Students may rotate on the inpatient neurology ward, the neurology consult service, or the pediatric neurology service. Students will do initial patient evaluations and will follow patients daily. They will be involved in diagnostic and therapeutic decision making. An emphasis will be placed on neuroanatomical correlation.
Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

NEURO 5393 - INDEPENDENT STUDY IN NEUROLOGY

Minimum Credits: 0
Maximum Credits: 0
This is a third-year level elective. This course may be arranged as a research or a special clinical period of time. All electives are four weeks in duration and will be more specifically identified as to content on the student's transcript at the time credit is given.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

NEURO 5410 - NEUROLOGY ADVANCED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
A four-week acting internship is offered on the Clinical Neurology Service. Students can choose to rotate on inpatient Neurology ward services at UPMC Presbyterian University Hospital or spend two weeks on the ward service and two weeks on the stroke service. They will also care for patients in the neurointensive care unit. Students will have responsibilities similar to first year neurology residents. Students will be the primary person responsible for the initial neurological history and examination and will follow their patients each day. They will write orders to schedule diagnostic tests and for medications. Students will also obtain and assimilate the results of these tests for discussion on attending rounds. Students are required to do at least three new patient evaluations each week and follow 4-5 patients at any given time. They will be directly involved in both diagnostic and therapeutic decision making and emphasis will be placed on neuroanatomical correlation. They will do patient sign out at the end of each day. They will be on call, rounding one day each weekend during the rotation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5420 - CLINICAL NEUROLOGY

Minimum Credits: 0
Maximum Credits: 0
Four week elective on consult service at health center hospitals and outlying hospitals; participation in investigation and management of patients; discussion of cases and basic mechanisms pertinent to understanding neural function and pathogenesis of neurological diseases. History taking, detailed physical and neurological examination, and recording information on patients will be required.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5421 - STROKE SERVICE

Minimum Credits: 0
Maximum Credits: 0
This four week clinical neurology elective will place an emphasis on the evaluation and treatment of patients with cerebrovascular disease including ischemic cerebral infarction and intracerebral hemmorhage. Patients will be seen in the inpatient ward and in an outpatient stroke clinic. Students may participate in ongoing acute stroke trials. They will observe carotid and transcranial doppler ultrasound studies.
Academic Career: Medical School
Course Component: Clinical

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5425 - OUTPATIENT CLINICAL NEUROLOGY

Minimum Credits: 0
Maximum Credits: 0
This four week elective is a closely supervised clinical clerkship providing a broad exposure to common and unusual outpatient neurologic conditions. Initial manifestations of disease, physical exam findings, effective diagnostic evaluation and treatment options are emphasized. Students will actively participate in initial and follow visits of patients with faculty. Students will also work in neurology subspecialty clinics including stroke, epilepsy, multiple sclerosis, neuromuscular disease, aphasa and neurological rehabilitation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5430 - NEONATAL NEUROLOGY

Minimum Credits: 0
Maximum Credits: 0
A four week elective consists of a closely supervised clinical clerkship in neonatal neurology. Students will participate in the diagnostic investigation and management of neonates and young infants with neurologic disorders in both inpatient and outpatient settings. Students, with attending supervision, will learn the neurologic examination of the newborn and evaluation of children with suspected neural disorders. The understanding of neural function and development with its relationship to brain disorders will be emphasized.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5435 - PEDIATRIC NEUROMUSCULAR DISEASE

Minimum Credits: 0
Maximum Credits: 0
This four week elective is a closely supervised clinical clerkship which will provide an opportunity to study a variety of pediatric neuromuscular disorders. Students will participate in the diagnostic evaluation and management of patients in the muscular dystrophy association clinic and have an opportunity to observe electromyographic examinations. Students will perform new patient evaluations and participate in the planning and interpretation of diagnostic studies.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5440 - PEDIATRIC NEUROLOGY

Minimum Credits: 0
Maximum Credits: 0
Four week elective on consult service; participation in investigation and management of patients; discussion of cases and basic mechanisms pertinent to understanding neural function and pathogenesis of neurological diseases. History taking, detailed physical and neurological examination, and recording information on patients will be required.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5441 - CHILD NEUROLOGY/EPILEPSY

Minimum Credits: 0
Maximum Credits: 0
A four week elective at Childrens' Hospital will provide the student with the opportunity to see inpatients and outpatients with seizures. Students will participate in the evaluation, diagnosis and treatment of these patients and will help to evaluate patients undergoing surgical consideration. Students will learn to identify certain seizure patterns by review of seizures and EEGs recorded on video tape. They will review neuroimaging studies and be involved in discussions about antiepileptic drug management.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5442 - EPILEPSY MONITORING UNITY

Minimum Credits: 0
Maximum Credits: 0
This elective will emphasize main 7 core concepts in addition to below described objectives: 1) Students will learn how to take a focused neurologic and seizure history, do a full neurologic exam and present the case to an attending, with formative feedback 2) Medical student will attain basic medical Knowledge on seizure classification, epilepsy syndromes and various types of spells. They will observe a large variety of seizure types and learn how to classify seizures based on clinical presentation and EEG findings 3) Students learn about indication, benefits and limitation of electroencephalogram role. They will understand basic principles and how to read EEG studies and learn to identify seizures on EEG, prognosis for various epilepsy conditions. 4) Students will understand how to diagnosis non-epileptiform spells and their management options. 5) Delivering the message about non-epileptic spells and counseling is one of the most challenging part in regard to management of non-epileptic patients. Students will learn the art of counseling and effectively deliver the patient their diagnosis and management options. 6) They will learn about importance of confirming or excluding epilepsy condition with similar mimickers including syncope. They will learn patient management and pharmacological treatment of these conditions. 7) They will learn about various co-morbid conditions including depression, anxiety, migraine associated with epilepsy. During this rotation, they will have direct observation by faculty, fellows and PA-c and will be working with our multidisciplinary teams in coordinating patient care. This will provide them a very good working environment.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

NEURO 5445 - BEHAVIORAL NEUROLOGY

Minimum Credits: 0
Maximum Credits: 0
A four to twelve week elective is offered at highland drive VA Medical Center for students who have an interest in cognitive and psychiatric manifestations of neurological disease. Typical clinical problems include cognitive and personality changes after stroke, head trauma, epilepsy, dementia, neurodegenerative disorders, movement disorders, amnestic syndromes, confusional states and patients with obsessive compulsive presentations. Teaching will include neuropsychological assessments, case conferences and clinical bedside attending rounds.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5450 - NEUROLOGY BOOT CAMP

Minimum Credits: 0
Maximum Credits: 0
Students who are entering the field of neurology or with strong interest in neurology and related fields require a solid foundation of knowledge and skills before embarking on internship and assuming the duties of an intern. This intensive course addresses relevant knowledge and skill building activities by educators deeply involved in postgraduate training.

Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 4

NEURO 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty members, as well as the student's scheduling advisor. When approvals have been received, the course will be scheduled and department notified.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5730 - CLINICAL NEUROSCIENCES (ILS)

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective will satisfy the requirement of the integrated life science course of the senior year. The course objectives are: introduce students to clinical academic medicine; educate students in the conduct, design and interpretation of clinical trials; illustrate how basic science findings lead to clinical research advances; and provide additional subspecialty experience. The course will consist of seminars illustrating how basic scientific observations lead to clinical research, internships with a clinical neuroscience residency mentor and a pbl where a clinical research project is designed.
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5875 - INDEPENDENT STUDY IN NEUROLOGY

Minimum Credits: 0
Maximum Credits: 0
A research project can be arranged with a faculty person on or off-site. Approval of all projects must be secured at the departmental and student affairs level. These independent study opportunities will be more specifically identified as to content on the student's transcript at the time credit is given.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5876 - BASIC RESEARCH IN NEUROLOGY

Minimum Credits: 0
Maximum Credits: 0
In this elective the student will be involved in the study of the molecular mechanisms that underly neuronal injury in ischemic stroke and the physiological repair mechanisms that injury triggers. One major focus is how prior ischemia indules the expression of neuroproteltive gene products, such as stress proteins and death supressor genes. Another interest is the role of neural stem cells in neural plasticity after injury. Techniques include animal surgery, cell culture, immunohistochemistry, in situ hybridization, Northern analysis and flourescein detection of calcium.
Academic Career: Medical School
Course Component: Directed Studies

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5877 - COGNITIVE NEUROSCIENCE RESEARCH

Minimum Credits: 0
Maximum Credits: 0
This four week elective involves research in cognitive neuroscience. Students can participate in one of several research projects including: computer modeling of human language, computer modeling of the somatosensory cortex, behavioral studies of patients with language disorders and functional neuroimaging of language function. Emphasis will be placed on the relationship between cognitive structures of the mind and the neurobiologic implementation of mental structures in the cellular and molecular hardware of the brain.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5878 - ALZHEIMER'S DISEASE RESEARCH

Minimum Credits: 0
Maximum Credits: 0
An eight week elective places a special emphasis on memory and cognitive problems associated with aging and dementia. Emphasis is placed on clinical diagnosis and the use of neuropsychological testing, laboratory and neuroimaging studies in the diagnosis of dementia. There will be an opportunity to be involved in experimental therapeutic trial being carried out in patients with Alzheimer's disease.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5879 - MOLECULAR NEURO-BIOLOGY/GENETICS

Minimum Credits: 0
Maximum Credits: 0
This neurology elective will provide exposure to research directed at identifying molecules expressed during critical phases of neuronal differentiation using rat cerebellum as a model system. This tissue is studied using molecular biological methods to clone genes in granule cells to study their regulation. Methods used include standard cloning techniques, preparation of RNA from rat tissues, Northern blot analysis, in situ hybridization and histochemistry.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5892 - OUTPATIENT NEUROLOGY WITH A VETERAN POPULATION 2-WEEK ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This rotation takes places at VA Pittsburgh Healthcare System at University Drive. Students will participate in outpatient general neurology clinic, reading of EEGs, and performing of NCS/EMGs. Students will understand what a comprehensive outpatient neurologist does and understand the differences between the VA healthcare model vs private insurance model. Students will have the opportunity to interact with veterans and understand the VA healthcare model. The goal of this rotation is to introduce students to outpatient general comprehensive neurology in a VA community setting. There will be high-yield teaching sessions in the most common diseases seen by a general outpatient neurologist.
Academic Career: Medical School

Course Component: Clinical
Grade Component: S/U Basis

NEURO 5900 - EXTRAMURAL NEUROLOGY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in neurology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Neuroscience

NROSCI 1000 - INTRO TO NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course highlights the intellectual challenges and excitement of what many see as the last great frontier of biological science, neuroscience. The 24 lectures are grouped into four blocks: Block I, Introduction to neuroanatomy and cellular neurophysiology; Block II, Sensory systems; Block III, Motor systems; and Block IV, The complex brain functions and diseases. We begin Part I by introducing the structure and function of individual neurons, how they communicate chemically, and how these building blocks are arranged to form a nervous system. In Block II, we go inside the brain to examine the structure and function of the systems that serve the senses such as touch, pain, visual, auditory, and chemical. In Block III, we discuss the structure and function of the motor systems that command voluntary movements. Finally, in Block IV, we explore the neurobiology of human behavior and diseases, including language, emotion, addiction, and various neurological and psychiatric disorders.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: (BIOSC150or155or170or715or190orBIOL101or110)and(BIOSC160 or 165or180or191or716orBIOENG1071orBIOL102or120)and(CHEM101or110or710or760or960orCHEM111or410)and(CHEM 102or120or720or770or970)or(CHEM420and440)or(CHEM112and114);MINGRAD:`C' for listed Courses

NROSCI 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1
Maximum Credits: 12
Students working on their early research requirement may (but are not required to) register for NROSCI 2000.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2005 - COGNITIVE NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course will cover fundamental findings & approaches in cognitive neuroscience, with the goal of providing an over view of the field at an advanced level. Topics will include high-level vision, spatial cognition, working memory, long term memory, learning, language, executive control, and emotion. Each topic will be approached from a variety of methodological directions, i.e. Computational modeling, cognitive assessment in brain-damaged humans, non-invasive brain monitoring in humans and single-neuron recording in animals. Lectures will alternate with sessions in seminar format.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (MS or PHD)

NROSCI 2007 - JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
This course is intended for all graduate students and faculty members. Papers will be selected from current periodicals in neuroscience for presentation. Emphasis is placed on a critical evaluation of experimental procedure and interpretation of data.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2008 - PRO SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Each member of the program faculty presents an overview of the topic on which s/he works and then leads a discussion of a research article in that area. Critical analysis of experiments and of research is emphasized.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Neuroscience (PHD)

NROSCI 2010 - SCIENTIFIC ETHICS

Minimum Credits: 1
Maximum Credits: 1
The course is an introduction to basic ethical issues that arise in the course of conducting scientific research. It is intended for graduate students in the center for neuro science who have completed at least one year of graduate work. The course will be composed of informal lecture presentations followed by class discussion of issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NROSCI 2011 - FUNCTIONAL NEUROANATOMY

Minimum Credits: 3
Maximum Credits: 3
This course deals with human neuroanatomy and covers the basic structure of the central nervous system from spinal cord to cerebral cortex. Emphasis is placed on major systems and subsystems within the brain, and on their function al significance. The basic structure and morphology of nerve cells will be covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (MS or PHD)

NROSCI 2012 - NEUROPHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3

This course examines the electrical properties of nerve cells and the mechanisms by which nerve cells communicate. The following topics will be covered: electrical principles used by nerve cells, the basis of the resting potential, the function of voltage-dependent ionic channels, the mechanisms by which action potentials are generated, neurotransmitter receptor function, and the physiology of fast synaptic communication.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (MS, PHD) or Neurobiology (PHD)

NROSCI 2013 - HONORS FUNCTIONAL NEUROANATOMY

Minimum Credits: 4
Maximum Credits: 4
Honors Functional Neuroanatomy provides an in-depth examination of the structure and function of the human nervous system and how circuit operations directly contribute to humans' capacity for complex behaviors. Students will be instructed in 1) the role of structure as the basis for function, 2) a critical appreciation of neuroanatomical methodology for investigating brain function, and 3) the contribution of hierarchical processing to sensory, motor, and regulatory operations of the brain. Students will also learn how precision in understanding and articulating detailed information is vital for expertise in science and future professions. Subjects to be covered include neurocytology, neurodevelopment, gross structure of the nervous system, structure and function of sensory, motor, and integrative neural systems, and how morphological alterations contribute to neurological and psychiatric disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

NROSCI 2014 - SPEAKING OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
Fulfills neuroscience advanced elective requirement. You will learn strategies for giving presentations about science to both a scientific audience and a public audience. Topics covered will include (1) how to engage your audience, (2) the art of breaking down your message, (3) tips for how to make clear, interesting slides, and (4) pointers on presentation style. All audiences want to learn interesting new scientific information, and have it delivered as a good story in an understandable manner by a personable, easy to approach person. You want to emphasize your message, stay focused, and convey the importance of your message while being interesting, maintaining the attention of the audience and making the learning process enjoyable. Guest speakers will provide background information about various uses of scientific information in the public domain. Communication skills, including knowing your audience and why they are interested in the information you are speaking about, how to translate scientific jargon into understandable concepts for the public, and how to keep the audience engaged will be discussed. Pointers will be given on answering questions, being conversational, and conveying the "big picture". Students will give a number of presentations in this course and learn to receive and give feedback effectively.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Neuroscience (PhD) or Neurobiology (PhD)

NROSCI 2017 - SYNAPTIC TRANSMISSION

Minimum Credits: 3
Maximum Credits: 3
This course examines the mechanisms by which neurotransmitters are synthesized and released and the biochemistry of synaptic responses. Basic physiological, biochemical, and morphological characteristics of neural transmission will be discussed. An emphasis will be placed on the experimental approaches used to examine these processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (MS, PHD) or Neurobiology (PHD)

NROSCI 2018 - COMMUNICATING SCIENCE

Minimum Credits: 1
Maximum Credits: 2
This course will foster student's skills in scientific communication and outreach through participation in the CNUP Brain Program. The Brain Program organizes outreach trips by CNUP students and faculty to area middle- and high-schools to foster interest in neuroscience through interactive presentations and demonstrations on a variety of topics. (Established presentations cover basic brain anatomy, mechanisms of memory and learning, traumatic brain injury, and basic neurophysiology.) An enrolled student will: (1) attend classes semi-weekly to prepare presentations, (2) participate in at least three school visits each semester, and (3) give presentations at least twice. The course is designed to help students refine their ability to deliver an audience-engaging 10-15 minute presentation on a neuroscience-related topic through brief hands-on demonstrations and/or power pointpresentations. On-campus class meetings will be devoted to lectures on effective communication of science to a general audience, individual practice of new or adopted presentations, and constructive feedback to presenters. Students enrolled in the 1-credit option may adopt and adapt existing presentation materials. Students enrolled in the 2-credit option are expected to develop their own presentation. Students will be evaluated by the instructor according to participation.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

NROSCI 2020 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 1

Minimum Credits: 1
Maximum Credits: 1
This course for first-year students in the CNUP Graduate Training Program extends across fall and spring terms. It includes structured and semi-structured discussions on diversity training, ethical dilemmas scientists encounter in their professional lives, and presentations by individual faculty on their personal training histories (traditional and non-traditional), career challenges, positive influences, scientific thought processes, and research questions of deepest significance. Whenever possible, a few presentations will feature alumni from the graduate training program discussing alternate career paths. Each term ends with an opportunity for students to discuss issues of scientific ethics and professional development with the graduate and center co-directors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

NROSCI 2021 - SCIENTIFIC ETHICS & PROFESSIONAL DEVELOPMENT 2

Minimum Credits: 1
Maximum Credits: 1
This course for first-year students in the CNUP Graduate Training Program extends across fall and spring terms. It includes structured and semi-structured discussions on diversity training, ethical dilemmas scientists encounter in their professional lives, and presentations by individual faculty on their personal training histories (traditional and non-traditional), career challenges, positive influences, scientific thought processes, and research questions of deepest significance. Whenever possible, a few presentations will feature alumni from the graduate training program discussing alternate career paths. Each term ends with an opportunity for students to discuss issues of scientific ethics and professional development with the graduate and center co-directors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

NROSCI 2036 - NEUROBIOLOGY OF AGING

Minimum Credits: 3
Maximum Credits: 3
This course examines age-related changes in neurobiological systems, including motor, sensory, cognitive, and neuroendocrine. Emphasis will be placed on distinguishing biochemical, molecular, physiological, and behavioral changes associated with normal aging versus changes associated with pathologic conditions such as Alzheimer's disease. Introductory lectures will discuss different theories of aging, how aging is studied in the laboratory, and how these relate specifically to neuroscience.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

NROSCI 2039 - PROCESSING IN NEURAL CIRCUITS

Minimum Credits: 3
Maximum Credits: 3
Sensory information flows from the periphery through different stages of processing in the central nervous system, to the thalamus and cerebral cortex. Within the cerebral cortex, feedforward processing is strongly modulated by top-down "feedback", with impacts on perception and decision making. The computations performed by individual neurons and networks of neurons within each region transform incoming information to produce an output that is projected to other targets in the brain. This course explores the local circuit mechanisms underlying the representation and refinement of sensory information at successive stages of the feedforward processing pathways. We will focus on the formation of receptive field properties within individual neurons, including contributions of feedforward circuitry and interactions between neurons within local circuits, and on how populations of neurons work together to encode information. An important theme of the course will also be to learn about current methodology in systems neuroscience research to study and perturb circuits. Descriptions of such experiments will be incorporated into lectures, and we will also read several primary research articles relevant to the major themes of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NROSCI 2043 - NEURAL PLASTICITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1

Minimum Credits: 5
Maximum Credits: 5
This course is the first component of the introductory graduate sequence designed to provide an overview of cellular and molecular aspects of neuroscience. This course covers nerve cell biology, protein chemistry, regulation of gene expression, receptor function, and second messenger signaling in a lecture format. A background in basic biology is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
This course is the second component of the introductory graduate sequence designed to provide an overview of cellular and molecular aspects of neuroscience. This course covers the electrical properties of neurons, synaptic transmission, and neural development. A background in basic biology is required.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2102 - SYSTEMS NEUROBIOLOGY

Minimum Credits: 6
Maximum Credits: 6
This course is a component of the introductory graduate sequence designed to provide an overview of neuroscience. This course provides an introduction to the structure of the mammalian nervous system and to the functional organization of sensory systems, motor systems, regulatory systems, and systems involved in higher brain functions. It is taught primarily in a lecture format with some laboratory work.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2104 - QUANTITATIVE METHODS FOR NEUROSCIENCE RESEARCH

Minimum Credits: 4
Maximum Credits: 4
This course is designed to give students the tools necessary to do sophisticated, quantitative analyses of neuroscientific data and promote critical thinking about the quantitative methods and representations used to make scientific claims. Specifically, participants will learn (1) methods for importing, analyzing, and visualizing data using `python` and `jupyter` notebooks, (2) appropriate experimental design and statistical methodologies including both classical and contemporary statistical methods, (3) and basic modeling techniques.To accomplish these goals, students will use real data from the literature including their own when possible.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

NROSCI 2106 - NEUROSCIENCE SEMINAR SERIES

Minimum Credits: 1
Maximum Credits: 1
Nationally and internationally recognized neuroscience researchers present scientific findings. Students meet with speakers to discuss seminar topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2107 - CUR RES NEURAL BASIS COGNITION

Minimum Credits: 1
Maximum Credits: 1
Presentations of current research by students and faculty of the center for the neural basis of cognition, and by visiting researchers from other universities. Areas of cognition covered include perception, memory, language, attention, motor control, and executive functions. Disorders of cognition as well as developmental issues are considered. Methodologies include single neuron recording studies, function al brain imaging studies, computational modeling studies, and behavioral investigations using normal populations and individuals with cognitive disorders.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad SN Basis
Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2112 - NEUROBIOLOGY OF DISEASE

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide a survey of some of the major neurological and psychiatric disorders for the non-clinician. Each session will focus on a particular disorder and will include a patient presentation (live or by video tape), and a discussion of the etiology, epidemiology, pathophysiology, and treatment of that disorder. Participants will be asked to do some background reading each week, to

prepare an essay on a topic of relevance to the neurobiology of disease. Reading will consist of reviews and recent research articles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2116 - FOUNDATIONS OF THE NEURAL BASIS OF COGNITION

Minimum Credits: 3
Maximum Credits: 3
This course will cover fundamental findings and approaches in cognitive neuroscience, with the goal of providing an overview of the field at an advanced level. Topics will include high-level vison, spatial cognition, working memory, long-term memory, learning, language, executive control, and emotion. Each topic will be approached from a variety of methodological directions, for example, computational modeling, cognitive assessment in brain-damaged humans, non-invasive brain monitoring in humans, and single-neuron recording in animals. Lectures will alternate with sessions in seminar format. Prerequisites: Graduate standing or two upper-level psychology courses from the areas of developmental psychology, cognitive psychology, computational modeling of intelligence, neuropsychology or neuroscience.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NROSCI 2146 - INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3
Computational neuroscience applies theoretical and numerical techniques to understand brain functions and neural coding. In this course, students will learn how to simulate and analyze model neurons and networks of neurons, and how simple neuronal networks perform computations. Students will also learn how to analyze spike train data and decode information from neural responses. We will have hands-on MATLAB practice sessions throughout the course. By the end of the course, students will be familiar with the mathematical formulations to study neural coding and network dynamics, and acquire programming skills in MATLAB. Knowledge of linear algebra, probability and differential equations is recommended, but not required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NROSCI 2150 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Supervised practicum experience in the Teaching of Neuroscience.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

NROSCI 2200 - NEUROPHARMACOLOGY OF ADDICTION

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide an overview of the biological basis of addiction and the neuropharmacology of drugs of abuse and dependence, including basic principles of drug action as well as comprehensive coverage of the major classes of drugs (opioids, stimulants, nicotine, alcohol, sedatives, cannabis, hallucinogens). Students will study mechanisms of action, effects, pharmacokinetics as well as tolerance and dependence for each of these drugs/drug classes. The reasons for addiction including biological, genetic, cultural and other determinants will be discussed. Students will learn about laboratory-based methods used in addiction research, common pharmacotherapies used to manage alcohol and drug addiction, and consider public health issues associated with addiction.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

NROSCI 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 12
Students doing laboratory research with a neuroscience faculty member should register for this course.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
Students doing laboratory research with a neuroscience faculty member should register for this course.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 12
Students working on their dissertation may register for this course.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Neuroscience (PHD)

NROSCI 3019 - SEMINAR IN AUTONOMIC FUNCTION

Minimum Credits: 1
Maximum Credits: 3
Students discuss research articles published recently in the general area of autonomic function. The goal of the course for the students is to gain perspective on this ongoing research, and more generally to receive instruction on how to critically evaluate the scientific literature.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 3030 - SEMINARS IN SYNAPTIC FUNCTION

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: PLAN: Neuroscience (MS, PHD)

Nuclear Engineering

NUCE 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
Provides an introduction to application of theory to practical aspects of nuclear science and technology. It is intended as a ramp-up course for non-nuclear engineers who wish to pursue additional graduate level courses in nuclear engineering at the University of Pittsburgh. Graduate level content will be assured by the use of rigorous quantitative homework assignments, take-home exams, and an individual research project to be presented at the end of the semester. This course is designed to accommodate working adults who must travel from time to time though it is not designed to be taken completely asynchronously. Topics will include: atomic and nuclear physics, nuclear reactions and radiation, radiation protection, fission reactor basics, neutron diffusion, time-dependent reactors, reactor thermal-hydraulics including nuclear heat generation, conductive and convective heat transfer, ideal and non-ideal fuel rod analysis, thermodynamics, and a review of major nuclear criticality and power plant accidents.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2101 - NUCLEAR CORE DYNAMICS

Minimum Credits: 3
Maximum Credits: 3
This course reviews the mathematics of nuclear reactor kinetics. Linear systems of ordinary differential equations are solved by state vector techniques, laplace transform techniques, or finite difference techniques including the treatment of discretization errors resulting from various finite differencing approximations. A review of the physics of nuclear kinetics is followed by treatments of the kinetics equations including the effect of uncertainties, approximate solutions, and the interpretation of experiments to measure kinetics parameters. Representations and the physical basis of reactivity feedback mechanisms are treated. Lumped and distributed parameter models of fuel, coolant, fission products are derived and applied to develop quantitative static relationships and qualitative dynamic results for transient conditions. The course provides an introduction to space dependent reactor kinetics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL

Minimum Credits: 3
Maximum Credits: 3
This course provides an integrated engineering examination of a nuclear power plant from the perspective of instrumentation and control systems used to infer the condition of the nuclear plant and its systems, control its normal operation, and provide protection during transient situations as well as assess core damage during severe accident situations. Students will apply previous knowledge of analog, digital, and microprocessor electronics techniques to nuclear power plant design and operation and reactor protection and safety considerations that influence the design of the reactor plant. A major outcome of this course will be an integrated understanding of the interaction between the physics of nuclear plant control (reactivity and heat balance) and the control and protection systems. This integrated plant understanding will be essential for the successful completion of the integrated nuclear power plant operations course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE

Minimum Credits: 3
Maximum Credits: 3
This course examines design bases for major systems and components in a nuclear plant and evaluates how the systems function in an integrated fashion. The student will examine a typical nuclear power plant and those components and systems of the nuclear plant complex that have the potential for affecting core power, and whose failure could be an initiating event for a plant transient. Dynamic relationships for the systems developed in the companion nuclear courses will be transformed into stable, numerical algorithms for computer solutions and system interactions will be illustrated using a major industry transient analysis code. Emphasis is on how operations of and faults in systems and components can influence reactivity and core behavior. Through classroom discussions the students will assess engineering problems and operational problems that have been experienced in historical nuclear plant operations. The intended outcome is an aptitude for predicting complex transient behavior of the integrated nuclear plant considering factors that are important for safe and efficient operation: reactivity management and control, coolant inventory control, and core heat removal.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2104 - NUCLEAR OPERATIONS AND SAFETY

Minimum Credits: 3
Maximum Credits: 3
Nuclear power is an abundant and renewable power source with unique characteristics which require special attention in its design, licensing and operation. This course explains the fundamental plant processes: nuclear fission, neutron kinetics, heat transfer, chemistry and feedback mechanisms, showing how variations in one plant parameter can propagate effects in the others in ways not seen in fossil, solar, wind, or other systems. The student will also learn methods for analyzing these processes, and the relationship of their features to normal and off-normal plant operations, up to and including postulated severe accidents. Both deterministic analysis and Probabilistic Risk Assessment (PRA) will be employed, with exercises provided in both approaches. Similar concepts will also be applied to the design, manufacture and utilization of nuclear fuel. Stress is placed throughout on the defense in depth concept, and the nuclear safety cultural approach - a necessary point of view regarding how tasks are approached and conducted, whether they be analytical or operational.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS

Minimum Credits: 3
Maximum Credits: 3
This course promotes understanding of how the integrated nuclear plant works and what challenges the operator faces, and helps an engineer 'speak operations' with interfacing groups. Use of the replica simulator is an effective way for students to understand accident control, emergency operating procedures, and how the control room interfaces with the rest of the plant. Emphasis is placed on understanding plant characteristics and controls, rather than on developing control manipulation skills. Intended outcomes are an aptitude for predicting transient behavior of the integrated plant and a command of reactivity management and control that is important for efficient operation of a nuclear plant complex. The course presumes knowledge of the major systems in a nuclear power plant and will emphasize how operations of and faults in those systems and components can affect reactivity and core transient behavior.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2108 - CYBERSECURITY-BY-DESIGN FOR OPERATIONAL TECHNOLOGY SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to cybersecurity-by-design practices for operational technology (OT) systems. An OT system is the hardware and software used to monitor, control, and automate physical processes in industrial environments. OT systems were traditionally designed

for reliability and safety, not cybersecurity; however, the increasing digitization and connectivity of these systems have exposed them to sophisticated cyber threats. Students will learn to integrate cybersecurity engineering with other aspects of OT system design to achieve "security-by-design". Students will learn the fundamental principles of OT systems and OT cybersecurity, then apply those principles through a series of hands-on research projects aligned with the design of a high-stakes OT system. Topics include threat modeling, risk assessment, consequence analysis, defensive cybersecurity architecture design, and adversary task analysis. Cybersecurity-by-design is a multi-disciplinary challenge - students of all engineering disciplines are encouraged to participate.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUCE 2110 - NUCLEAR MATERIALS

Minimum Credits: 3
Maximum Credits: 3
In this course, materials principles are taught in the initial lectures; students do not need to have prior understanding of them. The course will cover the metallurgy and phase diagrams of alloy systems important in the design of commercial nuclear power plants. The micro-structural changes that result from reactor exposure (including radiation damage and defect cluster evolution) are discussed in detail. The aim is to create a linkage between changes in the material microstructure and changes in the macroscopic behavior of the material. Also discussed is the corrosion of cladding materials as well as the effects of irradiation on corrosion performance, and the effects of primary and secondary coolant chemistry on corrosion. Both mathematical methods and experimental techniques are emphasized so that theoretical modeling is guided by experimental data. Materials issues in current commercial nuclear reactors and materials issues in future core and plant designs are covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
Nuclear and radiochemistry are subdisciplines of nuclear science that focus on the study of radioactive materials and their applications. The course will provide students with knowledge of fundamental nuclear science concepts that are key to the understanding of nuclear power plant safety, spent fuel and nuclear waste management, nuclear fuel reprocessing, environmental radioactivity, nuclear forensics, radionuclide production, medical imaging, nuclear pharmacy, and medical and health physics. The proposed course will consist of lectures on nuclear science fundamentals that include: atomic structure, nuclear models and properties, phenomenon of radioactive growth and decay, radiation emissions, nuclear reactions, radiation interactions with matter, radiation detection and measurement, radiation dosimetry and biological effects, and applications of nuclear and radiochemistry in science, engineering, and medicine.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2113 - RADIATION DETECTION AND MEASUREMENT

Minimum Credits: 3
Maximum Credits: 3
This combined lecture and laboratory course will provide students with an introduction to the principles of radiation detection and measurement and experimental techniques. The lecture material will provide students with an understanding of the theoretical basis of detector operation, radiation interactions with matter, signal conditioning and processing electronics, measurement techniques, and statistical considerations. Laboratory work will emphasize the practical aspects of radiation detection using an array of radioactive sources, detectors, and associated signal processing electronics. Through a series of laboratory experiments, students will learn to configure and operate instrumentation used in a wide range of radiation detection applications that are of interest to nuclear power, nuclear medicine, radiochemistry, and other scientific disciplines.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: ME 2100 or ENGR 2100; PROG: Swanson School of Engineering (PENGR)

NUCE 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS

Minimum Credits: 3
Maximum Credits: 3
This course provides advanced knowledge to promote understanding and application of thermal and hydraulic tools and procedures used in reactor plant design and analysis. It assumes that the student has a fundamental knowledge base in fluid mechanics, thermodynamics, heat transfer and reactor thermal analysis. The focus of the course is on physical and mathematical concepts useful for design and analysis of light water nuclear reactor plants. Applications of mass, momentum, and energy balances are combined with use of water properties to analyze the entire reactor plant complex as a whole.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY

Minimum Credits: 3
Maximum Credits: 3
BWR Thermal-Hydraulics and Safety is a course that focuses on the Boiling Water Reactor (BWR), design, operation, transient response, and abnormal operating conditions and accidents; boiling water heat transfer and two-phase flow; applications with respect to the Fukushima Daiichi BWRs. The course will cover the evolution of BWR systems including BWR features and characteristics and containment configurations. Thermal-hydraulics (T/H) and safety portions of the lectures cover boiling heat transfer and two-phase flow in BWR systems, T/H performance and thermal limits. BWR abnormal operating conditions and accidents are studied in theoretical response followed by hands-on simulator program exercises. Finally, accident evaluations and overview of the state-of-the-art safety analysis techniques for licensing applications are reviewed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2118 - COMPUTATIONAL RADIATION TRANSPORT

Minimum Credits: 3
Maximum Credits: 3
This course provides an in-depth review of modern computational techniques used for solving the linear boltzmann equation, with specific applications to neutron and photon radiation transport problems. Topics to be covered include: an introduction to the physical processes that govern radiation transport through materials, monte carlo methods for the simulation of radiation transport, a first-principles derivation of the boltzmann radiation transport equation for multiplying and non-multiplying systems, the multi-group, diffusion, and discrete ordinates approximations to the transport equation, expansion of the scattering kernel in legendre polynomials, and numerical methods for approximating solutions to the transport equation. In addition, the course will review many commonly used numerical methods for solving integral and differential equations, including: finite differencing, numerical quadrature, harmonic analysis, and the power method for solving eigenvalue problems. Topics covered in the class will be reinforced with weekly programming exercises designed to illustrate the different methods for solving the boltzmann radiation transport equation and demonstrate how these methods can be used to solve realistic problems related to nuclear reactor and radiation shielding analysis. The course will also places a strong emphasis on formal quality assurance methods (and best-practices) for the development, verification, and validation of scientific computer codes intended for use in engineering design calculations of record.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2120 - MATHEMATICALL MODELING OF NUCLEAR PLANTS

Minimum Credits: 3
Maximum Credits: 3
Graduate students will develop the graphics/simulation framework and the underlying mathematical models for simulating nuclear power plants in ME/ENGR 2120 mathematical modeling of nuclear plants. Models will be developed in Matlab/Simulink(tm) and configured to run on a PC so that students can both examine the mathematical models on which the simulation is based and use the simulation program in laboratory-like sessions to study the effect of design changes on plant behavior. The simulation model fidelity developed is suitable for educational purposes and provides students with a desktop tool to realistically model and better understand reactor performance under various conditions. While it would not be intended to replace or duplicate the high-fidelity dynamic simulation used in major accident analysis codes such as Relap, Trac, and Trace, the course will provide the student with an introduction and a working knowledge what is embodied in these industry standard codes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER

Minimum Credits: 3
Maximum Credits: 3
This course will teach management theory and best practices associated for a successful manager in the nuclear industry. The following topics presented and discussed: management theory and practice; ethics; generation economics across the U.S.; dispatch curves; implications of economic factors for existing and new nuclear plants and likely future changes; compensation theory and best practices; labor law issues and challenges common to the nuclear industry; contract law issues and challenges in the nuclear industry; management techniques for dealing with the diverse age groups; change management techniques and best practices in corporations; ethics challenges and issues in the nuclear field; management interactions with inpo and the nrc; project management techniques and practices; management's role in nuclear safety and security culture. Case studies of actual business situations will be studied.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS

Minimum Credits: 3
Maximum Credits: 3
Presentation of major issues associated with systems and component engineering relative to the nuclear power industry and the industry's consensus codes and standards. The course provides an explanation of the necessity of consensus codes and standards, a high-level view of codes and standards organizations, and shows how codes and standards promotes the safe operation of nuclear power plants. The course discusses how the NRC adopts and makes use of consensus codes and standards. It covers codes and standards for current, advanced and next generation, and high-temperature reactors, including global conformity assessment requirements. Relevant codes and standards from other communities, including nuclear quality assurance, are also summarized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

NUCE 2130 - THE NUCLEAR FUEL CYCLE

Minimum Credits: 3
Maximum Credits: 3
Studies the entire nuclear fuel cycle, beginning with the mining of uranium ores and progressing through the chemical and physical processes supporting enrichment, subsequent chemical conversion to uranium dioxide, and design and fabrication of fuel assemblies for use in a power reactor core. Aspects associated with fuel core management, operation and utilization in the reactor core along with the

regulatory licensing requirements are presented. Following fuel operation the areas of fuel onsite handling, transportation of spent nuclear fuel and options for diverse long term secure storage are reviewed and evaluated. Reprocessing and recycling are discussed which includes fuel resource utilization, proliferation control, and waste volume minimization. Discussion of regulatory issues completes the picture, enabling the student to understand not only the processes, economics and industry drivers, but also the benefits and issues that have been addressed with nuclear power generation. In all phases of the cycle, the student is acquainted with the quantitative techniques and methods employed in the nuclear fuel cycle.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (ME 2100) or (ENGR 2100); PROG: Swanson School of Engineering (PENGR)
Course Attributes: MCSI - Sustainability Related

NUCE 2131 - METAL COOLED REACTORS

Minimum Credits: 3
Maximum Credits: 3
This course is intended to provide you with an understanding of the technology associated with high-energy neutron reactors (most often called fast reactors). The course materials consist primarily of archival papers from literature, the GENIV International Forum materials, my slides, and the time we spend together during lectures; a bibliography of papers relevant to these reactors is provided in the course syllabus. Although many nations' sodium-cooled reactor programs continue to be based on oxide fuel, there is a better way metal fuel. In this course, the student will become more aware of the state of high-energy neutron reactor technology. Moving nuclear power from low-energy neutron fission (water-cooled reactors) to high-energy neutron fission (metal-, salt-, or gas-cooled reactors) will revolutionize fission, just as jet engines and fracking revolutionized commercial air transportation and oil/gas production, respectively. We will focus on metal-cooled high-energy neutron reactors, but you can easily transpose this knowledge to salt or gas systems
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUCE 2132 - BOILING WATER REACTOR SYSTEMS AND SAFETY

Minimum Credits: 3
Maximum Credits: 3
This course will review the fundamentals of boiling water reactor systems and operations as they apply to analysis, design, selection and application of power generation. The course will cover the evolution of BWR systems including BWR features and characteristics and containment configurations. With successful completion of the class students will understand how BWRs operate throu
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Nurse Anesthesia

NURSAN 2632 - Nurse Anesthesia Care Delivery in Southeast Asia

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide graduate nurse anesthesia students with exposure to the culture, disease processes and health care delivery systems in Southeast Asia. Emphasis will be placed on comparing health care delivery in Southeast Asia with health care provided in the United States. In addition, the impact of health-related organizations (i.e., WHO, USAID, World Bank, WPRO) on health care will be included. The impact of armed conflict and the recent history of Southeast Asia will be viewed in terms of the impact on public health. Barriers to surgical and anesthesia care in countries such as Cambodia and Lao People's Democratic Republic (PDR) will be compared to access to surgical care in other Association of Southeast Asian Nations (ASEAN).
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

NURSAN 2715 - ADVANCED PRACTICE INITIATIVES FOR THE CRNA

Minimum Credits: 3
Maximum Credits: 3
Course focuses on the expansion of the knowledge base and refinement of practice skills of experienced CRNA's. Stu dents identify an area of study in the field of nurse anesthesia in which they wish to improve knowledge and clinical expertise. Students develop and implement a comprehensive plan which includes establishing specific goals, developing a program of independent study, negotiation of a clinical practice site and completion of a defined clinical practicum. Objectives are met thru a learning contract, an oral and poster presentation and a written scholarly paper.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2785 - THESIS

Minimum Credits: 1
Maximum Credits: 3
Individual instruction provides guidance in the preparation of a scholarly written report relating to anesthesia nursing. This report synthesizes the components of a research project; review of literature, methodology, presentation and discussion of findings, application of appropriate statistical measures, and conclusion.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2792 - CLINICAL PRACTICUM

Minimum Credits: 0
Maximum Credits: 0
This second clinical course is designed to integrate with more advanced didactic coursework with focus on physiology and pathophysiology applied in anesthesia practice. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to more complicated cases and will be required to meet or exceed level specific objectives. Clinical experiences will be guided by certified registered nurse anesthetists and anesthesiologists.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2793 - CLINICAL PRACTICUM

Minimum Credits: 0
Maximum Credits: 0
This third clinical course is designed to build on more advanced didactic coursework including focus on pathophysiology, applied pharmacology and specialty case management. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to increasingly complicated cases and will be required to meet or exceed level specific objectives. Clinical experiences will be guided by certified registered nurse anesthetists and anesthesiologists.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2795 - CLINICAL PRACTICUM

Minimum Credits: 0
Maximum Credits: 0
This fifth clinical course is designed to assist the nurse anesthesia student to apply concepts from didactic coursework including focus on neurosurgical, trauma, orthopedic, renal transplant and hepatic transplant anesthesia. Students will apply advanced principles of fluid and blood management and demonstrate the ability to treat perioperative hematologic disorders. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to increasingly complicated and specialty cases and will be required to meet or exceed level specific objectives. Clinical experiences will be guided by certified registered nurse anesthetists and/or anesthesiologists.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2796 - CLINICAL PRACTICUM

Minimum Credits: 0
Maximum Credits: 0
This sixth clinical course is designed to assist the nurse anesthesia student to synthesize content from all advanced principles courses and to become increasingly independent in their clinical practice. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to increasingly complicated and specialty cases and will be required to meet or exceed level specific objectives. Clinical experiences will be guided by certified registered nurse anesthetists and/or anesthesiologists.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 3751 - TEAM TRAINING IN PATIENT SAFETY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide the student with a theoretical and practical foundation relating to human factors, crew resource management and team performance issues that impact patient safety. Information and skills gained in this course will prepare the student to function as a patient advocate in a multidisciplinary environment and implement team-based strategies designed to promote patient safety. Crisis management protocols and communication algorithms e.g., Situation-background-assessment-recommendation (SBAR) will be used as examples.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSAN 3752 - TEAM TRAINING IN PATIENT SAFTEY IN ANESTHESIA

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide the student with a theoretical and practical foundation relating to human performance, simulation education, team training science and team performance issues that impact patient safety. Information and skills gained in this course will prepare the student to function as a patient advocate in a multidisciplinary environment and implement team-based strategies designed to promote patient safety. Critical event management, team training approaches, simulation educational methods and human performance analysis will be used to support group discussion and inform course assignments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSAN 3753 - INTRODUCTION TO IMPLEMENTING SCHOLARLY PROJECTS FOR THE NURSE ANESTHETIST

Minimum Credits: 1
Maximum Credits: 1
Translational and implementation science methods will be used to inform best practices for implementing scholarly projects appropriate to the Nurse Anesthetist. Translational science components of the course will include gaining experience with the use of tools to score the quality of evidence in support of scholarly projects. The implementation science component of the course will include review of theories and best practices proven effective in application of evidence in the practice setting and in enhancing sustainment. An additional component of this course will include an introduction to assessment and evaluation methods including the development or modification of instruments intended to measure process indicators and/or patient outcomes associated with scholarly projects. Common statistical software used in project data analysis will also be reviewed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NUR 3031 or 3031D

NURSAN 3782 - DIRECTED SEMINARS IN NURSE ANESTHESIA PRACTICE

Minimum Credits: 1
Maximum Credits: 3
This seminar based course series is designed to provide the nurse anesthesia program DNP student with a strong theoretical and practical foundation grounded in nurse anesthesia science. In consultation with their faculty advisor, students will choose from among four different areas of focus including nurse anesthesia education, nurse anesthesia simulation methods, clinical research for the nurse anesthetist, and nurse anesthesia administration. The seminar series focus and content will change according to current state of-the-art practice in nurse anesthesia with consideration given to faculty and student areas of interest.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 3783 - REGULATION AND REIMBURSEMENT IN NURSE ANESTHESIA PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course examines the current regulatory requirements of governmental and non-governmental entities that impact and control nurse anesthesia practice. Approaches to influence positive changes in this practice discipline are explored. The generation of revenue in the specialty of anesthesia, including billing procedures and requirements of governmental and private health insurance providers, effective departmental organizational structure, and fraud are discussed. Current legal and advanced professional issues are included
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Hybrid

NURSAN 3784 - CURRICULUM, INSTRUCTION AND EVALUATION IN NURSE ANESTHESIA EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course will prepare CRNAs for the various roles of an educator within a nurse anesthesia program. Concepts of academic and clinical curriculum development specific to nurse anesthesia programs, best practice methodologies for clinical and didactic instruction, and evaluation approaches for academic and clinical performance will be included.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Hybrid

NURSAN 3785 - INTRODUCTION TO THE NURSE ANESTHETIST ROLE

Minimum Credits: 1
Maximum Credits: 1
This introductory course will provide student socialization into the role of nurse anesthesia practice and prepares the student for more advanced content within curriculum. This course provides fundamental concepts related to the professional role, anesthesia types and anesthesia processes. Safety principles essential to preventing negative outcomes for both patients and providers will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia; CREQ: NURSAN 3099

NURSAN 3786 - BASIC PRINCIPLES OF ANESTHESIA

Minimum Credits: 3
Maximum Credits: 3
This course prepares the student for entry into the clinical practice setting by presenting fundamental concepts of general, regional, pain management, and sedation anesthesia. Airway management techniques, positioning, and an introduction to anesthetic pharmacology are emphasized. Anesthetic management strategies for patients with common diseases and perioperative problems are examined.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia

NURSAN 3787 - BASIC PRINCIPLES OF ANESTHESIA LAB

Minimum Credits: 1
Maximum Credits: 1
This course provides students with necessary skills to enter clinical practice. Psychomotor, critical thinking and affective skills will be developed using a variety of experiential learning approaches. Best practices in simulation educational methods will be used and will include a variety of approaches. Students will demonstrate attainment of entry level skills required for clinical practice.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia

NURSAN 3788 - CHEMISTRY AND PHYSICS IN ANESTHESIA

Minimum Credits: 2
Maximum Credits: 2
This course provides the nurse anesthesia student with a fundamental understanding of chemical, biochemical and physics principles as they relate to physiology, pharmacology and the practice of anesthesia. Essential concepts related to chemistry and physics principles necessary to provide safe and effective anesthesia care are emphasized. Chemistry and physics concepts will be related to anesthesia equipment and processes in order to illustrate their importance to practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia

NURSAN 3789 - PHYSICAL DIAGNOSIS- ANESTHESIA

Minimum Credits: 1
Maximum Credits: 1
This course offers students the skills required for conducting a preoperative anesthesia history and physical (H&P) exam, identifying risk factors (anesthetic, patient, surgical), developing a relevant anesthetic management plan and writing appropriate post-operative orders. Students will gain skill in interpreting pre-operative diagnostic tests and lab values. Students will gain familiarity with the Electronic Medical Record and charting skills. Students in this course will also develop in the areas of enhancing patient and family relations as well

as health screening and intervention. Students will participate in immersive educational approaches utilizing standardized patients and structured debriefing methods.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia (DNP)

NURSAN 3790 - BASIC CLINICAL CARE 1: INTRO TO TECHNOLOGY, MONITORING, AND PRACTICE

Minimum Credits: 1
Maximum Credits: 1
This initial clinical course is designed to integrate with basic didactic coursework. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be introduced to basic level anesthesia technology and equipment, medications, monitoring procedures, and the perioperative environment. Experiences will begin with simple cases and techniques and build to more complex ones. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and/or Anesthesiologists. Clinical case conferences and ongoing assessments will be conducted to evaluate the students' ability to apply basic didactic coursework into clinical anesthesia care.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Nurse Anesthesia; CREQ: NURSAN 3786

NURSAN 3791 - ADVANCED PRINCIPLES ANATOMY, PHYSIOLOGY & PATHOPHYSIOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
This first course in a 2- course series is designed to help students understanding of advanced concepts in Anatomy, Physiology and Pathophysiology related to anesthesia care. Advanced principles of patient management supported by best evidence will be applied to the clinical practice of nurse anesthesia across a variety of body systems and surgical procedures. Students will formulate and evaluate approaches to anesthesia management in the presence of pathophysiologic conditions affecting the Central Nervous System (CNS), neuromuscular, cardiovascular, respiratory, skeletal, and immune systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSAN 3792 - BASIC CLINICAL CARE 2: BASIC PRE-OPERATIVE, INTRAOPERATIVE, AND POST-OPERATIVE CARE

Minimum Credits: 1
Maximum Credits: 1
This second clinical course promotes development of skills gained in NURSAN 3790 and integrates prior basic didactic content with more advanced concepts. The primary focus will be on the application of physiology and pathophysiology into anesthetic practice. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas as well as increasingly complicated cases. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and Anesthesiologists. Clinical case conferences will be conducted to assess the students' ability to combine more advanced didactic content into patient specific perioperative anesthesia care.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Nurse Anesthesia

NURSAN 3793 - ADVANCED PRINCIPLES OF ANESTHESIA 1

Minimum Credits: 3
Maximum Credits: 3

This course is the first in the three-part Advanced Principles series which provides in-depth study of specialized areas of nurse anesthesia practice. Lectures will concentrate on the theoretical basis for specific anesthesia nursing interventions and the rationale for their use in the pediatric and obstetric specialties. Concepts related to regional anesthesia, acute pain management and chronic pain management will be reviewed. Plans of care for pediatrics, obstetrics, patients requiring regional anesthesia and pain patients will be developed and evaluated. Current techniques and technologies related to management of regional anesthesia and pain blocks will be reviewed and reinforced with a variety of simulation experiences (hands-on, screen based, virtual).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSAN 3795 - ADVANCED PRINCIPLES OF ANATOMY, PHYSIOLOGY, AND PATHOPHYSIOLOGY 2

Minimum Credits: 2
Maximum Credits: 2
This second course in the series is designed to review the relevant anatomy and physiology of the endocrine, renal, hepatic, gastrointestinal, (and other intraabdominal organ), immune, hematologic and genitourinary systems. Students will develop in-depth understanding of how pathophysiology involving these systems will influence anesthetic choices and management approaches. Referencing best-evidence and clinical protocols, students will describe management approaches for surgical and therapeutic procedures related to these systems. Additionally, the pathophysiology of psychiatric illness, infectious disease, cancer and obesity will be reviewed and approaches to anesthesia care in the presence of these conditions will be developed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3791; CREQ: NURSAN 3797

NURSAN 3796 - ADVANCED PHARMACOLOGY FOR NURSE ANESTHETISTS

Minimum Credits: 3
Maximum Credits: 3
This course provides the basis for in-depth understanding of the pharmacology of clinical anesthesia practice. Specific properties of anesthetic agents and commonly used adjunctive drugs are discussed and evaluated for appropriate application in clinical situations. Development of a comprehensive knowledge base with respect to drugs used by the Nurse Anesthetist in the clinical setting will be achieved through lecture, presentation, situational examples, and case analysis. Students will formulate specific pharmacologic plans through synthesis of a variety of concepts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia

NURSAN 3797 - ADVANCED CLINICAL CARE 1: PAIN MANAGEMENT, ULTRASOUND, REGIONAL ANESTHESIA, PEDIATRICS, & OBSTERIC

Minimum Credits: 1
Maximum Credits: 1
This third clinical course is designed to begin integrating more advanced clinical concepts into the clinical experience. Primary focus will be on application of the principles of advanced physiology, pathophysiology and applied pharmacology to management of increasingly advanced clinical cases. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and Anesthesiologists. Supplemental clinical case conferences will focus on the students' ability to integrate more advanced didactic content into patient specific clinical anesthesia care. Particular emphasis will be placed on discussion of approaches to pain management, regional anesthesia, obstetrics and pediatrics.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3792; CREQ: NURSAN 3793

NURSAN 3798 - ADVANCED PRINCIPLES OF ANESTHESIA 2

Minimum Credits: 3
Maximum Credits: 3
The second course in the Advanced Principles series provides in-depth study of specialized areas of Nurse Anesthesia Practice. Lectures concentrate on the theoretical basis for specific interventions and relevant research-based rationale for their use in each area of sub specialization. Planning for the anesthetic care of patients with diseases requiring cardiothoracic, pulmonary, vascular, gynecologic, genitourinary and transplant (heart and lung) procedures is the focus. Current techniques and technology related to safe management of care for patients undergoing these procedures will be reviewed. Incorporated interactive workshops using models and mannequins will allow skill development in the areas of fiberoptic bronchoscopy, jet ventilation, Double Lumen Endobronchial Tube placement (DLEBT) and Central Venous Catheter insertion. Skills in scientific writing for publication in preparation for Capstone project completion will be developed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NURSAN BSN-DNP

NURSAN 3799 - DIRECTED SEMINAR: THE BSN TO DNP STUDENT ANESTHETIST

Minimum Credits: 1
Maximum Credits: 1
This seminar based course is designed to provide the Nurse Anesthesia Program DNP Student with a strong theoretical and practical foundation grounded in Nurse Anesthesia science. In consultation with their faculty advisor, students will choose from among four different areas of focus including Nurse Anesthesia Education, Nurse Anesthesia Simulation Methods, Clinical Research for the Nurse Anesthetist and Nurse Anesthesia Administration, and nurse anesthesia policy. The focus and content will change according to current state 'of-the-art practice in Nurse Anesthesia with consideration given to faculty and student areas of interest, to include international practice in developing countries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3794; CREQ: NURSAN 3800

NURSAN 3800 - NURSE ANESTHETIST ROLE SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This course prepares the nurse anesthesia student for their new role as a CRNA and Advanced Practice Registered Nurse. Areas of professional responsibility and potential professional roles will be addressed including APRN, educator, military member, consultant, self-employed practitioner, CRNA clinician, leader, change agent, organizational leadership position and administrator. Licensure, accreditation, certification and educational requirements for CRNAS as APRNS will be reviewed. Pathways to active involvement in community service and legislative advocacy will be discussed and analyzed. Legal, financial, malpractice and ethical issues related to nurse anesthesia practice will be addressed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia

NURSAN 3801 - ADVANCED CLINICAL CARE 2: CARDIOTHORACIC, CARDIOVASCULAR AND VASCULAR

Minimum Credits: 1
Maximum Credits: 1
This fourth clinical course is designed to assist the nurse anesthesia student to integrate advanced clinical concepts being covered concurrently in the classroom with the clinical experience. Primary focus will be on specialty case management, including cardiovascular, thoracic, and vascular anesthesia. Advanced airway techniques and sophisticated laboratory analysis will be included. Students will be

assigned to affiliated clinical sites and anesthesia related specialty areas to manage increasingly complicated and specialty cases. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and/or Anesthesiologists. Supplemental clinical case conferences will be conducted with focus on these specialty populations These conferences will correspond to current didactic courses.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Nurse Anesthesia; CREQ: NURSAN 3798

NURSAN 3802 - ADVANCED PRINCIPLES OF ANESTHESIA 3

Minimum Credits: 3
Maximum Credits: 3
The third course in the Advanced Principles series provides in-depth study of specialized areas of Nurse Anesthesia Practice. Lectures concentrate on the evidence base for specific anesthetic and surgical interventions. Anesthetic approaches and management plans for patients with traumatic injuries, burns (across the lifespan), alterations of hemostasis, hematologic disorders and neuropathology and pulmonary conditions will be reviewed. Neurosurgical, diagnostic radiology, solid organ transplant (renal, hepatic etc.) trauma, reconstructive and plastic surgery procedures will be reviewed. Current techniques and technology related to safe management of care for patients undergoing procedures involving these areas will be examined. Interactive workshops in managing trauma and performing invasive and non-invasive procedures will allow development of psychomotor skills in caring for burn and trauma patients. This course will also focus on principles of scientific writing for publication.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSAN 3803 - ADVANCED CLINICAL CARE 3: NEUROSURGICAL, TRAUMA, AND EMREGENCY

Minimum Credits: 1
Maximum Credits: 1
This fifth clinical course builds upon experiences gained in NURSAN- 3801 and prior courses. The focus will be on demonstration and refinement of more advanced skills as well as incorporating content from concurrent didactic coursework into patient care. Students will demonstrate the ability to implement patient specific plans of care for neurosurgical, neurovascular, and trauma, renal, hepatic and emergency procedures. Students will also demonstrate the ability to manage complex pathophysiology. Students will gain an awareness of the broader professional roles and responsibilities of the CRNA (administrative, patient advocacy, process and patient safety evaluator). Supplemental clinical case conferences will be conducted with focus on these specialty populations and the CRNA role.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3801; CREQ: NURSAN 3802

NURSAN 3804 - ADVANCED CLINICAL CARE 4: SYNTHESIS OF PERIOPERATIVE CARE

Minimum Credits: 2
Maximum Credits: 2
This sixth clinical course builds upon experiences gained in NURSAN- 3803 and prior courses and is designed to help the student refine their knowledge base and develop increasing sophistication in practice. Students will be able to provide care for any combination of patient acuity level and complexity of procedure across the lifespan. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and/or Anesthesiologists. Integrated clinical case conferences will require students to present their patients and defend their plan of care with rationale based on best practices.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3803

NURSAN 3805 - COMPREHENSIVE ANESTHESIA REVIEW SEMINAR

Minimum Credits: 2
Maximum Credits: 2
This course is designed to comprehensively review the body of knowledge necessary to enter Nurse Anesthesia practice. Nurse Anesthesia student preparation for both the DNP Comprehensive Examination and the National Board of Certified Registered Nurse Anesthetist National Certification Examination will be enhanced. Review topics will include: Basic Sciences, Equipment, Instrumentation, Technology, Basic Principles of Anesthesia and Advanced Principles of Anesthesia. A series of seminars and presentations interspersed with comprehensive, computerized examinations will be administered to allow students to evaluate their knowledge level and their test taking skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia

NURSAN 3806 - TRANSITION TO CLINICAL PRACTIC

Minimum Credits: 2
Maximum Credits: 2
This final clinical course is designed to help the student transition from the student role to clinical practice. Students will be expected to create sophisticated patient and case specific management plans. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and/or Anesthesiologists, but students will be expected to practice with little or no prompting from their clinical supervisors and understand their limitations. Clinical experiences will include specialty cases and experiences in all areas of practice as assigned. Clinical case conferences will be held that challenge the breadth of the students' knowledge base across the full scope of the clinical and professional role of the CRNA.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Nurse Anesthesia

NURSAN 3807 - TRANSITION TO CLINICAL PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This final clinical course is designed to help the student transition from the student role to clinical practice. Students will be expected to create sophisticated patient and case specific management plans. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and/or Anesthesiologists, but students will be expected to practice with little or no prompting from their clinical supervisors and understand their limitations. Clinical experiences will include specialty cases and experiences in all areas of practice as assigned. Clinical case conferences will be held that challenge the breadth of the students' knowledge base across the full scope of the clinical and professional role of the CRNA.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURSAN 3804; CREQ: NURSAN 3805

NURSAN 3808 - Health and Wellness for the Nurse Anesthetist

Minimum Credits: 1
Maximum Credits: 1
This course will critically analyze the health and wellness literature, with emphasis on the healthcare workplace, the healthcare workforce, and the impact on nurse anesthesia providers specifically. Identification and management of risk factors for stress, burnout, depression, suicide, and addiction among nurse anesthesia professionals will be a primary focus. Evidence-based models for wellness and resilience development will be analyzed. Models of addiction and resources for recovery will be reviewed. Current technologies and approaches related to support of wellness and management of stress and burnout will be reviewed and reinforced with a series of engaging wellness, resilience and stress management exercises that will be conducted during the course.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

NURSAN 3809 - NURSE ANESTHESIA CLINICAL PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
This clinical practicum is designed for practicing Certified Registered Nurse Anesthetists (CRNAs) enrolled in the MSN-to-DNP program who are seeking academic credit for clinical practice completed in their professional role. Students will document and reflect upon contemporary anesthesia practice while demonstrating advanced clinical judgment, evidence-based decision-making, patient safety, professionalism, and interprofessional collaboration. Successful completion of the course validates continued achievement of advanced clinical competencies expected of doctoral-prepared nurse anesthetists through verified clinical practice and scholarly reflection.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

Nurse Midwife

NURNM 3500 - AMBULATORY ROLE PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
This course targets the implementation of evidence-based practices and interventions that serve as the basis for the nurse midwifery care of health conditions associated with pregnant and non-pregnant women within ambulatory healthcare settings. The implementation of culturally sensitive and appropriate gynecological, antepartal, and postpartum care drawn from diverse theoretical frameworks is also a primary focus of the course.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURNM 3507 and NURNM 3513; CREQ: NURNM 3511; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3501 - GLOBAL/COMMUNITY ROLE PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This practicum focuses on nurse midwifery assessment of various community level women's and maternal-child health issues and planning for intervention. Public health, epidemiologic, ethical and legal considerations are applied to critiquing proposed projects.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNM 3508 and NURNM 3509; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3502 - HIGH RISK CHILDBEARING FAMILY

Minimum Credits: 4
Maximum Credits: 4
This course targets evidence based-practices and interventions that serve as the basis for family-centered nurse midwifery care of high risk conditions associated with pregnancy, labor and delivery, postpartum, and the neonatal period. Theories related to the woman's and family's experience associated with a high risk pregnancy are discussed and examined.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNM 3500; CREQ: NURNM 3504; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3503 - INTEGRATION ROLE PRACTICUM

Minimum Credits: 7
Maximum Credits: 7
This course is the culminating nurse midwifery practicum with the student focusing on the practice of full scope nurse midwifery under the guidance and supervision of a Certified Nurse Midwife preceptor. Full scope nurse midwifery care encompasses counseling and management during the preconception, pregnancy, labor and birth, postpartum, neonatal period, and across the reproductive life cycle within the family.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURNM 3504; CREQ: NURNM 3510; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3504 - LABOR & BIRTH ROLE PRACTICUM

Minimum Credits: 4
Maximum Credits: 4
This practicum targets the nurse midwifery model of care in implementation of evidence-based practices and interventions that serve as the basis for the management of health conditions associated with family-centered pregnancy, labor and birth, postpartum, and the neonatal period. The implementation of culturally sensitive and appropriate antepartal to postpartal to neonatal care drawn from diverse theoretical frameworks is also a primary focus of the course.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURNM 3500; CREQ: NURNM 3502; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3505 - MANAGEMENT FETUS/NEONATE IN DYAD

Minimum Credits: 2
Maximum Credits: 2
This course focuses on nurse midwifery management of the fetus/neonate within the mother-newborn dyad and family. Emphasis is on selected theories, principles, and techniques from the physical and behavioral sciences central to the nurse midwifery model of care for the fetus/neonate. The NM DNP scope of practice with interprofessional collaboration and referral is incorporated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNM 3512; CREQ: NURNM 3507; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3506 - MANAGEMENT WOMEN'S COMPLEX HEALTH ISSUES

Minimum Credits: 2
Maximum Credits: 2
This course focuses on nurse midwifery model of care with women experiencing complex reproductive health issues. Emphasis is on selected theories, principles and techniques from the physical and behavioral sciences central to the nurse midwifery management of women, women's issues, health promotion for women, and diagnosing and managing complicated reproductive health problems. The NM DNP scope of practice with interprofessional collaboration and referral is incorporated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2523 and 2515 and 2505; CREQ: NURNM 3513; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3507 - NEONATAL ROLE PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This practicum focuses on the nurse midwifery model of care for the neonate within the mother-newborn dyad and family. Examination, assessment and management of the neonate from birth through the first 28 days of life are applied in practice.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NURNM 3512; CREQ: NURNM 3505 and NURNM 3513; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3508 - NURSE MIDWIFE GLOBAL AND COMMUNITY HEALTH

Minimum Credits: 1
Maximum Credits: 1
This course is concerned with the role of nurse midwives in population-based health. Public health, epidemiologic, ethical and legal issues applicable to women, newborns, and childbearing families in diverse settings at local, national and international levels will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNM 3509; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3509 - ROLE SEMINAR 1: PROFESSIONAL NURSE MIDWIFE

Minimum Credits: 1
Maximum Credits: 1
This introductory seminar is designed for enculturation to the art and science of the nurse midwifery profession for care of women, newborns, and families in diverse settings. Articulation of nurse midwife (NM) role with the Doctor of Nursing Practice (DNP) will be developed. Midwifery history, philosophy of care, ethics, standards, and competencies will be emphasized in developing the role and scope of NM DNP practice.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NUR 2010 and NUR 3099; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3510 - NURSE MIDWIFE ROLE SEMINAR 2

Minimum Credits: 1
Maximum Credits: 1
This is a culminating seminar emphasizing issues unique to the implementation of the role of the Nurse Midwife (NM) in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice for then DNP care trends, health care needs of women, maternal-infant dyads and childbearing families in diverse environments, and legislative and professional practice issues. Professional, inter-professional, economic, cultural, and legal issues related to NM practice will be emphasized. Identification, assessment, and advanced management of common and complex health problems in specific populations will be addressed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNM 3513; CREQ: 3503; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3511 - NORMAL CHILDBEARING FAMILY

Minimum Credits: 4
Maximum Credits: 4
This course targets evidence-based practices and interventions that serve as the basis for nurse midwife (NM) management of normal and common health conditions associated with pregnancy, labor and delivery, postpartum, and the neonatal period. Theories related to the woman's experience of pregnancy, childbirth, and the taking-on of the maternal identity/role in context of family are also examined.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNM 3505 and NURNM 3506; CREQ: NURNM 3500; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3512 - WOMEN'S HEALTH ROLE PRACTICUM 1

Minimum Credits: 1
Maximum Credits: 1
This is an entry level clinical practicum focused on well-woman care and includes intermediate level seminars that emphasize issues unique to the implementation of the role of the Nurse Midwife (NM) as provider of primary care for women in various settings. This course is designed to develop assessment skills and differential diagnoses with beginning management skills, and to analyze factors that have an impact on advanced nursing practice, emphasizing the scope of practice in NM and DNP health care trends, health care needs in diverse environments, and professional practice issues. Professional, inter-professional, economic, cultural, and legal issues related to NM DNP practice experiences will be emphasized.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURNM 3509 and NURNP 2523; CREQ: NURNP 2515 and 2505; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3513 - WOMEN'S HEALTH ROLE PRACTICUM 2

Minimum Credits: 1
Maximum Credits: 1
This practicum focuses on implementing the nurse midwife (NM) model of care with non-pregnant woman. Examination, assessment, and management of the woman from puberty through menopause will be the focus of this course.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NURNM 3512; CREQ: NURNM 3506 and 3507; PLAN: Nurse Midwife (NURSMW-DNP)

Nurse Practitioner

NURNP 2026 - ROLE SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
This is an introductory seminar emphasizing issues unique to the implementation of the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, health care needs in diverse environments, and professional practice issues. Professional, economic, cultural, and legal issues related to nurse practitioner practice will be emphasized.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

NURNP 2026D - ROLE SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
This is an introductory seminar emphasizing issues unique to the implementation of the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, health care needs in diverse environments, and professional practice issues. Professional, economic, cultural, and legal issues related to nurse practitioner practice will be emphasized.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURNP 2028 - ROLE PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
This course is designed to provide each student with a practicum experience in role development for the nurse practitioner. Experiences emphasize clinical decision making in an interprofessional environment with a focus on the nurse practitioner as a principal provider of care for individuals with population specific health care needs and conditions.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Nursing

NURNP 2029 - ROLE SEMINAR 2

Minimum Credits: 2
Maximum Credits: 2
This is a culminating seminar emphasizing issues unique to transitioning to the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, and legislative and professional practice issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2026 or 2026D

NURNP 2029D - ROLE SEMINAR 2

Minimum Credits: 2
Maximum Credits: 2
This is a culminating seminar emphasizing issues unique to transitioning to the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, and legislative and professional practice issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2026 or 2026D
Course Attributes: Distance Education

NURNP 2041 - NURSE PRACTITIONER ROLE SEMINAR 1

Minimum Credits: 3
Maximum Credits: 3
This is an introductory seminar emphasizing issues unique to the implementation of the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, health promotion in diverse environments and populations, and professional practice issues. Professional, economic, cultural, and legal issues related to nurse practitioner practice will be emphasized. Evidence-based practice, nurse practitioner leadership, and ethics within the context of the nurse practitioner role will be reviewed and discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURNP 2042 - NURSE PRACTITIONER ROLE SEMINAR 2

Minimum Credits: 3
Maximum Credits: 3
This is a culminating seminar emphasizing issues unique to transitioning to the role of nurse practitioner in various practice settings. This course is designed to analyze factors that impact advanced nursing practice, with emphasis on the scope of practice of the nurse practitioner, health care trends, such as informatics and artificial intelligence, and legislative and professional practice issues. The interface of healthcare quality, organizational and systems management, and economic drivers in healthcare management will be reviewed as relevant for the nurse practitioner.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURNP 2100 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY

Minimum Credits: 4
Maximum Credits: 4
This course is designed to develop a theoretical, practical, and evidence-based foundation for advanced nursing practice in the diagnosis and management of common episodic and complex chronic dysfunctions/alterations in the acutely ill adult-gerontology population. Through didactic information, students develop the knowledge base needed to apply advanced practice skills in patient/family assessment, develop and implement a management plan, and evaluate the plan's effectiveness when caring for adult-gerontology patients across the continuum of acute care services. Health promotion, health restoration, and health protection appropriate to these patients and families will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2034 or 2034D) and NUR 2032 and 2033; CREQ: NURNP 2101; PROG: Graduate School of Nursing

NURNP 2100D - MANAGEMENT OF ADULT WITH EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY

Minimum Credits: 4
Maximum Credits: 4
This course is designed to develop a theoretical, practical, and evidence-based foundation for advanced practice nursing in the diagnosis and management of common episodic and chronic dysfunctions/alterations. Through didactic information, students develop the knowledge base needed to apply advanced practice skills in patient/family assessment, develop and implement a management plan, and evaluate the plan's effectiveness when caring for patients across the continuum of acute care services. Health promotion, health restoration, and health protection appropriate to these patients and families will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2033 or 2433 or 2033D); CREQ: (NUR 2034 or 2434 or 2234 or 2034D)
Course Attributes: Distance Education

NURNP 2101 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE CLINICAL

Minimum Credits: 3
Maximum Credits: 3
This clinical course is designed to provide opportunities to apply a theoretical, practical and evidenced based foundation for advanced nursing practice in the diagnosis and management of common episodic and complex chronic dysfunctions/alterations in the acutely ill adult-gerontology population. Through clinical experience, students implement advanced practice skills in patient/family assessment,

develop and implement a management plan and evaluate the plan's effectiveness when caring for adult-gerontology patients across the continuum of the acute care services. Health promotion, health protection, and health restoration appropriate to these patients and families will be emphasized.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NUR 2032 and NUR 2033; CREQ: NURNP 2100 or 2100D

NURNP 2102 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITCALLY ILL ADULT 2

Minimum Credits: 3
Maximum Credits: 3
This course is designed to expand on the comprehensive theoretical, practical and evidence-based foundation for advanced nursing practice in the diagnosis and management of selected dysfunctions/alterations commonly seen in the critically ill adult-gerontology patient. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for patients with problems commonly seen in adult-gerontology patients who are acutely and/or critically ill. Aspects of health promotion, health restoration, and maintenance appropriate to these patients and families will also be emphasized
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2104; CREQ: NURNP 2109

NURNP 2102D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT 2

Minimum Credits: 3
Maximum Credits: 3
This course is designed to expand on the comprehensive theoretical and practical foundation for advanced nursing practice in the diagnosis and management of selected dysfunctions/alterations commonly seen in the critically ill adult-gerontology patient. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for patients with problems commonly seen in adult-gerontology patients who are acutely and/or critically ill. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ:NURNP 2104; CREQ: NURNP 2109
Course Attributes: Distance Education

NURNP 2104 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a theoretical, practical, and evidence-based foundation for advanced nursing practice in the diagnosis and management of selected dysfunctions/alterations commonly seen in the critically ill adult-gerontology patient. Through didactic information, laboratory experience, and course assignments, students develop the knowledge base and psychomotor skills central to planning, implementing and evaluating health care for adult-gerontology patients with complex health problems that are commonly seen across the continuum of acute care delivery systems. Aspects of health promotion, health restoration, and maintenance appropriate to these patients and families will also be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2101 and 2100

NURNP 2104D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a theoretical foundation for advanced nursing care of the acutely and critically ill adult-gerontology patient. Through didactic information, laboratory experience, and course assignments, students develop the knowledge base and psychomotor skills central to planning, implementing and evaluating health care for adult-gerontology patients with complex health problems that are commonly seen across the continuum of acute care delivery systems. Health maintenance, health promotion, disease prevention and health protection appropriate to this patient population will also be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2101 or 2401 or 2100D
Course Attributes: Distance Education

NURNP 2105 - CLINICAL EMPHASIS - CARDIOPULMONARY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a comprehensive evidence-based practical foundation for clinical application of advanced nursing practice in the diagnosis and management of adult-gerontology patients with cardiopulmonary dysfunctions/alterations. The course integrates the pathophysiology of cardiopulmonary dysfunctions/alterations with appropriate diagnostic parameters and management strategies. Through ongoing clinical experience, students implement the nursing process when caring for patients who are acutely ill and apply the clinical decision-making process in the care of these patients. Health promotion, protection, and maintenance appropriate to these patients and families will also be emphasized.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: NURNP 2102

NURNP 2106 - CLINICAL EMPHASIS - CRITICAL CARE

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a comprehensive evidence-based practical foundation for clinical application of advanced nursing practice in the diagnosis and management of selected dysfunctions/alterations commonly seen in the critically ill adult-gerontology patient. Through ongoing clinical experience, students implement the nursing process when caring for patients who are critically ill and apply the clinical decision-making process in care of patients. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: NURNP 2102 or NURNP 2102D

NURNP 2107 - CLINICAL EMPHASIS - ONCOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a comprehensive, evidence-based practical foundation for clinical application of advanced nursing practice in the diagnosis and management of adult-gerontology patients with cancer. The course integrates the pathophysiology of problems associated with cancer and its treatment with appropriate diagnostic parameters and management strategies. Through ongoing clinical experiences the student will implement the clinical decision-making in the care of the acutely ill adult-gerontology patient with cancer. Health promotion and maintenance appropriate to these patients and families will also be emphasized.
Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: NURNP 2102

NURNP 2109 - CLINICAL EMPHASIS - DIRECTED STUDY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a comprehensive evidence-based practical foundation for clinical application of advanced nursing practice in the diagnosis and management of adult-gerontology patients with dysfunctions/alterations in a selected area of clinical specialization. The course integrates the pathophysiology of dysfunctions/alterations in the selected area with appropriate diagnostic parameters and management strategies. Through ongoing clinical experience, students implement the nursing process when caring for patients who are acutely ill and apply the clinical decision-making process in the care of these patients. Health promotion and maintenance appropriate to these patients and families will also be emphasized.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NURNP 2104; CREQ: NURNP 2102

NURNP 2114 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT CLINICAL

Minimum Credits: 3
Maximum Credits: 3
This course is designed to build upon the theoretical, practical and evidence-based foundation for advanced nursing practice through diagnosis and management of complex health problems seen in acutely ill and critically ill adult patients. Through ongoing clinical experience, students implement the nursing process when caring for patients who are acutely and critically ill and apply the clinical decision-making process in care of patients. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized. This course emphasizes patient and family-centered and culturally respectful care, in addition to interprofessional collaboration.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NURNP 2101; CREQ: NURNP 2104

NURNP 2115 - DIAGNOSTIC AND PROCEDURAL SKILLS FOR ACUTE CARE ADVANCED PRACTICE

Minimum Credits: 1
Maximum Credits: 1
This course provides theoretical knowledge and emphasizes psychomotor skills necessary to provide selected advanced practice nursing interventions utilized in the evaluation and management of patients. This course introduces evaluation, selection, interpretation, and application of diagnostic testing, evaluation techniques and procedures. Evidence-based clinical reasoning and decision-making techniques are presented and applied in simulation lab practices for skills acquisition and demonstration of competency.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NURNP 2100; CREQ: NURNP 2104

NURNP 2161 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Students elect an area of interest and work with a specific faculty member to meet agreed upon objectives.

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: School of Nursing students only.

NURNP 2194 - CLINICAL EMPHASIS: TRAUMA EMERGENCY PREPAREDNESS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a comprehensive practical foundation for the clinical application of advanced nursing practice in the management of selected dysfunctions/alterations commonly seen in the traumatized adult-gerontology patient. Through ongoing clinical experience, students implement the nursing process when caring for adult-gerontology patients who are emergent, traumatized, or involved in disasters, and apply the clinical decision-making process in the care of these patients in all phases of the trauma cycle.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: CREQ: NURNP 2102

NURNP 2303 - MANAGEMENT AND PRACTICUM 1 PMH ADULT ACUTE AND CHRONIC

Minimum Credits: 2
Maximum Credits: 2
Students develop advanced practice skills in the clinical management of patients with common acute and chronic primary health care needs and problems. Emphasis is on the synthesis of diagnostic findings with the development, implementation and evaluation of general management strategies. Clinical practica enable students to integrate knowledge derived from courses and readings with that obtained from experiences which will include precepted clinical work in primary health care settings with adult medical patients.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2033 or 2433 or 2033D; CREQ: 2314 and 2515

NURNP 2305 - PSYCHOTHERAPEUTIC INTERVENTION

Minimum Credits: 2
Maximum Credits: 2
This course provides the psychiatric-mental health nurse practitioner student with foundational concepts related to psychotherapeutic interventions for clinical practice. Specifically, the following modalities will be reviewed within the course: 1) cognitive behavioral therapy, 2) dialectical behavioral therapy, 3) interpersonal psychotherapy, and 4) motivational interviewing. The role of the psychiatric-mental health nurse practitioner in the provision of therapy will be highlighted. Family dynamics which can influence symptomatology and associated treatment outcomes will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURNP 2318 - CHILD AND ADOLESCENT PSYCHIATRIC MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This didactic course focuses on theory and concepts relevant to the management of children, adolescents, and young adults with common psychiatric-mental health problems or diagnoses. A biopsychosocial perspective will be utilized, and the following topic areas will be covered: 1) normative child and adolescent development with an emphasis on cognitive and social development; 2) evaluation and diagnosis of youth presenting with psychiatric-mental health symptoms; 3) non-pharmacological and pharmacological management of mental health problems in youth; and 4) the impact of youth mental health problems from a family perspective, with an overview of family engagement strategies provided. Further, maternal-infant mental health will also be addressed in this didactic course
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

NURNP 2320 - NEUROBIOLOGY OF PSYCHIATRIC DISORDERS

Minimum Credits: 2
Maximum Credits: 2
This course builds upon the knowledge base developed in the pathophysiology course, extending and applying this content to psychiatric disorders. It is designed with a threefold purpose: (a) to transition students from general concepts utilized in advanced practice to specific theories that are unique to the role of the psychiatric/mental health nurse practitioner; (b) to develop an appreciation of current biological theories as a major dimension in understanding the etiology, course, and outcome of selected psychiatric disorders; and, (c) to prepare students to utilize research findings as the empirical basis for the advanced practice of nursing. Content will focus on the major biological theories of psychiatric disorders in relationship to their respective technologies, neuroanatomical structures, neurochemical pathways, specific behaviors and symptomatology. Current research findings will be presented to supplement theoretical content.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2004 or 2204 or 2404 or 2004D or (PLAN: PSYMHN-ACP)

NURNP 2320D - NEUROBIOLOGY OF PSYCHIATRIC DISORDERS

Minimum Credits: 2
Maximum Credits: 2
This course builds upon the knowledge base developed in the pathophysiology course, extending and applying this content to psychiatric disorders. It is designed with a threefold purpose: (a) to transition students from general concepts utilized in advanced practice to specific theories that are unique to the role of the psychiatric/mental health nurse practitioner; (b) to develop an appreciation of current biological theories as a major dimension in understanding the etiology, course, and outcome of selected psychiatric disorders; and, (c) to prepare students to utilize research findings as the empirical basis for the advanced practice of nursing. Content will focus on the major biological theories of psychiatric disorders in relationship to their respective technologies, neuroanatomical structures, neurochemical pathways, specific behaviors and symptomatology. Current research findings will be presented to supplement theoretical content.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2004 or 2204 or 2404 or 2004D or (PLAN: PSYMHN-ACP)

NURNP 2321 - HEALTH TOPICS CONCERNING PSYCHIATRIC MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This didactic course focuses on theory and management skills relevant to the primary care of pediatric, adult, and older adult patients living with common psychiatric-mental health problems or diagnoses. A biopsychosocial perspective will be utilized, and the following content areas will be covered: 1) the impacts of medical problems and diagnoses on psychiatric functioning across the lifespan; 2) differential diagnostic considerations related to physical health conditions that mimic or frequently co-occur with psychiatric conditions; 3) the impacts of psychiatric treatment on physiological functioning and health outcomes; and 4) support services for those living with psychiatric illness to aid in meeting primary, secondary, and tertiary care needs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURNP 2325 - PSYCHOPHARMACOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course builds upon the conceptual principles developed in NUR 2034 Advanced Pharmacology and is designed to prepare students to manage the pharmacological aspects of treatment in patients with psychiatric disorders.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2034 or 2034D) and (NURNP 2320 or 2320D)

NURNP 2325D - PSYCHOPHARMACOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course builds upon the conceptual principles developed in NUR 2034 Advanced Pharmacology and is designed to prepare students to manage the pharmacological aspects of treatment in patients with psychiatric disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2034 or 2034D) and (NURNP 2320 or 2320D)
Course Attributes: Distance Education

NURNP 2327 - PRINCIPLES OF SUBSTANCE USE TREATMENT

Minimum Credits: 2
Maximum Credits: 2
This didactic course focuses on theory and concepts relevant to the management of individuals across the lifespan with substance use-related concerns. A biopsychosocial perspective will be utilized, and the following topic areas will be covered: 1) principles of toxicology; 2) medical and psychiatric evaluations of individuals with substance use disorders with consideration to common psychiatric/medical comorbidities and complications; 3) pharmacological management of substance use disorders across the lifespan; psychotherapeutic techniques relevant to substance use disorder treatment, including motivational interviewing and contingency management; 4) trauma-informed care and harm reduction principles within substance use settings; and 5) best practices in screening, brief intervention, and referral to treatment (SBIRT).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURNP 2330 - PSYCHIATRIC DIAGNOSIS THEORY

Minimum Credits: 2
Maximum Credits: 2
This course builds upon the diagnostic reasoning skills developed in the diagnostic physical exam and differential diagnosis courses, theory and clinical. It is designed to prepare students to utilize these skills in conducting psychiatric evaluations and in the preparation of case formulations across the life span. A bio-psycho-social perspective will be used to conceptualize case formulation and the examination of differential diagnoses. This course is open to students in other graduate programs in the school of nursing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: (PREQ: NURNP 2505 and NURNP 2515 and NURNP 2320; CREQ: NURNP 2331; PROG: School of Nursing) or (PREQ: NURNP 2320 and CREQ: NURNP 2331 and PLAN: PSYMHN-ACP)

NURNP 2330D - PSYCHIATRIC DIAGNOSIS THEORY

Minimum Credits: 2
Maximum Credits: 2
This course builds upon the diagnostic reasoning skills developed in the diagnostic physical exam and differential diagnosis courses, theory and clinical. It is designed to prepare students to utilize these skills in conducting psychiatric evaluations and in the preparation of case formulations. A biopsychosocial perspective will be used to conceptualize case formulation and the examination of differential diagnoses. This course is open to students in other graduate programs in the school of nursing.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: (PREQ: NURNP 2505 and NURNP 2515 and NURNP 2320; CREQ: NURNP 2331) or (PREQ: NURNP 2320 and CREQ: NURNP 2331 and PLAN: PSYMHN-ACP)
Course Attributes: Distance Education

NURNP 2331 - PSYCHIATRIC DIAGNOSIS PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
This clinical course is designed to complement and expand on the application of diagnostic reasoning skills developed in diagnostic physical exam across the life span, differential diagnosis theory and differential diagnosis clinical. In addition to the diagnoses of common health problems, the student will develop advanced diagnostic skills in relation to psychiatric disorders across the life span. The focus is on the identification and synthesis of pertinent physical, biological, psychological, and social data in order to complete a comprehensive psychiatric evaluation. The students will refine their diagnostic skills in a psychiatric setting with psychiatric patients across the life span.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2320; CREQ: 2330

NURNP 2340 - MANAGEMENT OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the theory and concepts relevant to management of the primary health care needs and problems of clients with a diagnosed psychiatric problem across the life span. The focus is on selected theories and principles from the physical and behavioral sciences central to planning, implementing, and evaluating therapeutic regimens for clients with acute psychiatric problems across the life span encountered in a primary care setting. Emphasis is also placed on understanding the unique contributions of social and cultural factors in the development of appropriate treatment plans. This course builds directly on the knowledge base developed in the physical diagnosis and primary health care courses, expanding that base to the care of clients who have a diagnosed psychiatric problem.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2330 and 2331 and 2325; CREQ: NURNP 2341; PROG: School of Nursing

NURNP 2340D - MANAGEMENT OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the theory and concepts relevant to management of the primary health care needs and problems of clients with a diagnosed psychiatric problem across the life span. The focus is on selected theories and principles from the physical and behavioral sciences central to planning, implementing, and evaluating therapeutic regimens for clients with acute psychiatric problems across the life span encountered in a primary care setting. Emphasis is also placed on understanding the unique contributions of social and cultural factors in the development of appropriate treatment plans. This course builds directly on the knowledge base developed in the physical diagnosis and primary health care courses, expanding that base to the care of clients who have a diagnosed psychiatric problem.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2330 and 2331 and 2325; CREQ: NURNP 2341

NURNP 2341 - MANAGEMENT PRACTICUM OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2
Maximum Credits: 2
The goal of this practicum is to provide the student with an opportunity to refine advanced practice skills in the clinical management of the primary health care needs and psycho-biological problems of clients with psychiatric disorders across the life span. The practicum focuses on synthesizing relevant psycho-therapeutic modalities with the management of common health problems into the client's plan of care, and evaluating the effectiveness of these interventions.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2331 and 2325 and 2330; CREQ: NURNP 2340 and 2325; PROG: School of Nursing

NURNP 2345 - MANAGEMENT OF CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on theory and concepts relevant to the management of chronic psychiatric and primary health care needs/problems of clients with long-term psychiatric disorders across the life span. The focus is on selected theories and principles from the physical and behavioral sciences central to planning, implementing, and evaluating therapeutic regimens for the client populations commonly encountered in psychiatric settings. Emphasis is also placed on understanding the unique contributions of social and cultural factors in the development of appropriate treatment plans for clients experiencing long-term psychiatric problems. This course builds on the scientific knowledge acquired in previous psychiatric mental health nurse practitioner core and theory courses. It offers a framework for integrating a primary care approach in the management of chronic and severe psychiatric problems across the life span.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2341; CREQ: NURNP 2346; PROG: School of Nursing

NURNP 2345D - MANAGEMENT OF CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on theory and concepts relevant to the management of chronic psychiatric and primary health care needs/problems of clients with long-term psychiatric disorders across the life span. The focus is on selected theories and principles from the physical and behavioral sciences central to planning, implementing, and evaluating therapeutic regimens for the client populations commonly encountered in psychiatric settings. Emphasis is also placed on understanding the unique contributions of social and cultural factors in the development of appropriate treatment plans for clients experiencing long-term psychiatric problems. This course builds on the scientific knowledge acquired in previous psychiatric mental health nurse practitioner core and theory courses. It offers a framework for integrating a primary care approach in the management of chronic and severe psychiatric problems across the life span.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2341; CREQ: NURNP 2345; PROG: School of Nursing

NURNP 2346 - MANAGEMENT PRACTICUM CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2
Maximum Credits: 2
This clinical course is designed to provide the student with a culminating practicum experience in the role of the psychiatric mental health nurse practitioner (PMHNP). Experiences emphasize clinical decision-making in an interdisciplinary environment with focus on the PMHNP as a principal provider of care for clients with chronic and severe psychiatric disorders across the life span in a variety of psychiatric settings.
Academic Career: Graduate
Course Component: Clinical

Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2341; CREQ: NURNP 2345

NURNP 2361 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
An in-depth study in a particular area of interest by arrangement with a designated faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

NURNP 2401 - MGT ADLT EPISODIC/CHRONIC HLTH

Minimum Credits: 4
Maximum Credits: 4
This course is designed to develop a theoretical, practical, and evidence-based foundation for advanced practice nursing in the diagnosis and management of common episodic and chronic dysfunctions/alterations. Through didactic information, students develop the knowledge base needed to apply advanced practice skills in patient/family assessment, develop and implement a management plan, and evaluate the plan's effectiveness when caring for patients across the continuum of acute care services. Health promotion, health restoration, and health protection appropriate to these patients and families will be emphasized.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2033 or NUR 2433; CREQ:NUR 2034 or NUR 2434 or NUR 2234
Course Attributes: Distance Education

NURNP 2402 - MGT CMPLX HLT PROB ACU/CRIT 2

Minimum Credits: 3
Maximum Credits: 3
This course is designed to expand on the comprehensive theoretical and practical foundation for advanced nursing practice in the diagnosis and management of selected dysfunctions/alterations commonly seen in the critically ill adult-gerontology patient. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for patients with problems commonly seen in adult-gerontology patients who are acutely and/or critically ill. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURNP 2405 - MANAGEMENT: ADULT ACUTE/CHRONIC CLINICAL 1

Minimum Credits: 3
Maximum Credits: 4
This practicum is focused on the management of primary health care needs. Students are precepted in an ambulatory health care setting and carry out the diagnostic process as they provide primary health care services to adults with chronic primary health care needs and problems. Students learn to plan, implement and evaluate therapeutic regimens for patients with acute and chronic illnesses commonly encountered in primary health care settings.
Academic Career: GRAD
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURNP 2515 or NURNP 2415
Course Attributes: Distance Education

NURNP 2406 - ROLE SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
This is an introductory seminar emphasizing issues unique to the implementation of the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, health care needs in diverse environments, and professional practice issues. Professional, economic, cultural, and legal issues related to nurse practitioner practice will be emphasized.
Academic Career: GRAD
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURNP 2414 - CPLX HLTH PROB ACTLY/CRIT ILL

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a theoretical foundation for advanced nursing care of the acutely and critically ill adult-gerontology patient. Through didactic information, laboratory experience, and course assignments, students develop the knowledge base and psychomotor skills central to planning, implementing and evaluating health care for adult-gerontology patients with complex health problems that are commonly seen across the continuum of acute care delivery systems. Health maintenance, health promotion, disease prevention and health protection appropriate to this patient population will also be emphasized.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2101 or NURNP 2401
Course Attributes: Distance Education

NURNP 2415 - MGT: ADLT ACUTE/CHRONIC THEORY

Minimum Credits: 4
Maximum Credits: 4
This theory course is concerned with management of primary health care needs. Focus is on selected theories and principles from the physical, medical, nursing, and behavioral sciences central to planning, implementing, and evaluating regimes for patients with acute and chronic illnesses commonly encountered in primary health care settings.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2033 or NUR 2433) and (NUR 2004 or NUR 2404 or NUR 2204); CREQ: NURNP 2505
Course Attributes: Distance Education

NURNP 2418 - FAMILY THEORY FOR NPS

Minimum Credits: 3
Maximum Credits: 3
This theory course is concerned with the exploration and application of the various family health theories with respect to np practice. Focus is on the definition and development of the family, types of families, family assessment and care of the family with application of family health theories. Examination and analysis of cultural diversity within families, health care policies, and end-of-life issues are included. Ethical issues with regard to the care of the family are also addressed.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURNP 2420 - MGT: PEDIATRIC HEALTH THEORY

Minimum Credits: 2
Maximum Credits: 2
This theory course taught concurrently with NURNP 2521: MGT: Pediatric Health Clinical deals with the management of health concerns and problems occurring in the pediatric age group (birth to 18 years). Focus is on selected theories and principles from the physical and behavioral sciences central to assisting children and their families in solving acute and chronic health problems commonly encountered in the primary health care setting. Physiologic & developmental variation is emphasized as well as the cultural, ethical and environmental context. This course encompasses lectures and readings on state-of-the art practice and current research that provides the evidence base for practice.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NURNP 2540 or NURNP 2440) and (NUR 2031 or NUR 2231) and (NUR 2034 or NUR 2234 or NUR 2434); CREQ: NURNP 2521 or NURNP 2421
Course Attributes: Distance Education

NURNP 2421 - MGT: PEDIATRIC HEALTH CLINICAL

Minimum Credits: 2
Maximum Credits: 2
This clinical course focuses on the management of health issues occurring in the pediatric age group (birth to 21 years) with application of principles from the physical and behavioral sciences. Physiologic and developmental variations are emphasized as well as the cultural, ethical, and environmental context.
Academic Career: GRAD
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURNP 2520 or NURNP 2420
Course Attributes: Distance Education

NURNP 2423 - MANAGEMENT: WOMEN'S HEALTH 1

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the health care of women. Emphasis is on selected theories, principles and techniques from the physical and behavioral sciences central to the assessment of women, women's issues, health promotion for women, and diagnosing and managing common gynecologic needs and problems
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031 or NUR 2231 ; CREQ: NUR 2033 or NUR 2433
Course Attributes: Distance Education

NURNP 2426 - MANAGEMENT: GERIATRIC HEALTH

Minimum Credits: 2
Maximum Credits: 2
This theory course explores the evidence base for the evaluation, diagnosis and management of problems commonly encountered in the geriatric population. Emphasis is on the aging process, health promotion, and the diagnosis and management of common health problems of older adults in primary care settings.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031 or NUR 2231
Course Attributes: Distance Education

NURNP 2429 - ROLE SEMINAR 2

Minimum Credits: 2
Maximum Credits: 2
This is a culminating seminar emphasizing issues unique to transitioning to the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, and legislative and professional practice issues.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NURNP 2026 or NURNP 2426
Course Attributes: Distance Education

NURNP 2430 - PSYCHIATRIC DIAGNOSIS THEORY

Minimum Credits: 2
Maximum Credits: 2
This course builds upon the diagnostic reasoning skills developed in the diagnostic physical exam and differential diagnosis courses, theory and clinical. It is designed to prepare students to utilize these skills in conducting psychiatric evaluations and in the preparation of case formulations. A biopsychosocial perspective will be used to conceptualize case formulation and the examination of differential diagnoses. This course is open to students in other graduate programs in the school of nursing.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2314 and NURNP 2515 and NURNP 2320; CREQ: NURNP 2331
Course Attributes: Distance Education

NURNP 2440 - PEDIATRIC WELL CHILD CARE THRY

Minimum Credits: 3
Maximum Credits: 3
This course provides students with an introduction to primary health care for children, where theories and concepts pertinent to the delivery of health care to well children and adolescents are explored. Emphasis is placed on anticipatory guidance as well as the identification and management of developmental and behavioral issues in children. Child development theories and issues will be explored.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURNP 2446 - MGT: ADOLSCNT HEALTH THEORY

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide the student with an opportunity to learn about adolescent health care from a developmental and theoretical perspective. Emphasis is placed on the identification, assessment and management of health problems common to adolescents in primary care settings utilizing knowledge of adolescent developmental principles.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2033 or NUR 2433) and (NUR 2034 or NUR 2434); CREQ: (NURNP 2440 or NURNP 2540)
Course Attributes: Distance Education

NURNP 2505 - MANAGEMENT: ADULT ACUTE/CHRONIC ILLNESS CLINICAL

Minimum Credits: 2
Maximum Credits: 5
This practicum is concerned with diagnosis and management of primary health care needs and problems. Students are precepted in an ambulatory health care setting and carry out the diagnostic process as they provide primary health care services to adults with chronic primary health care needs and problems. Students learn to plan, implement and evaluate therapeutic regimens for patients with acute and chronic illnesses commonly encountered in primary health care settings.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2034 or 2034D; CREQ: NURNP 2515 or 2515D

NURNP 2505D - MANAGEMENT: ADULT ACUTE/CHRONIC ILLNESS CLINICAL

Minimum Credits: 2
Maximum Credits: 5
This practicum is concerned with diagnosis and management of primary health care needs and problems. Students are precepted in an ambulatory health care setting and carry out the diagnostic process as they provide primary health care services to adults with chronic primary health care needs and problems. Students learn to plan, implement and evaluate therapeutic regimens for patients with acute and chronic illnesses commonly encountered in primary health care settings.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2034 or 2034D; CREQ: NURNP 2515 or 2515D
Course Attributes: Distance Education

NURNP 2515 - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY

Minimum Credits: 4
Maximum Credits: 4
This theory course is concerned with management of primary health care needs. Focus is on selected theories and principles from the physical, medical, nursing, and behavioral sciences central to planning, implementing, and evaluating regimes for patients with acute and chronic illnesses commonly encountered in primary health care settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2004 or 2404 or 2004D) and (NUR 2033 or 2433 or 2033D); CREQ: NURNP 2505; PROG: Graduate School of Nursing

NURNP 2515D - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY

Minimum Credits: 4
Maximum Credits: 4
This theory course is concerned with management of primary health care needs. Focus is on selected theories and principles from the physical, medical, nursing, and behavioral sciences central to planning, implementing, and evaluating regimes for patients with acute and chronic illnesses commonly encountered in primary health care settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2033 or 2433 or 2033D) and (NUR 2004 or 2404 or 2204 or 2004D); CREQ: NURNP 2505
Course Attributes: Distance Education

NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN

Minimum Credits: 3
Maximum Credits: 3
This theory course is concerned with the exploration and application of the various family health theories with respect to np practice. Focus is on the definition and development of the family, types of families, family assessment and care of the family with application of family health theories. Examination and analysis of cultural diversity within families, health care policies, and end-of-life issues are included. Ethical issues with regard to the care of the family are also addressed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN

Minimum Credits: 3
Maximum Credits: 3
This theory course is concerned with the exploration and application of the various family health theories with respect to NP practice. Focus is on the definition and development of the family, types of families, family assessment and care of the family with application of family health theories. Examination and analysis of cultural diversity within families, health care policies, and end-of-life issues are included. Ethical issues with regard to the care of the family are also addressed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURNP 2520 - MGT: PEDIATRIC HEALTH THEORY

Minimum Credits: 2
Maximum Credits: 2
This theory course taught concurrently with NURNP 2521: mgt.: Pediatric health clinical deals with the management of health concerns and problems occurring in the pediatric age group (birth to 18 years). Focus is on selected theories and principles from the physical and behavioral sciences central to assisting children and their families in solving acute and chronic health problems commonly encountered in the primary health care setting. Physiologic & developmental variation is emphasized as well as the cultural, ethical and environmental context. This course encompasses lectures and readings on state-of-the art practice and current research that provides the evidence base for practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NURNP 2540 or 2440 or 2540D) and (NUR 2031 or 2231) and (NUR 2034 or 2234 or 2434 or 2034D); CREQ: (NURNP 2521 or 2421 or 2521D)

NURNP 2520D - MGT: PEDIATRIC HEALTH THEORY

Minimum Credits: 2
Maximum Credits: 2
This theory course taught concurrently with NURNP 2521: MGT: Pediatric Health Clinical deals with the management of health concerns and problems occurring in the pediatric age group (birth to 18 years). Focus is on selected theories and principles from the physical and behavioral sciences central to assisting children and their families in solving acute and chronic health problems commonly encountered in the primary health care setting. Physiologic & developmental variation is emphasized as well as the cultural, ethical and environmental context. This course encompasses lectures and readings on state-of-the art practice and current research that provides the evidence base for practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NURNP 2540 or 2440 or 2540D) and (NUR 2031 or 2231) and (NUR 2034 or 2234 or 2434 or 2034D);

CREQ: (NURNP 2521 or 2421 or 2521D)
Course Attributes: Distance Education

NURNP 2521 - MANAGEMENT: PEDIATRIC HEALTH CLINICAL

Minimum Credits: 2
Maximum Credits: 4
This clinical course focuses on the management of health issues occurring in the pediatric age group (birth to 21 years) with application of principles from the physical and behavioral sciences. Physiologic and developmental variations are emphasized as well as the cultural, ethical, and environmental context. Clinical experiences focus on diagnosis and management of acute and chronic health problems in children using a family-centered approach. Health promotion, anticipatory guidance, health risk assessment, well child care, and community collaboration are incorporated. Clinical experiences focus on diagnosis and management of acute and chronic health problems in children using a family-centered approach. Health promotion, anticipatory guidance, health risk assessment, well child care, and community collaboration are incorporated.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURNP 2520 or 2520D

NURNP 2521D - MANAGEMENT: PEDIATRIC HEALTH CLINICAL

Minimum Credits: 2
Maximum Credits: 4
This clinical course focuses on the management of health issues occurring in the pediatric age group (birth to 21 years) with application of principles from the physical and behavioral sciences. Physiologic and developmental variations are emphasized as well as the cultural, ethical, and environmental context. This clinical course focuses on the management of health issues occurring in the pediatric age group (birth to 21 years) with application of principles from the physical and behavioral sciences. Physiologic and developmental variations are emphasized as well as the cultural, ethical, and environmental context. Clinical experiences focus on diagnosis and management of acute and chronic health problems in children using a family-centered approach. Health promotion, anticipatory guidance, health risk assessment, well child care, and community collaboration are incorporated.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURNP 2520 or 2420 or 2520D
Course Attributes: Distance Education

NURNP 2523 - MANAGEMENT: WOMEN'S HEALTH 1

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the health care of women. Emphasis is on selected theories, principles and techniques from the physical and behavioral sciences central to the assessment of women, women's issues, health promotion for women, and diagnosing and managing common gynecologic needs and problems
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2033 or 2433 or 2033D

NURNP 2523D - MANAGEMENT: WOMEN'S HEALTH 1

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the health care of women. Emphasis is on selected theories, principles and techniques from the physical and behavioral sciences central to the assessment of women, women's issues, health promotion for women, and diagnosing and managing common gynecologic needs and problems

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2033 or 2433 or 2033D
Course Attributes: Distance Education

NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY

Minimum Credits: 2
Maximum Credits: 2
This theory course explores the evidence base for the evaluation, diagnosis and management of problems commonly encountered in the geriatric population. Emphasis is on the aging process, health promotion, and the diagnosis and management of common health problems of older adults in primary care settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031

NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH

Minimum Credits: 2
Maximum Credits: 2
This theory course explores the evidence base for the evaluation, diagnosis and management of problems commonly encountered in the geriatric population. Emphasis is on the aging process, health promotion, and the diagnosis and management of common health problems of older adults in primary care settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031 or 2231
Course Attributes: Distance Education

NURNP 2527 - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES

Minimum Credits: 3
Maximum Credits: 3
The focus of this theory course is on advanced concepts related to current and complex geriatric management issues. The course builds on the foundation of geriatric care management presented in NURNP 2526. Utilization of health care resources, health care policies, and end-of-life care and caregiver issues will be presented. Primary care is the emphasis but the concepts will be applied across the continuum of care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2526

NURNP 2527D - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES

Minimum Credits: 3
Maximum Credits: 3
The focus of this theory course is on advanced concepts related to current and complex geriatric management issues. The course builds on the foundation of geriatric care management presented in NURNP 2526. Utilization of health care resources, health care policies, and end-of-life care and caregiver issues will be presented. Primary care is the emphasis but the concepts will be applied across the continuum of care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2526
Course Attributes: Distance Education, Pitt Online Programs

NURNP 2528 - SEMINAR IN GERIATRIC CARE

Minimum Credits: 1
Maximum Credits: 1
This course will focus on the role of the intra-professional team in regard to geriatric syndromes, current research, pharmaceuticals, and timely geriatric issues related to health care delivery.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2526

NURNP 2529 - GERONTOLOGY CLINICAL PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
This clinical course is designed for students to gain experience in the assessment, diagnosis and management of older adults in a variety of settings. The application of evidence-based protocols will be included in the prevention, early diagnosis and management of geriatric syndromes. An inter-disciplinary team approach will be emphasized. The practice sites will be in primary care office settings, continuum of care centers that could include dementia units, assisted living, personal care home, skilled nursing units, PACE sites and house calls.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2526

NURNP 2531 - PEDIATRIC ACUTE CARE 1

Minimum Credits: 3
Maximum Credits: 3
This didactic course deals with the assessment and management of common acute and critical conditions in pediatric patients, from newborn to young adult. This course is the first part of a two-part course series. It is taken concurrently with NURNP 2533 Management: Pediatric Acute Care Clinical 1. Content includes comprehensive diagnosis, evaluation, and ongoing management. This course emphasizes family-centered and culturally respectful care, as well as interprofessional collaboration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURNP 2533

NURNP 2531D - PEDIATRIC ACUTE CARE 1

Minimum Credits: 3
Maximum Credits: 3
This didactic course deals with the assessment and management of common acute and critical conditions in pediatric patients, from newborn to young adult. This course is the first part of a two-part course series. It is taken concurrently with NURNP 2533 Management: Pediatric Acute Care Clinical 1. Content includes comprehensive diagnosis, evaluation, and ongoing management. This course emphasizes family-centered and culturally respectful care, as well as interprofessional collaboration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURNP 2533

NURNP 2532 - PEDIATRIC ACUTE CARE 2

Minimum Credits: 3
Maximum Credits: 3
This didactic course deals with the assessment and management of common acute and critical conditions in pediatric patients, from newborn to young adult. This course is the second part of a two-part course series. It is taken concurrently with NURNP 2534 Management: Pediatric Acute Care Clinical 2. Content includes comprehensive diagnosis, evaluation, and ongoing management. This course emphasizes family-centered and culturally respectful care, as well as interprofessional collaboration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2531 or NURNP 2531D; CREQ: NURNP 2534

NURNP 2532D - PEDIATRIC ACUTE CARE 2

Minimum Credits: 3
Maximum Credits: 3
This didactic course deals with the assessment and management of common acute and critical conditions in pediatric patients, from newborn to young adult. This course is the second part of a two-part course series. It is taken concurrently with NURNP 2534 Management: Pediatric Acute Care Clinical 2. Content includes comprehensive diagnosis, evaluation, and ongoing management. This course emphasizes family-centered and culturally respectful care, as well as interprofessional collaboration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2531 or NURNP 2531D; CREQ: NURNP 2534

NURNP 2533 - MANAGEMENT: PEDIATRIC ACUTE CARE CLINICAL 1

Minimum Credits: 3
Maximum Credits: 3
This clinical course is taught concurrently with NURNP 2531 Pediatric Acute Care 1. In this precepted course, students will learn to manage acutely, critically, and chronically ill pediatric patients using a developmental and systematic approach. In additional to simulation exercises, these patients may be seen in an inpatient hospital setting, long-term acute care, an outpatient subspecialty clinic, or emergency department. This course emphasizes family-centered and culturally respectful care, in addition to interprofessional collaboration.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURNP 2531 or NURNP 2531D

NURNP 2534 - MANAGEMENT: PEDIATRIC ACUTE CARE CLINICAL 2

Minimum Credits: 3
Maximum Credits: 3
This clinical course is taught concurrently with NURNP 2532 Pediatric Acute Care 2. In this precepted course, students will learn to manage acutely, critically, and chronically ill pediatric patients using a developmental and systematic approach. In additional to simulation exercises, these patients may be seen in an inpatient hospital setting, long-term acute care, an outpatient subspecialty clinic, or emergency department. This course emphasizes family-centered and culturally respectful care, in addition to interprofessional collaboration.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2533; CREQ: NURNP 2532 or NURNP 2532D

NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY

Minimum Credits: 3
Maximum Credits: 3
This course provides students with an introduction to primary health care for children, where theories and concepts pertinent to the delivery

of health care to well children and adolescents are explored. Emphasis is placed on anticipatory guidance as well as the identification and management of developmental and behavioral issues in children. Child development theories and issues will be explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURNP 2540D - PEDIATRIC WELL CHILD CARE THEORY

Minimum Credits: 3
Maximum Credits: 3
This course provides students with an introduction to primary health care for children, where theories and concepts pertinent to the delivery of health care to well children and adolescents are explored. Emphasis is placed on anticipatory guidance as well as the identification and management of developmental and behavioral issues in children. Child development theories and issues will be explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURNP 2546 - MANAGEMENT: ADOLESCENT HEALTH AND YOUNG ADULT THEORY

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide the student with an opportunity to learn about adolescent health care from a developmental and theoretical perspective. Emphasis is placed on the identification, assessment and management of health problems common to adolescents in primary care settings utilizing knowledge of adolescent developmental principles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2034 or 2034D) and (NUR 2033 or 2033D); CREQ: (NURNP 2440 or 2540 or 2540D)

NURNP 2546D - MGT: ADOLESCENT HEALTH THEORY

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide the student with an opportunity to learn about adolescent health care from a developmental and theoretical perspective. Emphasis is placed on the identification, assessment and management of health problems common to adolescents in primary care settings utilizing knowledge of adolescent developmental principles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2034 or 2034D) and (NUR 2033 or 2033D); CREQ: (NURNP 2440 or NURNP 2540 or 2540D)
Course Attributes: Distance Education

NURNP 2549 - MANAGEMENT: ADVANCED PEDIATRIC HEALTH PROBLEMS THEORY

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide the student with an advanced study of children with primary, complex, and chronic health conditions and disabilities. Emphasis is placed on the identification, assessment, and management of chronic pediatric problems, neurodevelopmental disabilities, and behavioral issues. The influence that these conditions have on children and their families is also integrated. Emphasis is placed on understanding the physiologic rationale for treatment measures as well as the provision of physical and psychological care to children and families.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NURNP 2520 or 2420 or 2520D); CREQ: NURNP 2550

NURNP 2550 - MANAGEMENT: ADVANCED PEDIATRIC HEALTH PROBLEMS CLINICAL

Minimum Credits: 3
Maximum Credits: 3
The purpose of this clinical course is to provide students with an opportunity to provide comprehensive primary health care services to children with primary health care needs, developmental concerns, complex and chronic health problems. Concepts and content from NURNP 2549 will be applied in clinical practice.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2520 and 2521; CREQ: NURNP 2549

NURNP 2561 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Allows the student the opportunity to acquire knowledge and skill through independent experiences involving little or no formal interaction between the student and instructor. Typically selected when no formal course is available that meets the student's individual learning needs.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

NURNP 2570 - COMPREHENSIVE NEONATAL ASSESSMENT THEORY

Minimum Credits: 2
Maximum Credits: 2
This course addresses the complete neonatal assessment process. It includes a genetics overview, perinatal and neonatal physiology, neonatal pharmacology, common neonatal diagnostic and laboratory testing and invasive procedures. The comprehensive neonatal assessment, including prenatal through neonatal history and neonatal physical examination is reviewed. Family function, dynamics, crisis theory and the grieving process are also examined.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2004

NURNP 2571 - GENERAL MANAGEMENT OF THE SICK NEONATE - THEORY

Minimum Credits: 4
Maximum Credits: 4
This theory course builds on the neonatal assessment theory course and assists the students in developing the neonatal assessment skills necessary to function in the role of the NNP in the neonatal intensive care nursery (NICU), particularly in emergency situations. It focuses on the knowledge necessary to resuscitate and stabilize a sick newborn. In addition, the course discusses the physiology of pain and pain management. The course is taught with an accompanying clinical course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2570 and NUR 2031

NURNP 2572 - GENERAL ASSESSMENT AND MANAGEMENT OF THE SICK NEONATE - CLINICAL

Minimum Credits: 5
Maximum Credits: 5
This clinical course builds on the physical diagnosis and the neonatal assessment and general management courses. The students master the neonatal assessment skills necessary to function in the role of the NNP in the neonatal intensive care nursery (NICU). The students will obtain and evaluate a complete neonatal patient database, including conducting a history and physical examination. The students will also learn stabilization and resuscitation in the delivery room and during transport. In addition, the course affords the students the opportunity to perform neonatal therapeutic and diagnostic procedures in the clinical setting.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2570

NURNP 2573 - NEONATAL DISEASE PROCESS 1 - THEORY

Minimum Credits: 4
Maximum Credits: 4
Clinical management of neonatal (preterm and term infants in the neonatal intensive care unit) patients requires a broad knowledge base. This theory course will provide a thorough understanding of the embryology, physiology, pathophysiology and management of common neonatal disease processes. This is the first in a series of 2 consecutive courses and will focus on the cardiovascular, pulmonary, gastrointestinal/nutrition, renal/genitourinary and hematologic systems as well as fluids and electrolytes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2572; CREQ: NURNP 2028

NURNP 2574 - NEONATAL DISEASE PROCESS 2 - THEORY

Minimum Credits: 4
Maximum Credits: 4
Clinical management of neonatal (preterm and term infants in the neonatal intensive care unit) patients requires a broad knowledge base. This theory course will provide a thorough understanding of the embryology, physiology, pathophysiology and management of common neonatal disease processes. This is the second in a series of 2 consecutive courses and will focus on the endocrine & metabolic, immune, neurobehavioral, musculoskeletal, eyes/ears/nose/throat and dermatologic systems. It also includes discharge planning and follow-up care for the high-risk neonate.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2573; CREQ: NURNP 2028

NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

Minimum Credits: 4
Maximum Credits: 4
This didactic course explores the evidence base for the evaluation, diagnosis and management of common psychiatric-mental health issues across the lifespan. Emphasis in on (1) current understanding of the etiology, including the genetic basis, of psychiatric illnesses; (2) evaluation and diagnosis of individuals presenting with psychiatric-mental health symptoms; (3) recognizing problems that can be managed in a primary care setting and those that need to be referred for psychiatric evaluation and care; (4) ongoing management of psychiatric-mental health problems in primary care including management in collaboration with psychiatry; and (5) the impact of mental health problems from a family perspective.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

Minimum Credits: 4
Maximum Credits: 4
This didactic course explores the evidence base for the evaluation, diagnosis and management of common psychiatric-mental health issues across the lifespan. Emphasis in on (1) current understanding of the etiology, including the genetic basis, of psychiatric illnesses; (2) evaluation and diagnosis of individuals presenting with psychiatric-mental health symptoms; (3) recognizing problems that can be managed in a primary care setting and those that need to be referred for psychiatric evaluation and care; (4) ongoing management of psychiatric-mental health problems in primary care including management in collaboration with psychiatry; and (5) the impact of mental health problems from a family perspective.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURNP 3034 - AGACNP TRANSITION TO ROLE

Minimum Credits: 2
Maximum Credits: 2
This is a culminating seminar emphasizing issues unique to transitioning to the role of the nurse practitioner into the acute care health care setting. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the Acute Care Nurse Practitioner, health care trends, and legislative and professional practice issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2102

NURNP 3038 - DNP NP ROLE PRACTICUM

Minimum Credits: 1
Maximum Credits: 10
A culminating practicum experience in role development for the DNP np. Experiences emphasize clinical decision making in a multidisciplinary environment with focus on the nurse practitioner as a principal provider of care
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURNP 3425 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

Minimum Credits: 4
Maximum Credits: 4
This didactic course explores the evidence base for the evaluation, diagnosis and management of common psychiatric-mental health issues across the lifespan. Emphasis in on (1) current understanding of the etiology, including the genetic basis, of psychiatric illnesses; (2) evaluation and diagnosis of individuals presenting with psychiatric-mental health symptoms; (3) recognizing problems that can be managed in a primary care setting and those that need to be referred for psychiatric evaluation and care; (4) ongoing management of psychiatric-mental health problems in primary care including management in collaboration with psychiatry; and (5) the impact of mental health problems from a family perspective.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

NURNP 3546 - MANAGEMENT: ADOLESCENT HEALTH AND YOUNG ADULT CLINICAL

Minimum Credits: 1
Maximum Credits: 1
The purpose of this clinical course is to provide students with an opportunity to provide comprehensive health care services to adolescents and young adults with primary health care needs, developmental concerns, complex and chronic health problems common in adolescents and young adults in an interprofessional educational setting. Concepts and content from NURNP 2546 will be applied in clinical practice.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURNP 2520 and NUR 2032 and NUR 2032 and 2033; PLAN: DNP

Nurse Specialty Role

NURSP 2061 - ORGANIZTNL & MANAGEMENT THEORY

Minimum Credits: 3
Maximum Credits: 3
This graduate level course focuses on organizational, leadership, and management theories and how they apply to health service organizations, both today and in the future. Emphasis will be placed on leading the clinical discipline of nursing based on organizational and systems thinking as well as relevant political and cultural perspectives. Quality and performance improvement strategies, as well as creating and sustaining appropriate levels of change, are explored in order to facilitate the ability to create safe and effective care delivery environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURSP 2061D - ORGANIZATION & MANAGEMENT THEORY

Minimum Credits: 3
Maximum Credits: 3
This graduate level course focuses on organizational, leadership, and management theories and how they apply to health service organizations, both today and in the future. Emphasis will be placed on leading the clinical discipline of nursing based on organizational and systems thinking as well as relevant political and cultural perspectives. Quality and performance improvement strategies, as well as creating and sustaining appropriate levels of change, are explored in order to facilitate the ability to create safe and effective care delivery environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

NURSP 2062 - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS

Minimum Credits: 2
Maximum Credits: 2
This graduate level course focuses on organizational, leadership and management theories and how they apply to health service organizations, both today and in the future. Emphasis will be placed on leading the clinical discipline of nursing based on organizational and systems thinking as well as relevant global political and cultural perspectives. Quality and performance improvement strategies, as well as creating and sustaining appropriate levels of change, are explored in order to facilitate the ability to create safe and effective care delivery environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2062D - ORGANIZATIONAL AND SYSTEMS MANAGEMENT FOR HEALTHCARE LEADERS

Minimum Credits: 2
Maximum Credits: 2
This graduate level course focuses on organizational, leadership and management theories and how they apply to health service organizations, both today and in the future. Emphasis will be placed on leading the clinical discipline of nursing based on organizational and systems thinking as well as relevant global political and cultural perspectives. Quality and performance improvement strategies, as well as creating and sustaining appropriate levels of change, are explored in order to facilitate the ability to create safe and effective care delivery environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2064 - NURSING ADMINISTRATION SEMINAR AND PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students enrolled in the Administration minor tract and serves as their clinical practicum. This course will provide students with opportunities to observe, apply, analyze and discuss selected administrative and managerial skills and processes which are relevant to the practice of nursing administration. Negotiated sites and experiences are tailored to enhance student's career goals. It is anticipated that students will be exposed to and involved in various experiences that nursing administrators face in today's health care environment
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURSP 2061 and 2091 and 2092

NURSP 2070 - INFORMATION TECHNOLOGY PROJECT MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course provides students with an introduction to information technology project management. Students will learn how to create a comprehensive project management plan which includes: scope, integration, communication, time, cost, risk, quality and human resources management. This course also covers the following topics: system life cycles, messaging standards and procurement.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURSP 2072D - MEASUREMENT AND EVALUATION

Minimum Credits: 3
Maximum Credits: 3
Concepts and methods for learning measurement and evaluation as they relate to teaching and learning in nursing and the health sciences are reviewed and assessed. Course activities offer the student opportunities to study and use a variety of measurement and evaluation techniques that are appropriate for classroom and clinical healthcare settings. Opportunities are provided for students to critique and evaluate ethical, legal and social issues involving measurement and evaluation as well as uses and limitations of evaluation methods in diverse healthcare settings and educator roles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURSP 2074 - PRACTICUM 2 IN NURSING EDUCATION: EDUCATIONAL PROGRAM MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course builds on the principles of NURSP 2073 practicum 1 in nursing education: teaching and learning assessment. In this course students have the opportunity to further develop and implement the role of nurse educator through a guided, supportive practicum experience under the direct supervision of an accomplished preceptor. Students are able to choose the teaching environment that best meets his or her learning needs.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NURSP 2071 and NURSP 2072 and NURSP 2073; PROG: School of Nursing
Course Attributes: Hybrid

NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on a conceptual foundation for understanding nursing informatics and includes analysis of various applications of information systems within the context of the health care system. This course introduces theoretical models of nursing informatics; healthcare computing; and systems design and analysis. Other topics include nursing vocabularies, nursing knowledge generation; ethical and social issues in healthcare informatics; and the impact of consumer health informatics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on a conceptual foundation for understanding nursing informatics and includes analysis of various applications of information systems within the context of the health care system. This course introduces theoretical models of nursing informatics; healthcare computing; and systems design and analysis. Other topics include nursing vocabularies, nursing knowledge generation; ethical and social issues in healthcare informatics; and the impact of consumer health informatics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURSP 2076 - CLINICAL INFORMATION SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on an analysis of nursing information systems within the context of the health care system. Emphasis is placed on the use of computers for documentation in clinical settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURSP 2075 or 2275 or 2475 or 2075D

NURSP 2082 - INFORMATICS THEORIES AND ISSUES

Minimum Credits: 3
Maximum Credits: 3
This course covers relevant theories and models from the fields of: nursing informatics, communication, information science and computer science. The foundations of behavioral theories, group dynamics and principles of adult learning will be introduced. Students will apply these theories and models to emerging issues in informatics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2085 - NURSING INFORMTCS PRACTICUM 1

Minimum Credits: 3
Maximum Credits: 4
This course provides an opportunity for the learner to synthesize previous nursing informatics coursework. The student will implement the theory learned in class in a real-world setting and demonstrate beginning competency as an informatics nurse.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURSP 2076 or 2276

NURSP 2086 - NURSING INFORMTCS PRACTICUM 2

Minimum Credits: 3
Maximum Credits: 4
The course employs an application focus in which the learner demonstrates leadership, comprehension, critical thinking, and problem-solving abilities within the context of a real-world environment. The student will assume the role of a beginning nursing informatics specialist.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NURSP 2085

NURSP 2091 - FINANCE AND ECONOMICS FOR HEALTH CARE LEADERS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today's health care environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURSP 2091D - FINANCE AND ECONOMICS FOR HEALTH CARE LEADERS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data from a virtual hospital which allows those in clinical leadership roles learn how to effectively balance the administrative and clinical needs of today's health care environment.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURSP 2092 - LEADERSHIP DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the application of leadership theory and the development of critical leadership skills necessary for success in today's health care environment. The course is based on five essential competencies for nursing leadership: professionalism, business skills and principles, knowledge of the health care environment, communication and relationship management, and transformational leadership.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURSP 2092D - LEADERSHIP DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the application of leadership theory and the development of critical leadership skills necessary for success in today's health care environment. The course is based on five essential competencies for nursing leadership: professionalism, business skills and principles, knowledge of the health care environment, communication and relationship management, and transformational leadership.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURSP 2093 - EDUCATION AND MENTORING IN THE CLINICAL SETTING

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a theoretical, practical, and evidence-based foundation for graduate students in the education of clients/patient/families, nurse colleagues, and other health care providers. Students will broaden their knowledge base in the dynamics of human behavior, values clarification, educational psychology, and motivation which are fundamental to behavior change and sustaining that change (transformation). Content includes principles of andragogy and pedagogy, analysis of learning styles, replete with instruments and a contemporary model focusing upon behavior change of employees, mentoring, the role and function of preceptors, coaching and feedback skills and application of a competency model will be emphasized. The AACN competencies and curricular expectations for clinical nurse leader education and practice (October 2013) will serve as the overall framework for the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURSP 2094 - INTRODUCTION TO THE CNL ROLE AND CORE COMPETENCIES

Minimum Credits: 1
Maximum Credits: 1
This course is designed to facilitate the transition to clinical leadership. Emphasis is on conceptualization and implementation of the CNL role across different microsystems. Knowledge of leadership theories will be incorporated so students can increase their responsibility and accountability for leadership within the interprofessional team.
Academic Career: Graduate
Course Component: Clinical

Grade Component: Grad HSU Basis
Course Requirements: CREQ: NURSP 2092

NURSP 2095 - CONTEMPORARY ISSUES IN NURSING AND THE CNL ROLE SEMINAR

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the major contemporary issues facing the nursing profession. Patient safety, process improvement, effective patient care and family partnerships, improved care coordination and implementation of evidence based practice are examples that the CNL role could impact. The course also focuses on successful implementation of the CNL role through knowledge, evidence-based practice and application of leadership principles. The AACN competencies and curricular expectations for clinical nurse leader education and practice (October 2013) will serve as the overall framework for the course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

NURSP 2096 - CNL CLINICAL PRACTICUM 1

Minimum Credits: 2
Maximum Credits: 2
This course is designed to focus on the role of the clinical nurse leader in implementing quality improvement strategic imperatives with special emphasis on process improvement at the micro and macro levels, customer satisfaction, patient centered care, inter-professional healthcare teams, outcomes management and evidence-based practice. The AACN competencies and curricular expectations for clinical nurse leader education and practice (2013) will provide the framework for the practicum.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NURSP 2062 or 2062D) and NURSP 2098

NURSP 2097 - CNL CLINICAL PRACTICUM 2

Minimum Credits: 3
Maximum Credits: 3
This course is designed to focus on the role of the clinical nurse leader in implementing quality improvement strategic imperatives with special emphasis on process improvement at the micro and macro levels, customer satisfaction, patient centered care, inter-professional healthcare teams, outcomes management and evidence-based practice. The AACN competencies and curricular expectations for clinical nurse leader education and practice (2013) will provide the framework for the practicum.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NURSP 2098 and NURSP 2096 and [NURSP (2061 or 2061D) or (2062 or 2062D)]

NURSP 2098 - HEALTHCARE QUALITY

Minimum Credits: 2
Maximum Credits: 2
Nurses functioning in advanced professional practice roles must employ established and emerging principles of safety science and quality in healthcare. This course will provide students with opportunities to discuss and analyze key issues in healthcare quality.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2099 - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today's health care environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2099D - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today's health care environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2099D - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today's health care environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2099D - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today's health care environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2099D - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today¿s environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today¿s health care environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2099D - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today's health care environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2099D - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today's health care environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2099D - FINANCIAL, BUSINESS, AND ECONOMICS DRIVERS IN HEALTHCARE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today's health care environment.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2161 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Students elect an area of interest and work with a specific faculty member to meet agreed upon objectives.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: School of Nursing students only.

NURSP 2175 - APPLICATION OF HEALTH INFORMATICS IN HEALTH CARE

Minimum Credits: 2
Maximum Credits: 2
This course focuses on a conceptual foundation for understanding nursing informatics and includes analysis of various applications of nursing informatics within the context of the health care system. This course introduces theoretical models of nursing informatics, health care computing, and systems design and analysis. Other topics include nursing vocabularies, nursing knowledge generation, data visualization, ethical and social issues in nursing informatics, and the impact of consumer health informatics and public health informatics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2175D - APPLICATION OF HEALTH INFORMATICS IN HEALTH CARE

Minimum Credits: 2
Maximum Credits: 2
This course focuses on a conceptual foundation for understanding nursing informatics and includes analysis of various applications of nursing informatics within the context of the health care system. This course introduces theoretical models of nursing informatics, health care computing, and systems design and analysis. Other topics include nursing vocabularies, nursing knowledge generation, data visualization, ethical and social issues in nursing informatics, and the impact of consumer health informatics and public health informatics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2180 - ADVANCED SPECIALTY OPTION: ADULT EPISODIC AND CHRONIC ACUTE CARE

Minimum Credits: 4
Maximum Credits: 4
This course is designed to develop a foundation for advanced nursing practice in the care of patients with common episodic and chronic dysfunctions/alterations. The student will develop advanced practice skills in patient/family assessment, developing and implementing a nursing plan and evaluating the plan's effectiveness when caring for patients across the continuum of acute care services. Health promotion, health maintenance, disease prevention and health restoration appropriate to these patients and families will also be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURSP 2185 - ADVANCED SPECIALTY OPTION: COMPLEX HEALTH PROBLEMS IN ACTUE CARE

Minimum Credits: 2
Maximum Credits: 2
This course is designed to develop a theoretical foundation for advanced nursing care of the acutely and critically ill adult-gerontology patient. Through didactic information and course assignments, students develop the knowledge base central to planning, implementing and evaluating nursing care for acutely and critically ill adult-gerontology patients with complex health problems that are commonly seen across the continuum of acute care delivery systems. Health maintenance, health promotion, disease prevention and health protection appropriate to this patient population will also be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2004 or 2404 or 2004D) and (NUR 2034 or 2434 or 2034D)

NURSP 2192 - ADV SPECIALTY OPTION: ONCOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a comprehensive theoretical and practical foundation for advanced nursing care of adult-gerontology patients with cancer dysfunctions/alterations. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for adult-gerontology patients with problems commonly seen in the oncology setting. Aspects of health promotion, protection, and maintenance appropriate to these patients and families will also be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2004

NURSP 2361 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
An in-depth study in a particular area of interest by arrangement with a designated faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

NURSP 2383 - METHODS IN TECHNOLOGY EVALUATION & USABILITY

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide informatics students with the knowledge necessary to take an applied role in the design, implementation, and evaluation of healthcare information systems. In this course, students will apply principles of usability and evaluation theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2388 - DATABASE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course provides students with the conceptual knowledge base and practice experiences necessary to understand the workings of a modern relational database management system. It will provide the students with the historical and practical knowledge needed to design a relational database. The students will have hands-on experience with databases and other software that will interface with databases. Standards, such as html, SQL, ODBC and normalization will be stressed in both the theory and practical aspects of this course. The future of database design and access from non-traditional environments will be discussed. Use of databases on servers will be demonstrated.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 2388D - DATABASE MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course provides students with the conceptual knowledge base and practice experiences necessary to understand the workings of a modern relational database management system. It will provide the students with the historical and practical knowledge needed to design a relational database. The students will have hands-on experience with databases and other software that will interface with databases. Standards, such as html, SQL, ODBC and normalization will be stressed in both the theory and practical aspects of this course. The future of database design and access from non-traditional environments will be discussed. Use of databases on servers will be demonstrated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURSP 2461 - ORGANIZTNL & MANAGEMENT THEORY

Minimum Credits: 3
Maximum Credits: 3
This graduate level course focuses on organizational, leadership, and management theories and how they apply to health service organizations, both today and in the future. Emphasis will be placed on leading the clinical discipline of nursing based on organizational and systems thinking as well as relevant political and cultural perspectives. Quality and performance improvement strategies, as well as creating and sustaining appropriate levels of change, are explored in order to facilitate the ability to create safe and effective care delivery environments.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

NURSP 2475 - INTRO TO HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on a conceptual foundation for understanding nursing informatics and includes analysis of various applications of information systems within the context of the health care system. This course introduces theoretical models of nursing informatics; healthcare computing; and systems design and analysis. Other topics include nursing vocabularies, nursing knowledge generation; ethical and social issues in healthcare informatics; and the impact of consumer health informatics.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURSP 2491 - FINC ECON HEALTH CARE LEADERS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data from a virtual hospital which allows those in clinical leadership roles learn how to effectively balance the administrative and clinical needs of today's health care environment.
Academic Career: GRAD
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

NURSP 2492 - LEADERSHIP DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the application of leadership theory and the development of critical leadership skills necessary for success in today's health care environment. The course is based on five essential competencies for nursing leadership: professionalism, business skills and principles, knowledge of the health care environment, communication and relationship management, and transformational leadership.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Distance Education

NURSP 3092 - LEADERSHIP IN COMPLEX SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This advanced level leadership course focuses on leading complex organizations and systems to facilitate the transformation of health care. Using principles of chaos and complexity theory, students will explore methods for assessing organizations, identifying emerging issues, and facilitating organization-wide changes to meet the ongoing challenges facing health care organizations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NURSP 3094 - EVIDENCE-BASED MANAGEMENT AND QUALITY IMPROVEMENT

Minimum Credits: 3
Maximum Credits: 3
This course is designed to assist students pursuing leadership roles within health systems with the application of evidence-based management principles and the design of quality improvement approaches that support a culture of clinical and service excellence. During this course, students learn to find, interpret, and use scientific evidence related to managerial decisions. Using quality improvement theories, students will analyze their own organizations and identify best practices. Students will apply selected quality tools and techniques to solve actual problems in their workplaces.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NURSP 3096 - DATA ANALYTICS AND CLINICAL SYSTEMS DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course is designed to assist students pursuing leadership roles within health systems to use data analytics to assist with the design of clinical systems to improve organizational outcomes. Using a web-designed structure, students will access a Virtual Hospital and use financial and clinical data to successfully resolve issues presented in a case study format. These case studies are designed to simulate actual problems facing nursing leaders both today and in the future. Through class discussions, students will then learn multiple approaches to resolving complicated issues.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Nursing students only.

NURSP 3097 - DNP RESIDENCY: ADMINISTRATION

Minimum Credits: 1
Maximum Credits: 10
This course is designed to provide a culminating practicum experience for the DNP leadership student. Students will focus on promoting evidence based practice as interdisciplinary team members and providing high quality, cost effective care in a dynamic health care environment. Emphasis is placed on further refinement of competencies related to the leadership complex issues, organizations and systems.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: School of Nursing students only.

Nursing

NUR 1092 - NURSING HONORS CAPSTONE 2

Minimum Credits: 1
Maximum Credits: 2
This capstone curriculum provides the student with mentored practical application of the research process from inception through dissemination. The capstone is designed to allow an active, participatory role in the mentor's program of research. The goal is to develop, under supervision, competencies necessary for the development, implementation, analysis and dissemination of scholarly research. This will be accomplished through the construction and implementation of a research practicum plan in congruence with mentor's and student's research interests.
Academic Career: Undergraduate
Course Component: Directed Studies
Grade Component: H/S/U Basis

NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

Minimum Credits: 2
Maximum Credits: 2
This course examines the interaction of theory, research, and clinical expertise in the development of evidence-based nursing practice. Students identify relevant research and critically appraise published studies to evaluate their quality and applicability to clinical practice. Students gain an understanding of the research process, the critical appraisal of published research studies that use a variety of research designs, and the role of research in evidence-based practice. Students synthesize critically appraised evidence on a clinical topic. Students describe the methodologies used for quality improvement and safety initiatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NUR 2011 or 2011D

NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

Minimum Credits: 2
Maximum Credits: 2
This course examines the interaction of theory, research, and clinical expertise in the development of evidence-based nursing practice. Students identify relevant research and critically appraise published studies to evaluate their quality and applicability to clinical practice. Students gain an understanding of the research process, the critical appraisal of published research studies that use a variety of research designs, and the role of research in evidence-based practice. Students synthesize critically appraised evidence on a clinical topic. Students describe the methodologies used for quality improvement and safety initiatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Course Requirements: CREQ: NUR 2011 or 2011D
Course Attributes: Distance Education

NUR 2002 - RESEARCH PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
This course builds on the knowledge and skills acquired in NUR 2000/2400 and NUR 2011/2411 and focuses on the continuing development of an understanding of the research process through participation in an ongoing research project and course seminars. Students identify a researcher who is conducting an ongoing project and who is willing to serve as a preceptor. Students prepare a contract defining the role of the student and how he/she will meet the course objectives while working with the designated preceptor. A written log is submitted documenting the student's learning activities for the practicum. Seminars are held on a regular basis by the primary teacher and focus on discussion of the research process, guided critiques of published research, and presentations by the students of their practicum experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NUR 2007 or 2407 or 2207 or 2007D

NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

Minimum Credits: 4
Maximum Credits: 4
This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the lifespan.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

Minimum Credits: 4
Maximum Credits: 4
This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the life span.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 2009 - LEADERSHIP AND HEALTHCARE SYSTEMS: POLICY, ORGANIZATION, AND FINANCING OF HEALTH CARE

Minimum Credits: 0
Maximum Credits: 0
The purpose of this web-enhanced course is to equip the graduate prepared nurse with beginning skills to influence health policy, to provide leadership in the healthcare delivery system, and to utilize basic principles of fiscal management in making high-quality cost-effective choices in the use of health care resources. The course consists of three units. The first unit explores the policymaking process, the role of the advanced practice nurse or advanced generalist and the effect of public policy on healthcare delivery systems. The second unit

examines the organization and delivery of healthcare with an emphasis on the continuum of health care, including acute, specialized, and community based systems. Preparation for a nursing leadership role in these integrated care systems is emphasized. The third unit presents an overview of healthcare financing as it relates to the delivery of health care services. The nurse's role as the monitor of quality control, patient safety, and cost-effective care is examined in the context of clinical decision making.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: MUST be taken with any 2000 or 3000-level Nursing Course

NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

Minimum Credits: 3
Maximum Credits: 3
Health promotion and disease prevention are examined from theoretical foundations to clinical applications. The course focuses on individual and community health promotion assessment, screening, and interventions in diverse populations. Epidemiological principles and real clinical examples are discussed as a basis for focusing health promotion assessment and interventions. Course topics are delineated according to Healthy People 2020 and World Health Organization goals with a corresponding focus on factors related to health care disparities among vulnerable populations. Current international research in health promotion and disease prevention is the basis for identifying appropriate interventions in diverse populations and settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NUR 2010D - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

Minimum Credits: 3
Maximum Credits: 3
Health promotion and disease prevention are examined from theoretical foundations to clinical applications. The course focuses on individual and community health promotion assessment, screening, and interventions in diverse populations. Epidemiological principles and real clinical examples are discussed as a basis for focusing health promotion assessment and interventions. Course topics are delineated according to Health People 2010 goals with a corresponding focus on factors related to health care disparities among vulnerable populations. Current research in health promotion and disease prevention is the basis for identifying appropriate interventions in diverse populations and settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course will provide students with the basis for understanding and interpreting commonly used statistical tests, as well as critically appraising their use in published research studies. Content will include descriptive and inferential statistics commonly reported in published research studies including both univariate and multivariate parametric and nonparametric tests. The course will also cover meta-analytic techniques and students will learn to calculate effect sizes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course will provide students with the basis for understanding and interpreting commonly used statistical tests, as well as critically appraising their use in published research studies. Content will include descriptive and inferential statistics commonly reported in published research studies including both univariate and multivariate parametric and nonparametic tests. The course will also cover meta-analytic techniques and students will learn to calculate effect sizes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2019 - PED PHYSICAL DIAGNOSIS CLINICAL

Minimum Credits: 1
Maximum Credits: 1
This course focuses on the performance of the health assessment of the child. Students practice performing a patient database, the physical exam, developmental assessment, and to applying the diagnostic process.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN

Minimum Credits: 3
Maximum Credits: 3
This didactic course focuses on the use of the diagnostic history and physical examination to formulate a health assessment in patient populations across the lifespan. Concentration is on selected theories, principles and techniques from the physical and behavioral sciences essential to obtaining a complete health history and performing a methodical physical examination on patients across the life span.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2004 or 2004D; PLAN: NURSAN-MSN or NURSAN-DNP or NURSMW-DNP; SUBPLAN: MSNNNP or DNPNNP or DNPFLNP or DNPPPNP or MSNCNL or DNPMSN or DNPAGAC or DNPNA or ODNPNA or MSNADM or OCNL or ONAD or DNPAGNP-SP or DNPPCNP or DNPAGCN or DNPPMHN

NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL

Minimum Credits: 2
Maximum Credits: 2
This clinical course builds upon the diagnostic process that is introduced in NUR 2031 and expanded upon in NUR 2033. Using a problem based approach; students will use the information on the diagnostic process that is taught in NUR 2033 and apply it to the clinical setting. Differential diagnoses will be formulated based on the accurate and thorough health history and physical exam conducted on patients across the lifespan. Students will learn the process of verbally presenting patient cases, formulating differential diagnoses, formulating patient problem lists, and identifying stressors to health.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2033 or 2433 or 2033D; PROG: Graduate School of Nursing

NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL

Minimum Credits: 2
Maximum Credits: 2
This clinical course builds upon the diagnostic process that is introduced in NUR 2031 and expanded upon in NUR 2033. Using a problem based approach; students will use the information on the diagnostic process that is taught in NUR 2033 and apply it to the clinical setting. Differential diagnoses will be formulated based on the accurate and thorough health history and physical exam conducted on patients across the lifespan. Students will learn the process of verbally presenting patient cases, formulating differential diagnoses, formulating patient problem lists, and identifying stressors to health.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: PREQ:NUR 2031or2231;CREQ: NUR 2033 or2433or2033D;PLAN:NOT IN Neonatal Nurse Practitioner, Pediatric Nurse Practitioner, Family Nurse Practitioner, Psych Primary Care Nurse Practitioner, Student Nurse Midwife or Adult Geron Primary Care Nurse Practitioner
Course Attributes: Distance Education

NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN

Minimum Credits: 2
Maximum Credits: 2
This didactic course builds upon the diagnostic process introduced in NUR 2031. Using a problem-based approach to symptoms, students will be introduced to the diagnostic framework, algorithms, and terminology that will allow them to move from symptom to diagnosis. Evidence-based diagnosis will focus on the accuracy of the health history and sensitivity of the physical exam, laboratory studies and tests to "rule in" or "rule out" specific diseases. Students will learn the importance of formulating clinical impressions that lead to hypothesis testing in the care of patients across the life span.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2032 or 2432 or 2032D; PROG: Graduate School of Nursing

NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN

Minimum Credits: 2
Maximum Credits: 2
This didactic course builds upon the diagnostic process introduced in NUR 2031. Using a problem-based approach to symptoms, students will be introduced to the diagnostic framework, algorithms, and terminology that will allow them to move from symptom to diagnosis. Evidence-based diagnosis will focus on the accuracy of the health history and sensitivity of the physical exam, laboratory studies and tests to "rule in" or "rule out" specific diseases. Students will learn the importance of formulating clinical impressions that lead to hypothesis testing in the care of patients across the life span.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2032 or 2432 or 2032D
Course Attributes: Distance Education

NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN

Minimum Credits: 3
Maximum Credits: 3
This is a basic science course covering the principles of drug action for several important classes of drugs. A basic knowledge of principles of chemistry and biochemistry will be used to explain the chemical basis of drug receptor interactions. The course begins with the fundamentals of pharmacodynamics, pharmacokinetics and pharmacogenomics, and then covers the pharmacology of the central nervous system, respiratory system, gastrointestinal system, renal/cardiovascular system, endocrine system, immune suppression and antibiotic, antifungal, antiviral therapies.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2004 or 2004D

NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN

Minimum Credits: 3
Maximum Credits: 3
This is a basic science course covering the principles of drug action for several important classes of drugs. A basic knowledge of principles of chemistry and biochemistry will be used to explain the chemical basis of drug receptor interactions. The course begins with the fundamentals of pharmacodynamics, pharmacokinetics and pharmacogenomics, and then covers the pharmacology of the central nervous system, respiratory system, gastrointestinal system, renal/cardiovascular system, endocrine system, immune suppression and antibiotic, antifungal, antiviral therapies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2004 or 2004D
Course Attributes: Distance Education

NUR 2040 - LITERATURE AND FILM TO UNDERSTAND THE PATIENT-PRACTITIONER EXPERIENCE

Minimum Credits: 1
Maximum Credits: 1
This course emphasizes the importance of understanding the universal human aspects of health and disease to further develop empathetic and holistic skills among health professional students. The importance of interprofessional collaboration as a mechanism to improve patient outcomes will be explored. Students and faculty will read and/or view selected works that focus on the human condition that may impact the physical and/or psychological health of the patient, families, communities, and care providers - and their interaction with the healthcare system. Guided discussion that helps students to reflect on the humanistic aspects of healthcare will be conducted.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROGRAM: Nursing - Graduate or Undergraduate

NUR 2043 - FOUNDATIONS OF PERSONALIZED HEALTH: TRANSLATION FROM BASIC RESEARCH TO CLINICAL PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide the undergraduate nursing student with a Foundation in Personalized Health Care and to introduce students to many facets of this emerging field. Emphasis will be placed on exploring 1) nursing implications of personalized and precision health care, 2) ethical issues of importance to the field of nursing, 3) next generation methods to tailor precise and personalized treatments, and 4) evidence-based interventions in personalized health care. Students will immerse themselves in the clinical settings and research areas related to personalized health care. Student will explore the implementations of personalized health care, a predictive, preventive, and patient-centered approach treatment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

NUR 2078 - CLINICAL DIAGNOSTICS

Minimum Credits: 3
Maximum Credits: 3
This course emphasizes performing and/or interpreting cost effective office-based laboratory and selected diagnostic tests in problem-based cases. The course is designed for nurse practitioners who may practice where on-site laboratory and diagnostic services may not be

available. Included are EKG and x-ray interpretation and performing and interpreting selected laboratory tests. Suturing, casting, splinting workshops and wound care techniques are also included.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2033; PROG: School of Nursing

NUR 2078D - CLINICAL DIAGNOSTICS

Minimum Credits: 3
Maximum Credits: 3
This course emphasizes performing and/or interpreting cost effective office-based laboratory and selected diagnostic tests in problem-based cases. The course is designed for nurse practitioners who may practice where on-site laboratory and diagnostic services may not be available. Included are EKG and x-ray interpretation and performing and interpreting selected laboratory tests. Suturing, casting, splinting workshops and wound care techniques are also included.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2033
Course Attributes: Distance Education

NUR 2084 - MEASUREMENT AND EVALUATION IN TEACHING

Minimum Credits: 2
Maximum Credits: 2
Nurse educators continue to build their skills by applying measurement and evaluation concepts to student learning and the quality of student assessments. Course activities offer opportunities to apply measurement and evaluation methods as well as create assessment tools. Students will develop an understanding of measurement and evaluation in the broader context of a nursing school's program. We will discuss ethical, legal, and social issues involving measurement and evaluation as well as uses and limitations of evaluation methods in diverse healthcare settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 3293

NUR 2112 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 1

Minimum Credits: 3
Maximum Credits: 3
This course develops skill in parametric and nonparametric applications of descriptive and inferential statistics to health sciences research. The concept of parametric and non-parametric statistics is covered. Parametric tests for comparing means include one-sample z and t-tests, and independent and related samples t-tests. Methods for checking parametric test assumptions are presented, and remedies for assumption violations explored, including non-parametric alternatives for these tests. Software for statistical analyses will be introduced along with data examples from health science research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate Nursing

NUR 2113 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 2

Minimum Credits: 3
Maximum Credits: 3
This course develops skill in parametric and nonparametric statistical applications to factorial designs in health sciences research. Analysis of variance (ANOVA) for normally distributed outcomes is the parametric approach presented. Methods for checking parametric test assumptions are presented, and remedies for assumption violations explored, including non-parametric alternatives for this test including empirical resampling techniques (bootstrapping) and rank-based tests. Software for statistical analyses will be introduced along with data examples from health science research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: "NUR 2112 Applied Parametric and Non-Parametric Statistics for Health Sciences 1" OR "NUR 3112 Applied Parametric and Non-Parametric Statistics for Health Sciences 1"

NUR 2114 - APPLIED REGRESSION FOR HEALTH SCIENCE RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course covers classical and more modern regression analysis methods with application to the health sciences. A major focus is simple and multiple linear regression and its underlying assumptions for valid inference. Remedial strategies will be presented for regression when nonstandard conditions exist. Predictive modeling using nonlinear regression methods, regression trees, and rule-based models will be introduced. Implementation of regression using statistical software will be presented using data examples from health science research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NUR 2112 and NUR 2113

NUR 2134 - PROFESSIONAL NURSING SEMINAR

Minimum Credits: 1
Maximum Credits: 1
The goal of this course is to support the student's successful progression to MSN entry into professional nursing practice. Classroom activities and self-directed learning will prepare students to attain the benchmarks associated with professional RN licensure and CNL certification and provide a foundation for the continuous self-reflection and life-long learning required to support professional nursing practice. Students will develop skills to be resilient and flexible within the changing healthcare environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

NUR 2174 - LEADERSHIP IN SCHOOL NURSING

Minimum Credits: 2
Maximum Credits: 2
This course complements NUR 2176 Seminar School Nurse by expanding knowledge and decision making in school nursing. This course explores the leadership role of school nurses, legal aspects of school nursing, and the management of the school health office. This course will also expand on chronic health conditions and vulnerable populations in the school and community. Students will engage in active learning modules designed to prepare them for the Certified School Nurse role in the school system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2176 - SEMINAR SCHOOL NURSE

Minimum Credits: 3
Maximum Credits: 3
This course is designed to prepare the professional nurse for certification as a school nurse in Pennsylvania; both the theory component

(NURSP 2176) and the practicum (NURSP 2179) are required for eligibility. The role of the school nurse is explored through the historical, legal, ethical, research and practice perspectives. The biological, physical, developmental, behavioral, cultural and psychosocial needs of children of all ages in the school setting are examined. Throughout the course, current evidence related to school nursing and Pennsylvania educational requirements are applied to the health needs of school age children, including those with special health and learning needs, the culturally diverse and English Language Learners (ELLs). The independent and collaborative aspects of the school nurse role are explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2179 - PRACTICUM SCHOOL NURSE

Minimum Credits: 2
Maximum Credits: 2
This course is designed to prepare the professional nurse for certification as a school nurse in Pennsylvania; both the theory components (NUR 2176 and NUR 2174) and this practicum (NUR 2179) are required for eligibility. This course provides the required 120 hours of clinical practicum experience in elementary, middle, and high school settings. The nursing care of children requiring acute, chronic, and episodic care is performed under the guidance of a certified school nurse. Throughout the course, the application of the nursing process and evidence-based approaches is employed when providing nursing services to school-age children. Interdisciplinary care and management for school-age children with special health and learning needs, including the culturally diverse and English Language Learners (ELLs), is emphasized. The independent and collaborative aspects of the school nurse role are explored within the school setting.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

NUR 2202 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2212 - HEALTH POLICY ANALYSIS: CONCEPTUAL FOUNDATIONS

Minimum Credits: 3
Maximum Credits: 3
Twenty-first century America is marked by deep and seemingly incommensurable divisions in terms of public policy solutions to our most intractable issues. Health policy challenges are not immune to these deep divisions, as the debate during and since the passage of the Affordable Care Act illustrates. Positions on key public policy issues are driven by a variety of philosophical, social, and cognitive phenomena. In this class, we will explore these phenomena and how they drive the derivation, implementation, and evaluation of public policy. We will apply the conceptual understanding of these phenomena to current health policy issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2218 - STUDIES IN ADVANCED NURSING ETHICS

Minimum Credits: 1
Maximum Credits: 1
Philosophical and clinical foundations in ethics are analyzed and used to provide a basis for guidelines in ethical decision-making and practice. Content will include (among other potential issues issues) theoretical foundational ethics, issues in diversity and social justice, healthcare allocation, and responsible conduct of research. At the end of the course students will be able to apply theoretical resources to case studies and daily practice
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

NUR 2220 - PRINCIPLES OF PALLIATIVE AND END-OF-LIFE CARE

Minimum Credits: 3
Maximum Credits: 3
This course is the foundational course for the University of Pittsburgh School of Nursing Graduate Certificate in End-of-Life Care and Communication. The Certificate's curriculum is grounded in Ruland & Moore's Theory of a Peaceful End-of-Life which posits that there are four key outcome domains central to a high-quality patient- and family-centered end-of-life experience: experiencing dignity and respect; experiencing comfort; experiencing connectedness; and experiencing support. This foundational course focuses on experiencing dignity and respect, as quality end-of-life care is predicated on a commitment to understanding and delivering care that is aligned with the patient's values and preferences. This course reviews the history of the dying experience from a cultural and professional perspective and examines the emergence of Modern Hospice and Palliative Care as responses to the growing shift towards medicalization and institutionalization of the dying experience in the 20th century. The course will emphasize the vital importance of primary palliative care to achieving quality end-of-life care. Key topics include the philosophical underpinnings of Palliative Care, mechanisms to uphold patient autonomy, and barriers and facilitators to providing culturally congruent care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2221 - PROMOTING COMFORT THROUGH PAIN AND SYMPTOM MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course is the second course in the University of Pittsburgh School of Nursing Graduate Certificate in End-of-Life Care and Communication. The Certificate's curriculum is grounded in Ruland & Moore's Theory of a Peaceful End-of-Life, which posits that there are four key outcome domains central to a high-quality patient- and family-centered end-of-life experience: experiencing dignity and respect; experiencing comfort; experiencing connectedness; and experiencing support. This second course expands on the foundational knowledge contained in the first course and provides detailed, evidence-based information that will provide learners with the knowledge and skills to promote the comfort of their patients who are at end-of-life. This course is rooted in the knowledge that comfort is multidimensional and transcends merely assessing patients and administering medications. The course will include content on the multidimensional assessment of pain and other distressing symptoms using validated tools; provision of pharmacological and non-pharmacological strategies for pain and symptom management; setting patient-centered goals for patients with multiple symptoms in the setting of complex illness; and engaging family members/informal caregivers in pain and symptom management plans. The course will also include special considerations in the management of patients with substance use disorder. Finally, we will address strategies to apply the principles of pain and symptom management across diverse patient populations and practice settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2220

NUR 2222 - CONVERSATION & COLLABORATION: COMMUNICATION WITH PATIENTS, FAMILIES, AND COLLEAGUES

Minimum Credits: 3
Maximum Credits: 3
This course is the third course in the University of Pittsburgh School of Nursing Graduate Certificate in End-of-Life Care and Communication. The Certificate's curriculum is grounded in Ruland & Moore's Theory of a Peaceful End-of-Life, which posits that there are four key outcome domains central to a high-quality patient- and family-centered end-of-life experience: experiencing dignity and respect; experiencing comfort; experiencing connectedness; and experiencing support. Proficient communication is essential to all of the four outcomes. This third course expands on the foundational knowledge contained in the first course and provides the theoretical foundations of high-quality communication as well as the skills and techniques that will enable healthcare providers to engage in supportive and empathetic communication with patients and family members as well as effective, professional communication with other members of the healthcare team. Students will have the opportunity to use simulation to practice and refine their communication skills.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2277 - EXXAT FEE FOR GRADUATES

Minimum Credits: 0
Maximum Credits: 0
Clinical Management Fee for Graduate Students
Academic Career: Graduate
Course Component: Lecture
Grade Component: No Grade Required

NUR 2308 - ETHICAL AND SOCIAL IMPLICATIONS OF BIOTECHNOLOGY

Minimum Credits: 3
Maximum Credits: 3
This discussion-based course provides an introduction to the ethical issues accompanying the development and implementation of a range of biotechnologies and the social implications of their use. Two types of biotechnologies will be examined: the use of engineering and technology in the health sciences to treat disease, protect people, and improve human well-being, as well as the use of microorganisms or other biological substances in the development of new products. Biotechnologies to be considered include genomic sequencing, gene editing and genetic engineering (CRISPR-Cas9); reproductive technologies (e.g., ectogenesis, fertility preservation); use of stem cells, phage, and neurotechnologies to treat human disease and disability; forensic uses of data (e.g., facial recognition technologies, identification of humans and human remains); Big Data and machine learning in healthcare; robotics, and neuroengineering, as well as the use of technologies to protect people or to avoid placing humans in harm's way (e.g., military use of drone technology, or search and rescue use of robots). This course encourages students to consider: issues of diversity, equity, and inclusion in developing and deploying biotechnologies; issues of research ethics, intellectual property, and global access to biotechnologies; professional and social responsibilities for the funding, development, marketing, and use of biotechnologies; ethical use of personal data and biological materials; and ethical frameworks for evaluating the social implications of biotechnology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2377 - EXXAT FEE FOR CERTIFICATES

Minimum Credits: 0
Maximum Credits: 0
Clinical Management Fee for Nursing Certificate Students
Academic Career: Graduate
Course Component: Lecture
Grade Component: No Grade Required

NUR 2400 - RES FOR EBP 1

Minimum Credits: 2
Maximum Credits: 2
This course examines the interaction of theory, research, and clinical expertise in the development of evidence-based nursing practice. Students develop the skills needed to identify relevant research and to critically appraise published studies to evaluate their quality and applicability to clinical practice. Students gain an understanding of the research process, the critical appraisal of published research studies that use a variety of research designs, and the role of research in evidence-based practice.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NUR 2011 or NUR 2211
Course Attributes: Distance Education

NUR 2404 - PATHOPHYS ACROSS LIFE SPAN

Minimum Credits: 4
Maximum Credits: 4
This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the life span.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 2407 - RES FOR EBP 2

Minimum Credits: 2
Maximum Credits: 2
Students will learn how to write an evidence-based question, conduct an exhaustive review of published literature on a clinical topic, integrate critically appraised research studies, develop an evidence-based protocol, and propose a method to implement and evaluate the protocol. Students will also learn to critically appraise published clinical practice guidelines. Students will develop an evidence-based document that transforms empirically developed information for use in clinical practice.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2000 or NUR 2200 or NUR 2400) and (NUR 2011 or NUR 2211 or NUR 2411)
Course Attributes: Distance Education

NUR 2410 - HEALTH PROMO/DISEASE PRVNTN

Minimum Credits: 3
Maximum Credits: 3
Health promotion and disease prevention are examined from theoretical foundations to clinical applications. The course focuses on individual and community health promotion assessment, screening, and interventions in diverse populations. Epidemiological principles and real clinical examples are discussed as a basis for focusing health promotion assessment and interventions. Course topics are delineated according to Health People 2010 goals with a corresponding focus on factors related to health care disparities among vulnerable populations. Current research in health promotion and disease prevention is the basis for identifying appropriate interventions in diverse populations and settings.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

NUR 2411 - APPLIED STATISTICS FOR EBP

Minimum Credits: 3
Maximum Credits: 3
This course will provide students with the basis for understanding and interpreting commonly used statistical tests, as well as critically appraising their use in published research studies. Content will include descriptive and inferential statistics commonly reported in published research studies including both univariate and multivariate parametric and nonparametic tests. The course will also cover meta-analytic techniques and students will learn to calculate effect sizes.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

NUR 2432 - DIFFERENTIAL DIAGNOSIS CLN

Minimum Credits: 2
Maximum Credits: 2
This clinical course builds upon the diagnostic process that is introduced in NUR 2031 and expanded upon in NUR 2033. Using a problem based approach; students will use the information on the diagnostic process that is taught in NUR 2033 and apply it to the clinical setting. Differential diagnoses will be formulated based on the accurate and thorough health history and physical exam conducted on patients across the lifespan. Students will learn the process of verbally presenting patient cases, formulating differential diagnoses, formulating patient problem lists, and identifying stressors to health.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2031 or NUR 2231 ; CREQ: NUR 2033 or NUR 2433
Course Attributes: Distance Education

NUR 2433 - DIFFRNCL DIAG ACROSS LIFE SPAN

Minimum Credits: 2
Maximum Credits: 2
This didactic course builds upon the diagnostic process introduced in NUR 2031. Using a problem-based approach to symptoms, students will be introduced to the diagnostic framework, algorithms, and terminology that will allow them to move from symptom to diagnosis. Evidence-based diagnosis will focus on the accuracy of the health history and sensitivity of the physical exam, laboratory studies and tests to "rule in" or "rule out" specific diseases. Students will learn the importance of formuLating clinical impressions that lead to hypothesis testing in the care of patients across the life span.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NUR 2031 or NUR 2231 ; CREQ: NUR 2032 or NUR 2432
Course Attributes: Distance Education

NUR 2434 - ADVANCED PHARMACOLOGY

Minimum Credits: 3
Maximum Credits: 3
This is a basic science course covering the principles of drug action for several important classes of drugs. A basic knowledge of principles of chemistry and biochemistry will be helpful in understanding the chemical basis of drug receptor interactions. The course begins with fundamentals of pharmacodynamics and pharmacokinetics and then covers the pharmacology of the central nervous system, respiratory system, gastrointestinal system, renal/cardiovascular system, endocrine system, immunosuppression, antibiotics and antifungals
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NUR 2004 or NUR 2204 or NUR 2404
Course Attributes: Distance Education

NUR 2465 - FUNDMS DISTR/MASS CASUALTY CRE

Minimum Credits: 2
Maximum Credits: 2
This course is designed to develop a comprehensive understanding and practical foundation for advanced nursing practice of the causes, prevention, and response to disasters as well as insight into the disaster management system nationally and locally. Didactic content focuses on information central to emergency preparedness, disaster planning and response and mass casualty care.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 2478 - CLINICAL DIAGNOSTICS

Minimum Credits: 3
Maximum Credits: 3
This course emphasizes performing and/or interpreting cost effective office-based laboratory and selected diagnostic tests in problem-based cases. The course is designed for nurse practitioners who may practice where on-site laboratory and diagnostic services may not be available. Included are EKG and x-ray interpretation and performing and interpreting selected laboratory tests. Suturing, casting, splinting workshops and wound care techniques are also included.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2033 or NUR 2433
Course Attributes: Distance Education

NUR 2480 - INTRO GENETCS & MOLEC THERPUTC

Minimum Credits: 3
Maximum Credits: 3
This introductory course focuses on the fundamentals of human and molecular genetics. It is designed to give students a basic understanding of genetic concepts and molecular techniques so that this knowledge can be applied to current and future genetic diagnoses and therapies encountered in nursing.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 2639 - HEALTH CARE DELIVERY AT SAINT REGIS MOHAWK

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide the graduate (nursing) student with exposure to an American Indian and Alaska Native (AI/AN) culture and health care delivery system. Emphasis will be placed on exploring health issues and risk factors, the impact of cultural characteristics on health outcomes, and health care delivery and utilization, and the achievement of health-related goals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

NUR 2680 - INTRODUCTION TO GENETICS AND MOLECULAR THERAPEUTICS

Minimum Credits: 3
Maximum Credits: 3
This introductory course focuses on the fundamentals of human and molecular genetics. It is designed to give students a basic understanding of genetic concepts and molecular techniques so that this knowledge can be applied to current and future genetic diagnoses and therapies encountered in nursing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2680D - INTRODUCTION TO GENETICS AND MOLECULAR THERAPUTICS

Minimum Credits: 3
Maximum Credits: 3
This introductory course focuses on the fundamentals of human and molecular genetics. It is designed to give students a basic understanding of genetic concepts and molecular techniques so that this knowledge can be applied to current and future genetic diagnoses

and therapies encountered in nursing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 2681 - ADV TOPICS IN HUMAN GENETICS

Minimum Credits: 3
Maximum Credits: 3
This is a 12-week graduate level course that will emphasize the clinical aspects of genetic disorders including diagnosis, current standard treatment, available gene testing and molecular therapy, ethical/cultural issues, support group availability and the state of current research in the field. This will be accomplished using a problem based learning approach with case resolutions to demonstrate the clinical variation of genetic disorders, including the variety of causes, treatments, testing and ethical concerns. This course is also designed to introduce the student to resources related to teaching genetics/genomics and appropriate design of genetic/genomic research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2682 - HUMAN GENETICS AND CLINICAL APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
This introductory course focuses on the fundamentals of human and molecular genetics. It is designed to give students a basic understanding of genetic concepts and molecular techniques so that this knowledge can be applied to current and future genetic diagnoses and therapies encountered in nursing
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2682D - HUMAN GENETICS AND CLINICAL APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
This introductory course focuses on the fundamentals of human and molecular genetics. It is designed to give students a basic understanding of genetic concepts and molecular techniques so that this knowledge can be applied to current and future genetic diagnoses and therapies encountered in nursing
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2800 - COORDINATING CLINICAL TRIALS

Minimum Credits: 2
Maximum Credits: 2
.The purpose of this course is to provide individuals with a basic understanding of clinical trials research conducted in accordance with federal regulations. Aspects of clinical trials research such as regulatory requirements, informed consent, pre- and post-study activities, audit procedures, and budgetary issues will be covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2000 or 2200 or 2400 or 2000D

NUR 2801 - COORDINATING CLINICAL TRIALS PRACTICUM

Minimum Credits: 1
Maximum Credits: 2
The course is designed to familiarize the student with the various roles and responsibilities of a clinical research coordinator. Each student may select one or more research areas. Preceptors in these areas will guide observations that exemplify the role of the clinical research coordinator. Each student will also participate in the review of research proposals at the university of Pittsburgh institutional review board and an observational experience at the clinical and translational research center (CTRC). The CTRC is an NIH funded center at the University of Pittsburgh used for inpatient and outpatient studies. The course includes opportunities for discussion of research protocols and review of procedures from a variety of perspectives.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: CREQ: NUR 2800

NUR 2820 - PRINCIPLES AND PRACTICE OF FORENSIC NURSING AND LEGAL NURSE CONSULTING

Minimum Credits: 3
Maximum Credits: 3
This course provides knowledge in areas of the law; the process of a lawsuit; and ethical, legal, and social issues (ELSI) related to nurse consulting and forensic nursing (FN). It is designed to provide an overview of how nursing knowledge and skills can be transferred and translated into legal nurse consulting (LNC) and forensic nursing examination (FNE) practice. Approaches and methods in legal nurse consulting and forensic nursing are discussed including but not limited to screening cases, analyzing health professional malpractice cases, performing medical records review and examination, quality assurance and risk management, preparing effective written and verbal reports and abstracts, and preparing for testifying as an expert witness. Specific activities focused on the development of investigative techniques in forensic nursing examination are included. Emphasis is placed on the application of nursing skills and knowledge to questions of law and health in criminal and civil investigations and other court related issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Hybrid

NUR 2822 - SEMINAR AND PRACTICUM IN FORENSIC NURSING AND LEGAL NURSE CONSULTING

Minimum Credits: 3
Maximum Credits: 3
The seminar and practicum in forensic nursing and legal nurse consulting course provides the student with an opportunity to attend a seminar with other students who are completing their practicum experience in a variety of settings and mentored by diverse preceptors. Emphasis is placed on the application of nursing skills and knowledge to areas of practice in law (reviewing malpractice cases for and attorney, collaborating with law enforcement, health, correctional, or psychiatric or ed settings) where a forensic nurse or legal nurse consultant practices.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NUR 2865 - FUNDAMENTALS OF DISASTER AND MASS CASUALTY CARE

Minimum Credits: 2
Maximum Credits: 2
This course is designed to develop a comprehensive understanding and practical foundation for nursing and advanced nursing practice of the causes, mitigation, and response to disasters as well as insight into the disaster management system nationally and locally. Didactic content focuses on information central to emergency preparedness, disaster planning and response and mass casualty care.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2865D - FUNDAMENTALS OF DISASTER AND MASS CASUALTY CARE

Minimum Credits: 2
Maximum Credits: 2
This course is designed to develop a comprehensive understanding and practical foundation for advanced nursing practice of the causes, prevention, and response to disasters as well as insight into the disaster management system nationally and locally. Didactic content focuses on information central to emergency preparedness, disaster planning and response and mass casualty care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 2890 - INTRODUCTION TO EPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
Epidemiology is the study of the patterns and causes of health and disease in populations. It is the scientific basis of public health. Using a problem-based approach, this course will focus on the basic principles and methods of epidemiology as they apply to health and disease in populations, as well as the development of health policy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2000; PROG: School of Nursing

NUR 3006 - DEVELOPING THE HEALTHCARE LEADER: INTERNSHIP EXPERIENCE 2

Minimum Credits: 6
Maximum Credits: 6
Learners will acquire and demonstrate leadership skills as they apply classroom-based concepts in the clinical, academic, or administrative setting with an emphasis on enhancing the focus of their personalized elective. This course will give learners the opportunity to apply knowledge and build professional networks. Alternatively, the requirements for this course may be fulfilled by the completion of a residency or fellowship upon approval of the Program Director.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

NUR 3010 - PHD DISSERTATION

Minimum Credits: 1
Maximum Credits: 9
The PhD dissertation fulfills two major purposes: (1) to establish the student's competency in the conduct of scholarly research, the successful public defense and uploading of all required documents of which demonstrates the candidate's ability to carry out, analyze and report scholarly research at a higher level of professional competency; and (2) to contribute to the science of nursing through the dissemination of results from the investigation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

NUR 3012 - PUBLIC POLICY IN HEALTH CARE

Minimum Credits: 2
Maximum Credits: 2
This course offers political and analytical insights into understanding U.S. health policy-making and into developing strategies that influence health policy outcomes. The course presents an analysis of the functions of the public and private sector in creating and implementing health policy across diverse patient populations. The role of political and social philosophy in defining nursing and health services is examined. The course includes consideration of areas in which policy made by multiple branches of government and various types of public and private organizations significantly affects nursing as a profession and its ability to deliver care; regulation of professional practice; and the impact of public policy on patient health outcomes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3012D - PUBLIC POLICY IN HEALTH CARE

Minimum Credits: 2
Maximum Credits: 2
This course offers political and analytical insights into understanding U.S. health policy-making and into developing strategies that influence health policy outcomes. The course presents an analysis of the functions of the public and private sector in creating and implementing health policy across diverse patient populations. The role of political and social philosophy in defining nursing and health services is examined. The course includes consideration of areas in which policy made by multiple branches of government and various types of public and private organizations significantly affects nursing as a profession and its ability to deliver care; regulation of professional practice; and the impact of public policy on patient health outcomes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 3013 - ETHICS IN HEALTHCARE

Minimum Credits: 1
Maximum Credits: 1
Philosophical and clinical foundations in ethics are analyzed and used to provide a basis for guidelines in ethical decision-making and practice. Content will include legal-ethical issues in practice, ethical implications in the role of the doctorally prepared nurse, historical and political influences on ethics in health care, diversity in race, gender, and sexual orientation, and principals of justice, autonomy, and provider-patient relations. Additionally this course describes general ethical practices and ethical principles associated with the proper conduct of research, scientific integrity and protection of human subjects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3013D - ETHICS IN HEALTHCARE

Minimum Credits: 1
Maximum Credits: 1
Philosophical and clinical foundations in ethics are analyzed and used to provide a basis for guidelines in ethical decision-making and practice. Content will include legal-ethical issues in practice, ethical implications in the role of the doctorally prepared nurse, historical and political influences on ethics in health care, diversity in race, gender, and sexual orientation, and principals of justice, autonomy, and provider-patient relations. Additionally this course describes general ethical practices and ethical principles associated with the proper conduct of research, scientific integrity and protection of human subjects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 3018 - FOCUS GROUP PRACTICUM

Minimum Credits: 2
Maximum Credits: 6
This course builds upon the student's didactic knowledge gained in NUR 3055 or equivalent through the supervised experience of planning, conducting, analyzing, and preparing reports for focus groups. Emphasis is placed upon the student's mastery of the ability to formulate questions, facilitate discussion, including the management of difficult participants, note taking, and analysis of data and preparation of the report. Students will be expected to lead at least two focus groups and to serve as note taker in at least two additional groups. It is expected that a secondary component of the practicum will be to develop an understanding of cultural differences in approaches to health and health care through the conduct of focus groups among different cultural groups as well as learning from the focus group experiences of others.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

NUR 3031 - METHODOLOGIES FOR DNP PROJECTS

Minimum Credits: 2
Maximum Credits: 2
During this course, students develop a Form One proposal appropriate for a Doctor of Nursing Practice (DNP) project. The evidence-based Form One proposal includes the following components: (a) a focus on a change that directly or indirectly affects health care outcomes, (b) a focus on a system or population/aggregate, (c) an implementation plan in an arena or area of practice, (d) a plan for sustainability, and (e) an evaluation plan that measures processes and/or outcomes (formative or summative). Students demonstrate how to apply the following four methodologies for the development and conduct of a DNP project and future scholarly projects, specifically quality improvement, surveillance, program evaluation, and simulation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3031D - METHODOLOGIES FOR DNP PROJECTS

Minimum Credits: 2
Maximum Credits: 2
During this course, students develop a Form One proposal appropriate for a Doctor of Nursing Practice (DNP) project. The evidence-based Form One proposal includes the following components: (a) a focus on a change that directly or indirectly affects health care outcomes, (b) a focus on a system or population/aggregate, (c) an implementation plan in an arena or area of practice, (d) a plan for sustainability, and (e) an evaluation plan that measures processes and/or outcomes (formative or summative). Students demonstrate how to apply the following four methodologies for the development and conduct of a DNP project and future scholarly projects, specifically quality improvement, surveillance, program evaluation, and simulation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 3099 or 3099D; CREQ: NUR 2000 or 2000D; PLAN: Nursing (DNP)

NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS

Minimum Credits: 2
Maximum Credits: 2
This course provides students hands-on experience with the menu-driven statistical software program of Statistical Package for the Social Sciences (SPSS). Content includes commonly used descriptive and inferential statistics including univariate and multivariate tests, parametric and non-parametric tests, and qualitative description. Students can analyze and interpret quantitative and qualitative data from their own Doctor of Nursing Practice project dataset or an instructor-provided dataset.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2011 or 2011D) and (NUR 3031 or 3031D) and (NURSP 2388 or NURSP 2388D)

NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS

Minimum Credits: 2
Maximum Credits: 2
This course provides students hands-on experience with the menu-driven statistical software program of Statistical Package for the Social Sciences (SPSS). Content includes commonly used descriptive and inferential statistics including univariate and multivariate tests, parametric and non-parametric tests, and qualitative description. Students can analyze and interpret quantitative and qualitative data from their own Doctor of Nursing Practice project dataset or an instructor-provided dataset.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2011 and 3031 and NURSP 2388; PLAN: Nursing (DNP)
Course Attributes: Distance Education

NUR 3033 - DEVELOPING THE HEALTHCARE LEADER: INTERNSHIP EXPERIENCE 1

Minimum Credits: 6
Maximum Credits: 6
This course gives learners the option for an academic, administrative, or digital health focus. Learners will broaden their understanding of program concepts through a combination of didactic instruction and experiential learning. This course will give learners the opportunity to apply knowledge and build professional networks. Alternatively, the requirements for this course may be fulfilled by the completion of a residency or fellowship upon approval of the Program Director.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

NUR 3034 - PERSONALIZED ELECTIVE

Minimum Credits: 4
Maximum Credits: 4
This course gives learners the option for an academic, administrative, or digital health focus. Learners will broaden their understanding of program concepts through a combination of didactic instruction and experiential learning. This course will give learners the opportunity to apply knowledge and build professional networks. Alternatively, the requirements for this course may be fulfilled by the completion of a residency or fellowship upon approval of the Program Director.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3036 - CAPSTONE PROJECT

Minimum Credits: 2
Maximum Credits: 2
Students will undertake a systematic investigation of a clinically based or administration based problem selected by the student and supported by faculty. Course requirements include identification of the problem to be addressed, review and critique of pertinent literature, and implementation of the project. The project will use an evidence-based practice model, and it will by systematically developed in consultation with the student's capstone committee who will evaluate each step of the process. This process can begin in NUR 2007: research for evidence-based practice 2.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

NUR 3037 - DNP PROJECT CLINICAL

Minimum Credits: 1
Maximum Credits: 1
This practicum represents the final clinical course for the DNP degree. Here the student will experience a mentored and supervised immersion in a clinical practice where the project designed and approved in the capstone project course will be implemented and evaluated.

The practice site, approved by the capstone committee must provide access to the necessary and appropriate population for project implementation, as well as support for full expression of the DNP scope of practice.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Nursing (Graduate)

NUR 3038 - DEVELOPING THE HEALTHCARE LEADER: INTERNSHIP EXPERIENCE 3

Minimum Credits: 6
Maximum Credits: 6
Learners will acquire and demonstrate leadership skills as they apply classroom-based concepts in the clinical, academic, or administrative setting that emphasizes reflection on the implementation of change processes and their iterations. Alternatively, the requirements for this course may be fulfilled by the completion of a residency or fellowship upon approval of the Program Director.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

NUR 3045 - RESEARCH PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
This course focuses on the student's development of selected research skills in collaboration with a mentor and his or her research team. Each student has the opportunity to design a practicum that complements prior research experience and is tailored to his or her current learning needs. The array of course activities may include but not be limited to developing a research proposal, submitting it as part of a grant application, preparing a protocol for submission to the institutional review board, assisting with recruitment or data collection activities for ongoing investigation, learning data management skills, participating in performance of laboratory procedures, participating in research team meetings, conducting literature searches, and preparing abstracts and/or manuscripts for presentation or publication.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

NUR 3050D - GRANT WRITING

Minimum Credits: 1
Maximum Credits: 1
This course focuses on the organization, development and preparation of a grant application. Course content is based on the general issues encountered during the development of grant applications. Students are expected to prepare components of their grant application under the direction of their mentor using the guidelines for an appropriate funding organization. Ph.D. students are expected to support some aspect of their dissertation research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

NUR 3052 - MANUSCRIPT DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
This course focuses on the process of preparing a manuscript for possible publication. Attention is directed toward selecting an appropriate journal, the organization of the paper, relevant legal and ethical issues, single vs. multiple authorship, refining one's writing skills, and the development and preparation of a manuscript for submission to a peer- reviewed journal.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

NUR 3052D - MANUSCRIPT DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
This course focuses on the process of preparing a manuscript for possible publication. Attention is directed toward selecting an appropriate journal, the organization of the paper, relevant legal and ethical issues, single vs. multiple authorship, refining one's writing skills, and the development and preparation of a manuscript for submission to a peer-reviewed journal.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

NUR 3055 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION

Minimum Credits: 1
Maximum Credits: 1
This seven-week workshop will introduce students to the focus group as a data-gathering tool and will prepare them to use focus groups in their work. The workshop will use lectures, discussions and interactive exercises to familiarize students with all aspects of focus groups. Topics to be covered include the theoretical basis of focus groups, formulating questions, recruiting participants, facilitating the discussion, taking notes and applying the data. It is recommended that students read one text. In addition, students will complete a series of assignments designed to sharpen their listening, facilitating and analytical abilities. Critical components of the class will be observation of and hands-on experience with facilitating discussions, taking notes and reporting. Ability to role play highly desirable.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3056 - INTRODUCTION TO TRANSLATIONAL RESEARCH IN THE HEALTH SCIENCES

Minimum Credits: 2
Maximum Credits: 2
Course will provide students with a comprehensive survey of the processes involved in translating research discoveries into practices that promote health and prevent disease. The specific topics to be covered include five goals: 1) introduce students to the NIH roadmap and to discuss the conceptual framework for multidisciplinary and interdisciplinary research. 2) Provide perspectives on objectives outlined at the national level in healthy people 2010/2020 and at the global level by organizations such as the world health organization. 3) Provide an understanding of the models of translational research. 4) Introduce students to the methods of clinical and translational research. 5) Interpret and explain the drug and therapeutic development process. Also, topics include the implementation of new therapies as standards of care and the application of innovative preventive services. Various research methodologies, including those encompassed in the drug development process will be discussed. Course will offer lectures via electronic media and will use a collaborative learning approach to classroom activities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3060 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
This course focuses on the student's development of unique knowledge and skills in collaboration with a faculty mentor. Each student has the opportunity to design an independent study that complements prior knowledge and is tailored to the student's current learning needs. Content of the independent study will reflect an in-depth focus in a particular area of study as arranged between the student and designated faculty member. Content to be covered may include, but is not limited to, theoretical approaches from the biomedical and psychosocial sciences, research designs and methods, data analytic techniques, and advanced clinical practice issues.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

NUR 3061 - INTENSIVE METHODS: ADVANCED QUANTITATIVE METHODS

Minimum Credits: 2
Maximum Credits: 2
This course focuses upon the development of knowledge and skills for building advanced methodologies that can be used in more complex research designs that are conceptually congruent with study purpose and aims. This course will build on the student's substantive knowledge in the state of the science of quantitative methods through critical appraisal of methodologies relevant to the field and implications of these methodologies for study design, sample, setting, measurement and plan for analysis. Based upon this appraisal, students will select and construct rigorous methods to investigate problems in their field of study. Emphasis will be on developing knowledge and skills in evaluating, selecting and applying methods that are congruent with the driving theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plan: Nursing (PhD)

NUR 3063 - INTENSIVE METHODS: INNOVATIVE DESIGN & METHODS IN DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course focuses upon the development of knowledge and skills for designing studies using methodologies in data science that are conceptually congruent with study purpose and aims. This course will build on the student's substantive knowledge in the state of data science through critical appraisal of methodologies relevant to the field, and implications of these methodologies for study design, sample, setting, measurement and plan for analysis of big data. Based upon this appraisal, students will select and construct rigorous methods to investigate problems in their field of study. Emphasis will be on developing knowledge and skills in evaluating, selecting and applying data science methods (at the scale of big data) that are congruent with the driving theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nursing (PhD)

NUR 3064 - STATE OF THE SCIENCE IN BIOPSYCHOSOCIAL RESEARCH

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the concepts, theories, and design of biopsychosocial investigations and develops the ability to apply biopsychosocial concepts to the interpretation and design of biopsychosocial research. Emphasis is placed on interdisciplinary and translational research focused on health outcomes with complex links with and between psychosocial factors, behavior, and physiologic systems such as hormonal, cardiovascular, inflammatory, and genetic systems. The main goal of the course is to enhance the development of foundational knowledge in biopsychosocial investigations that address these links.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nursing (PhD)

NUR 3065 - STATE OF THE SCIENCE IN LEVERAGING TECHNOLOGY FOR SELF-MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the concepts, theories, and design of technology for self-management and develops the ability to apply technologic concepts to the interpretation and design of self-management research. Emphasis is placed on interdisciplinary and translational research focused on health outcomes related to leveraging technology for self- management. The main goal of the course is to enhance the development of foundational knowledge in the application of technology in patient self-management.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nursing (PhD)

NUR 3066 - STATE OF THE SCIENCE IN CANCER SURVIVORSHIP

Minimum Credits: 2
Maximum Credits: 2
The cancer survivorship research emphasis seminar focuses on synthesis of the empirical evidence in cancer survivorship and critical evaluation of theories from multiple disciplines underlying this research. Students will examine controversies and methodological issues associated with investigations of the physical, psychological and social responses to cancer and cancer therapy and discuss innovations in cancer survivorship research. Emphasis will be placed on the examination of the influence of underrepresented populations on research in cancer survivorship.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nursing (PhD)

NUR 3068 - STATE OF THE SCIENCE IN SYMPTOM SCIENCE

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the critical appraisal and synthesis of empirical evidence relevant to symptom science. Theoretical foundations and mechanistic processes and outcomes are the focus, although issues in measurement, considerations for intervention development, analytics and implications for clinical application will also be examined. Emphasis is placed on the identification, critical review, analysis, and integration of key theoretical concepts and relationships in symptom science and their implications for the student's own area of research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 3285 and 3286 and 3287; PLAN: Nursing (PhD)

NUR 3069 - STATE OF SCIENCE: ADVANCED TOPICS IN HUMAN GENETICS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the critical appraisal and synthesis of empirical evidence relevant to science in the area of human genetics. Theoretical foundations and mechanistic processes are the focus, although issues in measurement, considerations for intervention development, analytics and implications for clinical application will also be examined. Emphasis is placed on the identification, critical review, analysis, and integration of key theoretical concepts and relationships in advanced human genetics and their implications for the student's own area of research. Clinical aspects of genetic disorders including diagnosis, current standard treatment, available gene testing and molecular therapy, ethical/cultural issues, support group availability and the state of current research in the field will be explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nursing (PhD)

NUR 3070 - ADVANCED MULTIVARIATE QUANTITATIVE STATISTICAL TOPICS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the application of advanced quantitative statistical topics applicable in nursing research. A variety of statistical strategies will be explored for their utility in answering research questions and/or testing hypotheses in nursing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 3290; PLAN: Nursing PHD

NUR 3071 - PHD RESEARCH APPRENTICESHIP

Minimum Credits: 1
Maximum Credits: 6
This apprenticeship provides the student with mentored practical application of the research process from inception through dissemination. The course is designed to allow an active, participatory role in the mentor's program of research. The goal is to develop, under supervision, competencies necessary for the development, implementation, analysis and dissemination of scholarly research. This will be accomplished through the construction and implementation of an apprenticeship plan in congruence with mentor's and student's research focus
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

NUR 3072 - STATE OF THE SCIENCE: APPLICATIONS OF MACHINE LEARNING IN HEALTH SCIENCES

Minimum Credits: 3
Maximum Credits: 3
Machine learning involves the application of advanced computing methods in the delivery of healthcare services. Predictive and causal models using machine learning will be increasingly used in clinical practice in the coming decade. However, in order to better adopt machine learning-based discoveries into health sciences effectively; scientists need to learn the fundamentals of machine learning models and understand the current state-of-the-science of these methods in various clinical applications. This course focuses on understanding and critically appraising the development of machine-learning based applications that aid in very specific clinical tasks. This course will review and discuss selected machine-learning based applications in health science areas such as primary & acute care, chronic & ambulatory care, global health, genomics, and medical imaging. Basic knowledge about statistics and clinical research methodologies is desired for the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3073 - STATE OF THE SCIENCE: HEALTH SERVICES RESEARCH & POLICY

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the critical appraisal and synthesis of empirical evidence relevant to science in the area of health services research and policy. Theoretical foundations and mechanistic processes are the focus along with examination of issues in measurement, considerations for intervention development, analytics, and implications for clinical application. Emphasis will be placed on the identification, critical review, analysis, and integration of physiological, psychological, and social responses to health services and policy research and their implications for the student's own area of research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3074 - STATE OF THE SCIENCE: CHRONIC DISORDERS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the critical appraisal and synthesis of empirical evidence relevant to science in the area of chronic disorders. Theoretical foundations and mechanistic processes are the focus along with examination of issues in measurement, considerations for intervention development, analytics, and implications for clinical application.Emphasis will be placed on the identification, critical review, analysis, and integration of physiological, psychological, and social responses to selected chronic disorders and their implications for the student's own area of research
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3074 - STATE OF THE SCIENCE: CHRONIC DISORDERS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the critical appraisal and synthesis of empirical evidence relevant to science in the area of chronic disorders. Theoretical foundations and mechanistic processes are the focus along with examination of issues in measurement, considerations for intervention development, analytics, and implications forclinical application.Emphasis will beplaced on the identification, critical review, analysis, and integration of physiological, psychological, and social responses to selected chronic disordersand their implications for the student's own area of research
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

NUR 3075 - STATE OF THE SCIENCE: WOMEN'S HEALTH

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the critical appraisal and synthesis of theory and research pertinent to the health, wellbeing, and holistic care of women and people who may experience what are traditionally termed "women's health" issues (e.g., menarche, pregnancy, gynecologic cancers). The impact of culture, history, and environment-including social and structural determinants of health, will be examined and applied to issues in research measurement, sampling and analysis, and intervention development and translation. Emphasis will be placed on the intersectional and individual influences of racism, gender discrimination, sexuality, ageism, poverty, and violence/trauma on women's healthcare and health across the lifespan. Exemplars of current research in women's health will be used to illustrate concepts, with the ultimate goal of students applying relevant theoretical, empirical, and reflexivity principles to their own area of research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 2000 or NUR 3287)

NUR 3082 - INTRODUCTION TO MACHINE LEARNING IN HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
Machine learning involves the application of advanced computing methods in the delivery of healthcare services. Predictive and causal models using machine learning will be increasingly used in clinical practice in the coming decade. However, in order to better adopt machine learning-based discoveries into health sciences effectively; scientists need to learn the fundamentals of machine learning models and understand the current state-of-the-science of these methods in various clinical applications. This course focuses on understanding and critically appraising the development of machine-learning based applications that aid in very specific clinical tasks. This course will review and discuss selected machine-learning based applications in health science areas such as primary and acute care, chronic and ambulatory care, global health, genomics, and medical imaging. Basic knowledge about statistics and clinical research methodologies is desired for the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to develop a theoretical, practical, and evidence-based foundation for the delivery of safe, effective, evidence-based health care. Participants in this course will develop the knowledge base and critical thinking skills central to identifying and solving problems in the planning, implementation and evaluation of health care across the continuum of care delivery systems and across professions. The two overarching goals of the course are to a) develop a better understanding of how the healthcare delivery system works and fails to work, and b) develop a foundation for organizational and systems leadership for care reform, quality improvement and systems thinking in the delivery of safe, effective, evidence-based care using interprofessional approaches.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to develop a theoretical, practical, and evidence-based foundation for the delivery of safe, effective, evidence-based health care. Participants in this course will develop the knowledge base and critical thinking skills central to identifying and solving problems in the planning, implementation and evaluation of health care across the continuum of care delivery systems and across professions. The two overarching goals of the course are to a) develop a better understanding of how the healthcare delivery system works and fails to work, and b) develop a foundation for organizational and systems leadership for care reform, quality improvement and systems thinking in the delivery of safe, effective, evidence-based care using interprofessional approaches.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NUR 3112 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 1

Minimum Credits: 3
Maximum Credits: 3
This course develops skill in parametric and nonparametric applications of descriptive and inferential statistics to health sciences research. The concept of parametric and non-parametric statistics is covered. Parametric tests for comparing means include one-sample z and t-tests, and independent and related samples t-tests. Methods for checking parametric test assumptions are presented, and remedies for assumption violations explored, including non-parametric alternatives for these tests. Software for statistical analyses will be introduced along with data examples from health science research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate Nursing

NUR 3113 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 2

Minimum Credits: 3
Maximum Credits: 3
This course develops skill in parametric and nonparametric statistical applications to factorial designs in health sciences research. Analysis of variance (ANOVA) for normally distributed outcomes is the parametric approach presented. Methods for checking parametric test assumptions are presented, and remedies for assumption violations explored, including non-parametric alternatives for this test including empirical resampling techniques (bootstrapping) and rank-based tests. Software for statistical analyses will be introduced along with data examples from health science research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2112 or NUR 3112

NUR 3114 - APPLIED REGRESSION FOR HEALTH SCIENCE RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course covers general principles, purposes, and methodologies of regression analysis with application to the health sciences. A

primary focus will be on multiple linear regression with both continuous and categorical predictors as well as incorporating interaction terms for non-additivity and polynomials for non-linearity. Regression diagnostics for assessing underlying assumptions, evaluating variable and case influences on model fit and valid inference will be examined. Remedial strategies to address violations and issues found in diagnostics will be explored. Basic concepts and techniques for model selection and predictive modeling, such as algorithms for variable selection and cross-validation, will be introduced. Generalized Linear Modeling will be presented for doing regression analysis when outcomes are not expected to be linear functions of predictors or have normal error distributions (e.g., Logistic regression for categorical outcome variables and Poisson regression for discrete count outcome variables). Implementation of regression using statistical software will be presented using data examples from health science research. Labs are available for SPSS, Stata, R, and SAS.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 3286 and 3287 and (NUR 2112 or 3112) and (NUR 2113 or 3113)

NUR 3120 - DIVERSITY, EQUITY, AND INCLUSION IN HEALTHCARE

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to increase understanding of how health care relates to the concepts of diversity, equity, and inclusion (DEI). It will provide an overview of how these concepts influence the health of individuals and populations, and the healthcare provider's role in supporting DEI to influence positive outcomes. We will consider diversity in its broadest meaning. However, our focus will be exploring diversity in culture, race, ethnicity, gender, ability, socioeconomics, sexual orientation, and immigration, with special attention paid to the impact on local communities. During this exploration, community strengths and capacity to promote positive change will be presented. The goals of this course are to increase our appreciation of and advocacy for DEI in health care. Learning activities will support skill development to interact in an inclusive manner with a variety of individuals and groups.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3137 - DNP PROJECT PROPOSAL DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
This course is designed to assist DNP students develop a comprehensive project proposal including a detailed description of the methodologies, procedures, data analysis plan, and implications for practice. Students will finalize the methodology building upon the topic development completed with DNP Project Topic Approval, obtain institutional approval, and confirm an implementation timeline. At the conclusion of this course, the student will complete the final proposal and the full proposal cover sheet to their DNP Project Committee members for signature, as required in the DNP Project Guidelines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 3031 or NUR 3031D

NUR 3137D - DNP PROJECT PROPOSAL DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
The focus of this course is on development of the DNP Project Proposal. This course will provide the student with an overview of implementation science. Students will finalize the methodology building upon the topic development completed with Form One, obtain institutional approval, and finalize an implementation timeline. At the conclusion of this course, the student will complete the final proposal and submit the Form Two cover sheet to the DNP Project Committee for signatures, as required in the DNP Project Guidelines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3138 - DNP PROJECT IMPLEMENTATION

Minimum Credits: 1
Maximum Credits: 1
This practicum represents the clinical course for the DNP project. Here the students will experience a mentored and supervised immersion in clinical or administrative practice where the project previously designed and approved will be implemented and evaluated. The practice site, approved by the DNP Project Committee, must provide access to the necessary and appropriate population for project implementation, as well as support for full expression of the DNP scope of practice. Students may select any geographical location appropriate for their project.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NUR 3137 or 3137D

NUR 3138D - DNP PROJECT IMPLEMENTATION

Minimum Credits: 1
Maximum Credits: 1
This practicum represents the clinical course for the DNP project. Here the students will experience a mentored and supervised immersion in clinical or administrative practice where the project previously designed and approved will be implemented and evaluated. The practice site, approved by the DNP Project Committee, must provide access to the necessary and appropriate population for project implementation, as well as support for full expression of the DNP scope of practice. Students may select any geographical location appropriate for their project.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PREQ: NUR 3137 or 3137D

NUR 3139 - DNP PROJECT SYNTHESIS

Minimum Credits: 1
Maximum Credits: 1
This course will provide the student with the knowledge and skills needed to analyze, compose, and professionally present DNP project findings. At the conclusion of this course, students will complete the final review of data and data analysis, complete the final preparation of data tables for the manuscript and presentation, prepare a detailed manuscript outline, and prepare slides/poster for dissemination.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 3137 or 3137D) and (NURSP 2388 or 2388D); CREQ: NUR 3032 or 3032D

NUR 3139D - DNP PROJECT SYNTHESIS

Minimum Credits: 1
Maximum Credits: 1
This course will provide the student with the knowledge and skills needed to analyze, compose, and professionally present DNP project findings. At the conclusion of this course, students will complete the final review of data and data analysis, complete the final preparation of data tables for the manuscript and presentation, prepare the manuscript draft, and prepare slides/poster for dissemination.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 3137 or 3137D) and (NURSP 2383 or NURSP 2383D); CREQ: NUR 3032 or 3032D

NUR 3284 - INTENSIVE MIXED-METHODS RESEARCH

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the development of advanced knowledge and practical skills for applying research approaches that are conceptually

and methodologically congruent with the constructivist and pluralistic paradigms (integration of qualitative and quantitative inquiries). This course will build upon students' understanding of the state of the science about their phenomenon of interest and provide them with the knowledge to determine when the mixed methodological approaches are appropriate for moving the science forward. The course also provides an overview and opportunity for students to apply and critically appraise various types of mixed-methods designs and their corresponding purposes, settings, sampling, data collection, analysis, interpretation, verification, and integration techniques.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

NUR 3285 - PHILOSOPHICAL UNDERPINNINGS OF NURSING RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course explores the evolution, fundamental assumptions and dominant themes underpinning philosophies of science. The focus will be on the intersections between various approaches to meta-theoretical perspective, theoretical thinking, scientific inquiry, and knowledge development. The philosophical debate underlying science and knowledge development will be investigated. The current state of nursing science, ways of knowing, knowledge generation models, criteria for causation, and argumentation will be explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3286 - THEORETICAL FOUNDATIONS FOR RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course focuses upon the relationship of theory to research with an emphasis on the role of theory in the design and interpretation of research. The relationship between the development of science and theory is stressed. Attention is given to the evaluation of theory, the utility of theories in research, and the comparison of research strategies from various theoretical perspectives and the contribution of effect size. Emphasis is placed upon midrange, multidisciplinary theories relevant to clinical research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 3285 or HPS 1653 PLAN: Nursing (PhD)

NUR 3287 - RESEARCH DESIGN & METHODS

Minimum Credits: 3
Maximum Credits: 3
This course is a core component and foundational to the dissertation process and the program of research. The course provides a compendium of qualitative and quantitative research methods and study designs appropriate for studying health care phenomena. The emphasis of the course is on the interrelationship between clinical problems, literature reviews, research questions, study designs, and methods of inquiry and analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nursing PhD; PREQ: (NUR 3285 or HPS 1653) and (BIOST 2041 or PSYED 2018 or NUR 3112); CREQ: (NUR 3286 or NUR 3016) and (BIOST 2042 or PSYED 2019 or NUR 3113)

NUR 3288 - RESEARCH MEASUREMENT

Minimum Credits: 2
Maximum Credits: 2
This course focuses on concepts and techniques for analyzing the quality and characteristics of measurements in health research. Classic and emerging theories of measurement will be discussed including classical test theory, generalizability theory, latent variable modeling, and network psychometrics. Principles and methodologies of psychometrics will be discussed and applied by students to evaluate the

reliability, validity, and dimensionality (via factor analysis) of research instruments. Emphasis is placed on understanding the interrelationship of study aims, design and methods in outcomes measurement.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 2041 or PSYED 2018 or NUR 3112) and (BIOST 2042 or PSYED 2019 or NUR 3113) and (NUR 3285 or HPS 1653) and (NUR 3286 or NUR 3016); CREQ: NUR 3289; LEVEL: Nursing PhD

NUR 3289 - INTERVENTION DEVELOPMENT

Minimum Credits: 2
Maximum Credits: 2
This course focuses on an analysis of the relationship between intervention theory and the development of intervention protocols. In-depth exploration of selected programs of research will be used to generate and evaluate theories and intervention protocols. Methodological and practical issues in the design and implementation of theory-based intervention studies will be examined.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (NUR 3285 or HPS 1653) and (NUR 3286 or NUR 3016) and (NUR 3287or NUR 3020) and (BIOST 2041 or PSYED 2018 or NUR 3112) and (BIOST 2042 or PSYED 2019 or NUR 3113); CREQ: (NUR 3288 or NUR 3110 or NUR 3113); PLAN: Nursing PhD

NUR 3290 - ADVANCED QUANTITATIVE ANALYTIC METHODS SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the application of advanced quantitative statistical methods used in research. Aspects of methodology relevant to statistical analysis such as design, sampling, statistical power, sample size, and significance will be conceptually integrated with data analysis. Statistical strategies popular in other research areas will be explored for their utility in answering research questions and/or testing hypotheses in nursing.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (BIOST 2041 or PSYED 2018 or NUR 3112)and(BIOST 2042 or PSYED 2019 or NUR 3113) and (BIOST 2049 or PSYED 2410 or NUR 3114)and(NUR 3285 or HPS 1653)and(NUR 3286 or NUR 3016)and(NUR 3287 or NUR 3020)and(NUR 3288 or NUR 3110)andNUR 3289; Nursing(PhD)

NUR 3291 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 1

Minimum Credits: 2
Maximum Credits: 2
This seminar addresses the moral and ethical agency of a nursing scientist in the health professions, developing knowledge and skills to act ethically. First the course will cover multiple challenges of conducting research including ethical issues, health policy, scientific freedom and social responsibility, collaboration and negotiation, and interdisciplinary responsibilities. Next, key issues in conducting responsible science and human subject protection will be covered, including the conduct of culturally competent scholarship. Lastly issues in nursing leadership including valuing and upholding the caring nature of professional practice and advocacy for, and valuing the needs and concerns of patients/families will be addressed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NUR-PHD or NURRSP-MN

NUR 3292 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 2

Minimum Credits: 2
Maximum Credits: 2
This seminar addresses the responsibilities and activities involved in obtaining and sustaining a career in academic research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nursing (PhD)

NUR 3293 - ART AND SCIENCE OF TEACHING AND LEARNING

Minimum Credits: 2
Maximum Credits: 2
This course provides instruction in course design, methods of student and classroom instruction and evaluation of learning for teaching in academia in order that students can contribute to the formal and informal education of future nurses through discovery, application and integration of knowledge. One evaluative methodology may be the teaching practicum, taken concurrently or in a subsequent semester.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

NUR 3294 - STATE OF SCIENCE: RESEARCH SLEEP AND CIRCADIAN RHYTHMS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the critical appraisal and synthesis of empirical evidence relevant to science in the area of sleep and circadian rhythms. Theoretical foundations and mechanistic processes are the focus along with examination of issues in measurement, considerations for intervention development, analytics, and implications for clinical application. Emphasis will be placed on the identification, critical review, analysis, and integration of physiological, psychological, and social responses to impaired sleep and circadian rhythms and their implications for the student's own area of research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 3300 - DNP PROJECT OR CLINICAL - ONGOING WORK

Minimum Credits: 0
Maximum Credits: 0
Doctor of Nursing Practice (DNP) students who have completed all credit requirements for the degree and are working on their DNP project or completing clinical hours may register for this course. While the course carries no credits or grade, students who enroll in NUR 3300 are considered to have an active registration status.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Satisfactory/No Credit

NUR 3412 - PUBLIC POLICY IN HEALTH CARE

Minimum Credits: 2
Maximum Credits: 2
This course offers political and analytical insights into understanding U.S. health policy-making and into developing strategies that influence health policy outcomes. The course presents an analysis of the functions of the public and private sector in creating and implementing health policy across diverse patient populations. The role of political and social philosophy in defining nursing and health services is examined. The course includes consideration of areas in which policy made by multiple branches of government and various types of public and private organizations significantly affects nursing as a profession and its ability to deliver care; regulation of professional practice; and the impact of public policy on patient health outcomes.
Academic Career: GRAD
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

NUR 3413 - ETHICS IN HEALTHCARE

Minimum Credits: 1
Maximum Credits: 1
Philosophical and clinical foundations in ethics are analyzed and used to provide a basis for guidelines in ethical decision-making and practice. Content will include legal-ethical issues in practice, ethical implications in the role of the doctorally prepared nurse, historical and political influences on ethics in health care, diversity in race, gender, and sexual orientation, and principals of justice, autonomy, and provider-patient relations. Additionally this course describes general ethical practices and ethical principles associated with the proper conduct of research, scientific integrity and protection of human subjects.
Academic Career: GRAD
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

NUR 3450 - GRANT WRITING

Minimum Credits: 1
Maximum Credits: 1
This course focuses on the organization, development and preparation of a grant application. Course content is based on the general issues encountered during the development of grant applications. Students are expected to prepare components of their grant application under the direction of their mentor using the guidelines for an appropriate funding organization. Ph.D. students are expected to support some aspect of their dissertation research.
Academic Career: GRAD
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Attributes: Distance Education

NUR 3452 - MANUSCRIPT DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1
This course focuses on the process of preparing a manuscript for possible publication. Attention is directed toward selecting an appropriate journal, the organization of the paper, relevant legal and ethical issues, single vs. multiple authorship, refining one's writing skills, and the development and preparation of a manuscript for submission to a peer-reviewed journal.
Academic Career: GRAD
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Attributes: Distance Education

NUR 3499 - THE SCI OF HLTH CARE DELIVERY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to develop a theoretical, practical, and evidence-based foundation for the delivery of safe, effective, evidence-based health care. Participants in this course will develop the knowledge base and critical thinking skills central to identifying and solving problems in the planning, implementation and evaluation of health care across the continuum of care delivery systems and across professions. The two overarching goals of the course are to a) develop a better understanding of how the healthcare delivery system works and fails to work, and b) develop a foundation for organizational and systems leadership for care reform, quality improvement and systems thinking in the delivery of safe, effective, evidence-based care using interprofessional approaches.
Academic Career: GRAD
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

Nutrition

NUTR 1000 - INTRODUCTION TO RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The study of the nature of research and the applications of the scientific approach in the research procedures. The course focuses on concepts, design techniques and interpretations, as well as limiting factors and ethical considerations.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

NUTR 1005 - INTRODUCTION SPORTS NUTRITION

Minimum Credits: 3
Maximum Credits: 3
This course is designed to develop a deeper understanding of the appropriate nutrition practices in relation to exercise or sport training to promote health and wellness. 1. Students will classify and list the functions of the six major nutrients. 2. Students will choose nutritious foods for healthy lifestyles and peak performance. 3. Assess dietary supplements for effectiveness and safety. 4. Evaluate sports nutrition research and effectively communicate material into practical applications for athletes.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements:
School of Health and Rehabilitation Sciences students only

NUTR 1006 - INTRO TO HUMAN NUTRITION

Minimum Credits: 3
Maximum Credits: 3
This course will cover an overview of the scientific principles of nutrition and application of these principles to humans throughout the life cycle. Major focuses of the course are the classification and function of the six major nutrients, review of current nutrition standards, safety of the food supply, and nutrition misinformation.
This course is meant for nutrition majors.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

NUTR 1020 - NUTRITION ASSESSMENT

Minimum Credits: 2
Maximum Credits: 2
This course will introduce the student to the concepts and components of nutritional assessment. The steps and methods used in the Nutrition Care Process to determine the nutrition status and nutritional problems of individuals will be presented. Methods used to assess dietary intake and reference standards for individuals and groups will be a major focus of the course. Common tools and resources used by the Registered Dietitian Nutritionist will also be addressed.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

NUTR 1030 - NUTRIENT METABOLISM

Minimum Credits: 4
Maximum Credits: 4
This course examines the biochemical and physiological basis for human macronutrient and micronutrient requirements. Students will learn food sources, requirements, functions, digestion, absorption, metabolism, and storage of macronutrients and micronutrients as well as the metabolic consequences of nutrient deficiencies and toxicities.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

NUTR 1600 - INTRODUCTION TO DIETETICS

Minimum Credits: 2
Maximum Credits: 2
This is an introduction to the profession of dietetics. Emphasis will be placed on the scope of the profession of dietetics practice, the role and functions of registered dietitian nutritionists, and the education requirements for entry into practice.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

NUTR 1602 - NUTRITION ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the rationale for and the use of a variety of standards used in assessing and planning the quality and quantity of the food and nutrient intake of individuals and groups. It will include in-depth study and application of commonly used reference standards and tools used for evaluating levels and proportions of macronutrients, micronutrients and various dietary food components. Assessment of health indicators in individuals and populations will also be addressed.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Clinical Dietetics-Nutrition (BS, BPH, BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND)

NUTR 1604 - FOOD SERVICE MANAGEMENT WITH LAB

Minimum Credits: 3
Maximum Credits: 3
This course presents the basic principles and skills of food service management and leadership. Learning experiences include lectures, discussions, and required field trips. Please note, no other courses can be scheduled during the break between the morning and afternoon class sessions as this time will be needed for travel to field trips sites.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Clinical Dietetics-Nutrition (BS, BPH, BS-H)

NUTR 1605 - PRINCIPLES OF NUTRITION EDUCATION

Minimum Credits: 3
Maximum Credits: 3
Concepts and components of the teaching-learning process and their application in the dietetics practice. Experience in the instructional planning and implementation functions of clinical dietitians is emphasized.
Academic Career: Undergraduate
Course Component: Lecture

Grade Component: Letter Grade
Course Requirements: PLAN: Clinical Dietetics-Nutrition (BS, BPH, BS-H) or Nutrition Science (NS-BS) or Clinical Dietetics - Nutrition (NDNUTR-ND)

NUTR 1610 - FOOD APPLICATION

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course emphasizing the chemical and physical properties of food in relation to its selection, quality, and preparation. Experience in the construction, modification and preparation of recipes to meet various dietary needs is also provided.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: NUTR 1602; PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

NUTR 1612 - FOOD AND CULTURE

Minimum Credits: 3
Maximum Credits: 3
Introduction to ethnic influence on the diversity of American food patterns. Social, cultural, economic, geographic, and religious factors are considered.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

NUTR 1613 - FOOD APPLICATION LAB

Minimum Credits: 1
Maximum Credits: 1
Study of the chemical and physical changes that occur in food as a result of various food preparation methods and their effects on nutrient quality. Experience in the construction, modification and preparation of recipes to meet various dietary needs is also provided.
Academic Career: Undergraduate
Course Component: Practicum
Grade Component: Letter Grade
Course Requirements: PREQ: NUTR 1602; PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

NUTR 1614 - NUTRITION CRITICAL THINKING

Minimum Credits: 3
Maximum Credits: 3
An application of critical thinking skills to evaluate nutrition issues.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Clinical Dietetics-Nutrition (BS, BPH, BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

NUTR 1620 - NUTRIENT METABOLISM

Minimum Credits: 3
Maximum Credits: 3
The first of a two-course sequence in advanced nutrition and metabolism presenting the principles of normal nutrition and their application

in providing nutritional care and guidance. Emphasis is placed on the macronutrients and energy balance.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND)

NUTR 1622 - LIFE CYCLE NUTRITION

Minimum Credits: 3
Maximum Credits: 3
The study of the physiological, developmental, sociological, and environmental factors that affect nutrient requirements and recommendations at various stages of the life cycle.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

NUTR 1625 - NUTRITION THERAPY

Minimum Credits: 4
Maximum Credits: 4
This course will provide an introduction to medical nutrition therapy in the prevention and treatment of disease. The course will cover the nutrition implications, nutrition assessment process, and nutrition interventions for specific diseases. Teaching approaches for the course include lectures, assigned readings, in-class discussions, and problem-based learning through simulation/case studies.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

NUTR 1630 - NUTRITION THERAPY 1

Minimum Credits: 3
Maximum Credits: 3
The first of a two-course sequence which will provide an introduction to medical nutrition therapy in the treatment of acute and chronic diseases. The course will cover pathophysiology and treatment of specific diseases, nutrition implications of specific diseases, nutrition assessment, determination of nutrient requirements, and nutrition interventions including calculation of modified diets.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

Obstetrics and Gynecology

OBGYN 5341 - OBSTETRICS AND GYNECOLOGY

Minimum Credits: 0
Maximum Credits: 0
This is a four week clerkship at Magee-Womens Hospital. The clerkship is divided among obstetrics, gynecology, and outpatient services. The daily schedule includes teaching rounds, small group tutorials, and lectures, in addition to patient responsibilities. Students are expected to take call and remain in the hospital overnight approximately twice a week during their rotation on obstetrics. At the end of the clerkship, an oral and/or written examination will be given.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OBGYN 5342 - OBSTETRICS & GYNECOLOGY CLERKSHIP 3RC

Minimum Credits: 0
Maximum Credits: 0
As part of the third-year core required clinical rotations, this clinical clerkship is designed to provide students with foundational knowledge in Obstetrics and Gynecology (Ob/Gyn). Through a variety of clinical experiences, students will participate in the care of Ob/Gyn patients. Students will develop and refine their clinical skills (i.e. interviewing, physical examination, differential diagnoses, and formulating treatment plans) for patient problems under the direct supervision of faculty preceptors. This six-week clerkship emphasizes sexual and reproductive care across the lifespan.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

OBGYN 5345 - CLERKSHIP REPEAT COURSE

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when the necessity to record a student's unsuccessful makeup is required. The course will be used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OBGYN 5387 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0
Maximum Credits: 0
The department of obstetrics, gynecology and reproductive sciences will arrange an individual study or research experience for third year medical students in an area of their interest.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OBGYN 5420 - OBSTETRICAL ANTEPARTUM SERVICE ADVANCED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This elective will focus on management of women with complications of pregnancy. This will include women in the outpatient setting in the private practice office, the resident high risk clinics, and the high-risk antepartum floor (2800). The student will be integrated into the antepartum resident team for the month, and will have continuity with Maternal-Fetal Medicine faculty and fellows as they supervise the service for a week or more at a time. The student will interact with attending physician specialists, fellows, residents, and nurse clinicians with special expertise in managing high risk pregnancies.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5430 - GYNECOLOGICAL ADVANCED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0

The student will function similar to an intern on the benign gynecology service. He/she will assist in rounding with the inpatient gynecology service, participate in benign gynecology cases and attend private faculty subspecialty offices including the Fibroid Treatment Center and the Endometriosis and Chronic Pelvic Pain Center.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5432 - MINIMALLY INVASIVE GYNECOLOGIC SURGERY

Minimum Credits: 0
Maximum Credits: 0
This elective will teach minimally invasive gynecologic surgery as well as the principles of evaluation and management of women with pelvic pain. Students will learn to take pertinent history and perform the (pelvic pain specific) physical exams on women with endometriosis as well as women with other sources of chronic pelvic pain. There will be exposure to all disciplines of minimally invasive gynecologic surgery including laparoscopic deep excision of endometriosis, presacral neurectomy, reconstruction for pelvic organ prolapse, hysterectomy, myomectomy, and adenexal surgery. Students will participate in the pre-op evaluations with the faculty and will have the opportunity to scrub in on cases. The students will renew their understanding and appreciation of pelvic anatomy (retroperitoneal and pelvic support anatomy) from the laparoscopic perspective.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 4

OBGYN 5435 - OBSTETRIC/GYNECOLOGY ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This clinical elective can be customized to meet individual needs. Students may elect to concentrate on maternal-fetal medicine, genetics, or gyn-one. The rotation will include both in-patient and ambulatory experience. Students must make advance arrangements and a specific descriptive course title may be assigned for recording on the official transcript.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5440 - OBSTETRICAL AND AMBULATORY CARE

Minimum Credits: 0
Maximum Credits: 0
This four-week elective offers hands-on experience in the delivery room and clinic at mercy hospital. The ob service consists mostly of 600 clinic deliveries per year with 24 hour, in-house coverage by attending staff. The clinic has a supervisory obstetrician/gynecologist full-time in attendance.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5445 - OUTPATIENT GYNECOLOGY

Minimum Credits: 0
Maximum Credits: 0
The student will function similarly to an intern. Time will be spent at office sites as well as hospital affiliates. The sub intern will obtain histories and physicals, establish a differential diagnosis and assist in developing a plan of care with an additional focus on the cultural and socioeconomic challenges of a diverse population. The student will assist in minor and major surgical procedures as well as post-operative

care. S/he will assist in the management of obstetrical patients during the antepartum, intrapartum and postpartum periods. The student will also have the opportunity to interact with patients who experience termination procedures. The sub internship will be offered for a four-week period with one weekend call required.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 4

OBGYN 5450 - REPRODUCTIVE ENDOCRINOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four week elective offers a clinical experience in two areas: the evaluation of couples with infertility and the diagnostic evaluation and management of endocrine dysfunctions involving the hypothalmic-pituitary-ovarian axis. The majority of work will be evaluating and managing these problems in outpatient areas. Inpatient gynecological procedures including laparoscopy, hysteroscopy, microsurgical techniques for resection of endometriosis and tuboplastic procedures for restoration of fertility will be observed.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5460 - MATERNAL AND FETAL MEDICINE

Minimum Credits: 0
Maximum Credits: 0
In this four-week elective students will follow high-risk obstetrical patients as outpatients in the perinatal and medical clinics and as inpatients in the labor suite. Students will become familiar with the principles of biophysical and biochemical monitoring of the fetus during labor as well as the techniques of antepartum fetal evaluation. These include amniocentesis, sonography, and antepartum fetal heart rate monitoring. Management of pregnancies with underlying medical problems of the mother will be an integral part of the elective.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5470 - GYNECOLOGIC ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
Students will participate as a member of a team providing care to patients with gynecologic malignancies during this four-week elective at Magee-Womens Hospital. Student will learn the staging classifications, the appropriate workup and be involved in the treatment and follow up of patients. The individual will scrub in the operating room and be involved in the administration of chemotherapy and radiation therapy for gynecologic malignancies.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5480 - UROGYNECOLOGY ADVANCED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
nyone planning to practice primary care medicine, gynecology, or urology will benefit from this intensive exposure to women with urinary incontinence and other pelvic floor defects. The student will be assigned to the Urogynecology Service which is composed of faculty urogynecologists, fellows and third year residents. He/She will see patients in an office setting learning to obtain an appropriate history, neurologic and pelvic examination. He/She will be exposed to pessary fitting, cystometric evaluations, pharmacologic intervention, pelvic

floor muscle rehabilitation, behavioral and biofeedback intervention protocols. In addition, the student will assist in the surgical procedures and postoperative care of these patients. At the conclusion of the rotation, the student will give a presentation of a relevant topic.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5487 - FAMILY PLANNING

Minimum Credits: 0
Maximum Credits: 0
The focus of this elective is to learn more about the gynecologic subspecialty of family planning. During the four weeks of the elective, the student will be present in several clinical settings to include: planned parenthood of Western Pennsylvania; family planning clinics in the Magee outpatient clinic - one specializing more in IUDS, implants, and sterilization pre-operative evaluations and the other specializing more in pre-operative preparation and evaluation for dilation and evacuation procedures); time will be spent with faculty in the private office seeing general GYN patients, family planning consults, and abortion patients; Magee or, both sterilization surgery and dilation and evacuation procedures. The student will decide on a topic from the current medical literature and present a full review to the family planning faculty, fellows and research staff.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5488 - REPRODUCTIVE GENETICS

Minimum Credits: 0
Maximum Credits: 0
Clinical reproductive genetics with the opportunity to tailor the experience to the student's interest. Core experience in genetic counseling will include advanced maternal age (AMA), abnormal family history, prenatal screenings, teratogen exposure, prenatally detected anomalies, adult genetics clinic and cancer counseling. The student will observe invasive diagnostic procedures (CVS and amniocentesis) as well as in the cytogenetics lab. The student will attend weekly fetal diagnosis & treatment center meetings and weekly clinical genetics meetings. The student will observe how genetics impacts personalized medicine. There may be opportunity to attend adult genetics clinic and participate in research.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

OBGYN 5490 - WOMEN'S HEALTH

Minimum Credits: 0
Maximum Credits: 0
This elective is an interdisciplinary offering by the department of obstetrics, gynecology and reproductive sciences and the department of medicine. The goal is to introduce students to the breadth and complexity of gender-specific health care. A variety of ambulatory clinical sites will be utilized to provide experience in women's health care, including, but not limited to; health maintenance and preventive care; family planning; genetic counseling; menopause and hormone replacement; osteoporosis; coronary artery disease; depression; violence against women.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5495 - MIDLIFE HEALTH

Minimum Credits: 0
Maximum Credits: 0

Course objectives: extract a targeted history from patients presenting to the midlife health center; perform a physical exam focused on perimenopausal and menopausal issues; be familiar with the gynecologic and medical needs of midlife female patients; develop a differential diagnosis for common conditions in perimenopause and menopause, such as abnormal vaginal bleeding; be familiar with the indications and contraindications with commonly used therapies for menopausal issues; competently assist on various surgical procedures; write postoperative orders on patients; be familiar with the work-up and management of postoperative complications. Students planning to practice primary care medicine, gynecology, urology, or geriatrics will benefit from this intensive exposure to the health needs of midlife-aged women. He/she will see patients in an office setting, learning to obtain an appropriate history and physical exam focused on menopausal issues. He/she will also be exposed to procedures such as endometrial biopsies and vulvar biopsies. He/she will be exposed to standard pharmacologic interventions, as well as integrative approaches such as acupuncture. In addition, the student may assist in the surgical procedures and postoperative care of these patients.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5500 - INTERNATIONAL MEDICINE IN OBSTETRICS AND GYNECOLOGY

Minimum Credits: 0
Maximum Credits: 0
The student will function similarly to an intern with faculty mentorship by designated OB/GYN faculty and staff. The student will spend this four-week elective at an international hospital and rural clinical affiliation. The sub intern will obtain histories and physicals, establish a differential diagnosis and assist in developing a plan of care with an additional focus on the cultural and socioeconomic challenges and resources of a developing country. The student will assist in minor and major surgical procedures as well as pre and post-operative care. He/she will assist in the management of obstetrical patients during antepartum, intrapartum and post partum periods. Course objectives: understand the multifaceted challenges in accessing and delivering care in developing countries; recognize the disparity gap in healthcare as it relates to the personnel, medical and surgical resources; evaluate patients with OB/GYN problems endemic to the international site; manage pregnant patients with both normal and high acuity medical and obstetrical issues; evaluate the course of normal labor and delivery and the post partum period; assist on OB/GYN procedures and recognize common pathology; assist in the planning and implementation of family planning programs and post abortive care.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5580 - SEXUALLY TRANSMITTED DISEASES

Minimum Credits: 0
Maximum Credits: 0
This rotation, located in the clinics of the Allegheny county health department, will provide an opportunity to gain practical experience under the direct guidance and supervision of the attending physician in the diagnosis and treatment of commonly seen sexually transmissible diseases including gonorrhea and syphilis. Opportunities will be available for obtaining skills in the commonly performed laboratory procedures such as gram staining and culturing and in performing darkfield examinations. Limited experience in contact investigation will be gained.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department of obstetrics, gynecology and reproductive sciences to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been

received, the school registrar will schedule the course and notify the department student coordinator.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5725 - INFECTIOUS DISEASE-OB/GYN (ILS)

Minimum Credits: 0
Maximum Credits: 0
This four week selective emphasizes the many unique features of infections in obstetrics, gynecology, and reproductive medicine. Students will learn the pathogenesis of organisms relevant to the female reproductive tract, and about transmission of organisms to the fetus. Students will evaluate pregnant and non pregnant patients with reproductive tract infections and discuss clinical and management issues daily with faculty. Students will also be exposed to contemporary laboratory techniques of identifying pathogenic organisms.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5885 - OB AND GYN RESEARCH

Minimum Credits: 0
Maximum Credits: 0
The research elective at Magee-Womens Hospital will involve the student in basic or clinical research projects under the supervision of a full-time faculty member. The student will participate in the design and conduct of the study as well as in the analysis of the data obtained during the study. The student will then be expected to participate writing a report of the study which should be of a quality suitable for publication in a refereed journal. This elective is offered in four-week time blocks.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5886 - INDIVIDUAL STUDY

Minimum Credits: 0
Maximum Credits: 0
The department of obstetrics, gynecology and reproductive sciences will arrange an individual clinical experience to fit the student's needs.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OBGYN 5899 - INDEPENDENT STUDY OBSTETRICS/GYNECOLOGY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

OBGYN 5900 - EXTRAMURAL OBSTETRICS AND/OR GYNECOLOGY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in obstetrics and/or gynecology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Occupational Therapy

OT 2199 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
A topic of interest to the student is examined in-depth under the guidance of a faculty mentor. It is the student's responsibility to contract with a faculty member for this tutorial.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2200 - FOUNDATIONS OF OCCUPATION

Minimum Credits: 2
Maximum Credits: 2
Examines the history, philosophy, theory and science of the profession of occupational therapy. The focus is on the meaning of occupation and its role in health, wellness, and participation. Occupational performance theories of practice are introduced.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2201 - BODY FUNCTIONS AND STRUCTURES: ANATOMY

Minimum Credits: 3
Maximum Credits: 3
Emphasizes the understanding and application of knowledge of human anatomy in diagnostics of clinical conditions commonly encountered by an occupational therapist. The practical component includes the use of prosected cadavers, skeletal models, and palpation of surface anatomical features in live models.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2202 - THERAPEUTIC APPROACHES 1

Minimum Credits: 2
Maximum Credits: 2
Examines how occupational therapists develop and manage their therapeutic relationships with clients using a model of intentional relationships, focusing on the use of narrative reasoning, emotional intelligence and empathy, and a client-centered collaborative approach. Formal interview techniques and casual conversation approaches used to obtain information are introduced and practiced.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2203 - CLINICAL SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
Addresses professional issues and the professional development of the occupational therapist.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2205 - NEUROBEHAVORIAL SCIENCE

Minimum Credits: 3
Maximum Credits: 3
Examines neuroscientific concepts underlying normal somatosensory, special sensory, motor, cognition, and emotion functional systems, and explores the manifestation of dysfunction of major neural elements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2201; PLAN: Doctor of Occupational Therapy (OTD)

OT 2207 - PRINCIPLES OF ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
Examines the principles associated with the evaluation process, including the selection and administration of assessment tools, and the scoring and interpretation of assessment data. Psychometrics are explored and data collection and analysis is practiced using a range of assessment methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2208 - CRITICAL APPRAISAL OF EVIDENCE

Minimum Credits: 2
Maximum Credits: 2
Occupational therapy and rehabilitation research and its application to practice, management, and education is explored. Scientific method, hierarchies of evidence, levels of measurement, and interpretation of findings are examined.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2209 - CLINICAL SEMINAR 2

Minimum Credits: 1
Maximum Credits: 1
Addresses professional issues and the professional development of the occupational therapist. Builds on content in Clinical Seminar 1.
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2203; PLAN: Doctor of Occupational Therapy (OTD)

OT 2210 - PSYCHOSOCIAL/COGNITIVE THEORY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
The occupational therapy process for clients with psychosocial and/or cognitive dysfunction is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2207; PLAN: Doctor of Occupational Therapy (OTD)

OT 2213 - OCCUPATIONAL THERAPY AND THE HEALTH SYSTEM

Minimum Credits: 2
Maximum Credits: 2
Examines health care trends, reimbursement regulations, legislative policies, and current issues affecting occupational therapy. Strategies for maintaining continued competence and supervisory roles are interpreted and applied to practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2203; PLAN: Doctor of Occupational Therapy (OTD)

OT 2214 - THERAPEUTIC APPROACHES 2

Minimum Credits: 2
Maximum Credits: 2
Examines the dynamic process used by occupational therapists to facilitate a client's or group of clients' engagement in occupations to promote health and participation. Focuses on education and training, self-advocacy, and health literacy for clients, those involved in the care of the clients, and groups.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2202; PLAN: Doctor of Occupational Therapy (OTD)

OT 2215 - FIELDWORK EDUCATION A

Minimum Credits: 1
Maximum Credits: 1
This course applies knowledge to practice and develops understanding of the needs of clients.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: OT 2207; PLAN: Doctor of Occupational Therapy (OTD)

OT 2216 - CLINICAL SEMINAR 3

Minimum Credits: 1
Maximum Credits: 1
Addresses professional issues and the professional development of the occupational therapist. Builds on content in Clinical Seminar 2.
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2209; PLAN: Doctor of Occupational Therapy (OTD)

OT 2217 - NEUROREHABILITATION THEORY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
The occupational therapy process for clients with neurological and neurobehavioral dysfunction is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2205; PLAN: Doctor of Occupational Therapy (OTD)

OT 2218 - BIOMECHANICAL THEORY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
The occupational therapy process for clients with physical dysfunction involving biomechanical impairments is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2236; PLAN: Doctor of Occupational Therapy (OTD)

OT 2219 - FIELDWORK EDUCATION B

Minimum Credits: 1
Maximum Credits: 1
This course explores and facilitates the development of an occupational therapist's professional identity that contributes to competence in clinical practice.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: OT 2215; PLAN: Doctor of Occupational Therapy (OTD)

OT 2220 - CLINICAL SEMINAR 4

Minimum Credits: 1
Maximum Credits: 1
Addresses professional issues and the professional development of the occupational therapist. Builds on content in Clinical Seminar 3.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2216; PLAN: Doctor of Occupational Therapy (OTD)

OT 2221 - DEVELOPMENTAL THEORY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
The occupational therapy process for children and youth is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2217; PLAN: Doctor of Occupational Therapy (OTD)

OT 2222 - PRODUCTIVE AGING THEORY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
The role of occupational therapy in productive aging and the promotion of successful aging in older adults is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2218; PLAN: Doctor of Occupational Therapy (OTD)

OT 2224 - MANAGEMENT OF OCCUPATIONAL THERAPY PRACTICE

Minimum Credits: 2
Maximum Credits: 2
Examines the role of the occupational therapist as a manager of occupational therapy services. Focuses on the application of principles and practices of administration and supervision in diverse practice environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2213; PLAN: Doctor of Occupational Therapy (OTD)

OT 2226 - FIELDWORK EDUCATION C

Minimum Credits: 1
Maximum Credits: 1
This course applies knowledge to practice and develops understanding of the needs of clients. Builds on Fieldwork Education A and B.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: OT 2219; PLAN: Doctor of Occupational Therapy (OTD)

OT 2228 - FIELDWORK EDUCATION D

Minimum Credits: 1
Maximum Credits: 10
Provides an in-depth learning experience in delivering occupational therapy services. The learning experience occurs at an approved clinical education site that offers the opportunity to develop competence in the professional responsibilities of an entry-level occupational therapist.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: OT 2226; PLAN: Doctor of Occupational Therapy (OTD)

OT 2229 - FIELDWORK EDUCATION E

Minimum Credits: 1
Maximum Credits: 10
Provides an in-depth learning experience in delivering occupational therapy services. The learning experience occurs at an approved clinical education site that offers the opportunity to develop competence in the professional responsibilities of an entry-level occupational therapist.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: OT 2226; PLAN: Doctor of Occupational Therapy (OTD)

OT 2232 - ADVANCED THEORY AND PRACTICE / MS

Minimum Credits: 1
Maximum Credits: 1
This course enables students to examine select theoretical perspectives, practice areas, evaluation procedures, intervention protocols, and/or professional issues in-depth.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2233 - IMPLEMENTING EVIDENCE: CLINICAL PRACTICE GUIDELINES

Minimum Credits: 3
Maximum Credits: 3
This course introduces the opportunities and barriers for implementing evidence in practice and focuses on the use of evidence for evaluating and developing clinical practice guidelines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2234 - HUMAN PERFORMANCE ANALYSIS

Minimum Credits: 2
Maximum Credits: 2
Examines human performance in-depth using the approaches of occupational analysis and activity analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plan: Doctor of Occupational Therapy (OTD)

OT 2235 - CLINICAL CONDITIONS 1

Minimum Credits: 1
Maximum Credits: 1
Defines and describes neuromuscular, orthopedic, psychiatric, and clinical medicine diagnoses that are leading causes of disability in children, adolescents, adults, and older adults. Etiology, signs and symptoms, clinical course, medical management, morbidity, and prognosis are reviewed, and the influence of pathology on occupational performance is examined.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2200; Plan: Doctor of Occupational Therapy (OTD)

OT 2236 - ACTIVITY/CONTEXT THEORY AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
The interface between functional impairment, activity, and societal participation is studied in-depth. Emphasis is on adaptation to

compensate for dysfunction in performance of occupations for life activities (self-care, home and community management, rest/sleep, education/work, and play/leisure, and social participation).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2207; PLAN: Doctor of Occupational Therapy (OTD)

OT 2237 - CLINICAL CONDITIONS 2

Minimum Credits: 1
Maximum Credits: 1
Defines and describes neuromuscular, orthopedic, psychiatric, and clinical medicine diagnoses that are leading causes of disability in children, adolescents, adults, and older adults. Etiology, signs and symptoms, clinical course, medical management, morbidity, and prognosis are reviewed, and the influence of pathology on occupational performance is examined. Builds on content in Clinical Conditions 1.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2235; PLAN: Doctor of Occupational Therapy

OT 2238 - ADAPTATION/TECHNOLOGY THEORY AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
Addresses assistive technologies and devices used to enhance occupational performance and foster participation and well-being.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2236; PLAN: Doctor of Occupational Therapy (OTD)

OT 2239 - PROJECT DEVELOPMENT 1

Minimum Credits: 2
Maximum Credits: 2
Focuses on the development of the skills needed to plan, implement and evaluate a project that addresses an important question related to professional practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2208; PLAN: Doctor of Occupational Theray (OTD)

OT 2240 - SPECIAL TOPICS IN OCCUPATIONAL THERAPY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2241 - CLINICAL PRECEPTORSHIP 1

Minimum Credits: 1
Maximum Credits: 1

This course provides experiential learning in occupational therapy practice to provide clinical exposure to the U.S. Health Care System.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2242 - CLINICAL PRECEPTORSHIP 2

Minimum Credits: 1
Maximum Credits: 1
This course provides experiential learning in occupational therapy practice to provide clinical exposure to the U.S. Health Care System.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2243 - CLINICAL PRECEPTORSHIP 3

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2244 - CLINICAL CONDITIONS 3

Minimum Credits: 1
Maximum Credits: 1
Defines and describes neuromuscular, orthopedic, psychiatric, and clinical medicine diagnoses that are leading causes of disability in children, adolescents, adults, and older adults. Etiology, signs and symptoms, clinical course, medical management, morbidity, and prognosis are reviewed, and the influence of pathology on occupational performance is examined. Builds on content in Clinical Conditions 2.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2237; PLAN: Doctor of Occupational Therapy (OTD)

OT 2245 - SPECIAL TOPICS IN OCCUPATIONAL THERAPY: RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course examines advanced topics related to occupational therapy research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2246 - RESEARCH PRECEPTORSHIP 1

Minimum Credits: 2
Maximum Credits: 2
This course provides a structured exposure to occupational therapy research.
Academic Career: Graduate

Course Component: Credit Laboratory
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2247 - RESEARCH PRECEPTORSHIP 2

Minimum Credits: 2
Maximum Credits: 2
This course provides a structured experience in an occupational therapy research laboratory under the guidance of a faculty mentor.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2248 - PROFESSIONAL REASONING IN OCCUPATIONAL THERAPY

Minimum Credits: 3
Maximum Credits: 3
This course uses professional and clinical reasoning to enhance evaluation and intervention.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2249 - SPECIAL TOPICS IN OCCUPATIONAL THERAPY: CLINICAL

Minimum Credits: 2
Maximum Credits: 2
This course examines advanced topics related to occupational therapy practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2250 - APPLIED STATISTICS IN OCCUPATIONAL THERAPY

Minimum Credits: 3
Maximum Credits: 3
This course introduces the concepts of descriptive and inferential statistics as they relate to occupational therapy research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

OT 2251 - SCHOLARLY PROJECT

Minimum Credits: 1
Maximum Credits: 10
This course provides the student with experience in implementing, analyzing, interpreting, and/or writing elements of an existing research project under the direction of a faculty mentor.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

OT 3000 - ADVANCED ASSESSMENT

Minimum Credits: 4
Maximum Credits: 4
This course focuses on building foundational knowledge in classical test and item response theories to identify assessments for improving outcomes at the patient, program, system, and population levels. Students will learn to differentiate between levels of assessments; examine the uses of various assessment methods (e.g., self-report, proxy report, clinical judgment, performance assessment, and survey); and analyze the impact of measurement issues on outcomes. Additionally, students will utilize knowledge gained in this course to create a program proposal showcasing the utility of assessments in improving outcomes at a facility.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

OT 3010 - EVIDENCE INTERPRETATION FOR IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course provides a basic understanding of methods to interpret research in the context of evidence-based practice. Content includes critical appraisal and interpretation of descriptive and inferential statistics (including univariate and multivariate parametric and nonparametric tests) that are commonly used in published clinical research studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Occupational Therapy(OT-MS) or Impl of Evidence in Clin Pract (IECP-ACG) SUBPLAN: Clinical Education(CSDCE-SP) or (OCSD-TR) Online OT-CSD

OT 3020 - FOUNDATIONS IN IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course introduces opportunities and barriers for implementing changes designed to improve clinical practice processes and outcomes. Content will include definitions, distinctions, and applications of key concepts including evidence-based practice, knowledge translation, implementation, and dissemination.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

OT 3030 - THE BUSINESS OF IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course shares effective techniques for negotiating, facilitating, and leading change in clinical contexts. Topics will include establishing new or renewing old relationships, changing behaviors and expectations, resolving dispute, and interpersonal effectiveness.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

OT 3040 - ADVOCACY FOR IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3

This course will provide a framework for understanding and analyzing legislative and regulatory processes that have an impact on clinical services delivery and implementation of processes across contexts to improve clinical practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OT 3040 - ADVOCACY FOR IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course will provide a framework for understanding and analyzing legislative and regulatory processes that have an impact on clinical services delivery and implementation of processes across contexts to improve clinical practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

OT 3040 - ADVOCACY FOR IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course will provide a framework for understanding and analyzing legislative and regulatory processes that have an impact on clinical services delivery and implementation of processes across contexts to improve clinical practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

OT 3040 - ADVOCACY FOR IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course will provide a framework for understanding and analyzing legislative and regulatory processes that have an impact on clinical services delivery and implementation of processes across contexts to improve clinical practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

OT 3100 - EVIDENCE ANALYSIS AND SYNTHESIS

Minimum Credits: 4
Maximum Credits: 4
This course uses systematic methods (e.g., PRISMA, Pedro, Consort, Strobe, Trend, CASP) to critically appraise and synthesize research to inform design and implementation of clinical protocols and best practice guidelines to improve clinical practices and outcomes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Occupational Therapy (OT-MS) or Impl of Evidence in Clin Pract (IECP-ACG) or SUBPLAN: Clinical Education (CSDCE-SP) or Online OT-CSD(OCSD-TR)

OT 3200 - EVIDENCE-BASED PROTOCOLS AND PRACTICE GUIDELINES

Minimum Credits: 4
Maximum Credits: 4
This course focuses on the use of evidence checklists for evaluating and developing practice guidelines (e.g., AGREEII). Current professional practice guidelines will be evaluated, generated, implemented, and assessed for adoption and sustainability.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Occupational Therapy(OT-MS) or Impl of Evidence in Clin Pract (IECP-ACG) SUBPLAN: Clinical Education(CSDCE-SP) or (OCSD-TR) Online OT-CSD

OT 3206 - ADVANCED THEORY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
Examines select theoretical perspectives, practice areas, evaluation procedures, intervention protocols, and/or professional issues in-depth.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2229 and 2228; PLAN: Doctor of Occupational Therapy (OTD)

OT 3207 - PROJECT DEVELOPMENT 2

Minimum Credits: 3
Maximum Credits: 3
Focuses on the construction of the protocol of a capstone project, including collaboration with and mentorship by faculty and content experts in developing plans for implementation, evaluation and sustainability of the program.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2229 and 2228; PLAN: Doctor of Occupational Therapy (OTD)

OT 3208 - EXPERIENTIAL PRECEPTORSHIP

Minimum Credits: 1
Maximum Credits: 12
Provides an in-depth learning experience in clinical practice, research, administration, leadership, program and/or policy development, advocacy, or education at an approved clinical education site that offers the opportunity to develop advanced skills that are beyond the professional responsibilities of an entry-level occupational therapist and collaboration and mentorship with faculty and site experts. Includes implementation of a capstone project.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PREQ: OT 3207; PLAN: Doctor of Occupational Therapy (OTD)

OT 3210 - ADVANCED CONCEPTS IN PROFESSIONAL AND CLINICAL REASONING

Minimum Credits: 2
Maximum Credits: 2
Uses case-based methods, evidence synthesis, and critical thinking to derive evidence-based and sustainable solutions to real-world complex clinical challenges in evaluation and intervention.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2229 and 2228; PLAN: Doctor of Occupational Therapy

OT 3211 - ADVANCED CONCEPTS IN HEALTH POLICY AND ADVOCACY

Minimum Credits: 2
Maximum Credits: 2
Focuses on the development and analysis of policy issues, and the engagement in advocacy to address issues affecting occupational therapy and that support health, well-being, and societal participation at the individual and/or systems levels. Addresses strategies for promoting occupational justice and empowering individuals to seek and obtain resources to fully participate in daily life occupations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2229 and 2228; PLAN: Doctor of Occupational Therapy (OTD)

OT 3212 - LEADERSHIP DEVELOPMENT

Minimum Credits: 2
Maximum Credits: 2
Focuses on leadership skills for promoting the distinct value of occupational therapy, implementing evidence-based occupational therapy services, and advocating for occupational therapy services at the consumer, work environment, and policy levels.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2229 or 2228; PLAN: Doctor of Occupational Therapy (OTD)

OT 3213 - PROFESSIONAL DEVELOPMENT SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Addresses professional issues and the professional development of the occupational therapist related to collaborative practice, ethics, professional entry requirements and responsibilities, and professional sustainability. Includes dissemination of capstone project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PREQ: OT 3207; PLAN: Doctor of Occupational Therapy

OT 3214 - ADVANCED THEORY AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
Examines select theoretical perspectives, practice areas, evaluation procedures, intervention protocols, and/or professional issues in-depth.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OT 3300 - CONCEPTUALIZING AND ASSESSING QUALITY IMPROVEMENT

Minimum Credits: 4
Maximum Credits: 4
This course focuses on the application of data analytic strategies (e.g., descriptive, correlational, comparative, predictive, and qualitative strategies) that practitioners can use to analyze clinical data related to patient, program, population, or health system-level outcomes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Occupational Therapy(OT-MS) or Impl of Evidence in Clin Pract (IECP-ACG) SUBPLAN: Clinical Education(CSDCE-SP) or (OCSD-TR) Online OT-CSD

OT 3400 - THEORIES OF CHANGE

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on analysis and synthesis of health, behavior, and organizational change theories and application to clinical practice, program development, and adult learning.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

OT 3500 - IMPLEMENTATION EVIDENCE

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on evidence-based practices to support implementation, with particular attention on approaches to support stakeholder engagement, knowledge translation, and dissemination.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

OT 3600 - CAPSTONE PHASE 1

Minimum Credits: 3
Maximum Credits: 3
Students will design and initiate a project to implement evidence-based knowledge in partnership with stakeholders and an academic mentor to improve occupational therapy outcomes. This phase of the capstone project includes project development and approval, stakeholder engagement, faculty guidance and feedback, project implementation, and data collection.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

OT 3700 - CAPSTONE PHASE 2

Minimum Credits: 5
Maximum Credits: 5
Students will complete and analyze the results of their project implementation to demonstrate the synthesis of integrated learnings. This phase of the capstone project includes the delivery of findings through both an oral presentation to and collegial discussion with an audience of academic peers, faculty and professional colleagues, as well as a written defense.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: PLAN: IECP-ACG or SUBPLAN: CSDCE-SP or OCSD-TR

Oncology/Cancer Biology

MSOGP 2000 - FOUNDATIONS IN CANCER BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This 3-hour credit course will serve as the first foundations course for the Oncology Graduate Program. It will provide a biological

foundation and background to cancer biology for students entering their first semester of the program. This class will meet twice per week (9:00-10:30am Monday and Wednesday) in the Assembly Building. The course will be directed by program co-directors Drs Katherine Aird and Chris Bakkenist, with lectures each week led by cancer researchers from various areas of expertise within the Hillman Cancer Center
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSOGP 2050 - ONCOLOGY GRADUATE PROGRAM WORK IN PROGRESS

Minimum Credits: 1
Maximum Credits: 1
Research seminar format of Oncology Graduate Program Students providing updates on current work in their dissertation lab related to oncology and cancer biology
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSOGP 2060 - HILLMAN BASIC AND TRANSLATIONAL SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Research seminar format of distinguished internal and external lectures related to oncology and cancer biology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

MSOGP 2070 - SUCCESS IN ACADEMIC SCIENCE

Minimum Credits: 1
Maximum Credits: 1
The goal of this course are to provide critical guidance needed for success in an academic science lab. The course will also enhance the career development capacity and foster the life-long career management habits of graduate students to maximize their scholarly training success and facilitate personal career outcomes. The course will consist of both didactic lectures and small group discussions. This forum will focus on supporting development of scholarly independence. Students will perform self-assessments, career exploration, and goal setting and also receive professional development and career planning and management guidance. Additional topics will be identified by students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad SN Basis

MSOGP 2080 - GRANT WRITING FOR ONCOLOGY GRADUATE PROGRAM

Minimum Credits: 1
Maximum Credits: 1
Grant Writing Course for second year Oncology Graduate Program students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSOGP 2110 - ONCOLOGY GRADUATE PROGRAM FIRST ROTATION

Minimum Credits: 3
Maximum Credits: 3

Oncology Graduate Program first laboratory rotation. Conducted during fall semester of year 1
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade

MSOGP 2120 - ONCOLOGY GRADUATE PROGRAM SECOND ROTATION

Minimum Credits: 3
Maximum Credits: 3
Oncology Graduate Program second laboratory rotation. To be taken during spring semester of year 1
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade

MSOGP 2130 - ONCOLOGY GRADUATE PROGRAM THIRD ROTATION

Minimum Credits: 3
Maximum Credits: 3
Oncology Graduate Program third laboratory rotation. To be taken during spring of the second year
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad Letter Grade

MSOGP 2140 - ONCOLOGY GRADUATE PROGRAM DIRECTED STUDY

Minimum Credits: 3
Maximum Credits: 9
Directed study, laboratory credits for Oncology Graduate Program Students who have completed 3 laboratory rotations.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

MSOGP 2150 - THERAPEUTIC METHODS FOR ONCOLOGY

Minimum Credits: 2
Maximum Credits: 2
This 2-hour credit course is an introduction to therapeutic methods as they apply to oncology. Students will develop a working understanding of traditional and personalized cancer therapeutics. This course will be team taught by experts in each therapeutic method.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSOGP 3000 - FOUNDATIONS IN CLINICAL ONCOLOGY

Minimum Credits: 3
Maximum Credits: 3
Oncology Graduate Program Foundational course in Clinical Oncology and Cancer Treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Ophthalmology

OPHTH 5385 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0
Maximum Credits: 0
The department of ophthalmology will arrange an individual study or research experience for third year medical students in an area of their interest. These electives are at the junior level and will be four weeks in duration.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OPHTH 5420 - INTENSIVE OPHTHALMOLOGY ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This elective will provide in-depth exposure to the field of ophthalmology. It is intended for students exploring the possibility of a career in ophthalmology as well for those who wish to gain more ophthalmologic experience prior to a career in another field. Prior to enrolling for the elective, the student must meet with Dr. Waxman to discuss his/her specific goals. Individual students will then be directed to meet with a member of the full-time faculty who will become the student's mentor for the elective period. The expectation is that the student will become a functioning member of their mentor's service with duties comparable to those of a first-year resident. Students will have the opportunity to attend subspecialty lectures, weekly grand rounds and to observe intraocular microsurgery. A call schedule can be arranged at the discretion of the student and mentor.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OPHTH 5430 - PEDIATRIC OPHTHALMOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective will provide in-depth exposure to the field of pediatric ophthalmology. It is intended for students exploring the possibility of a career in ophthalmology, as well as for those who wish to gain more ophthalmologic experience prior to a career in another, likely pediatric, field.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OPHTH 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department of ophthalmology to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OPHTH 5815 - OPHTHALMOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Research opportunities are available with appropriate staff members. Call to discuss the various research programs. The individual can then make the necessary arrangements for a research elective with the staff member of his choice.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OPHTH 5899 - INDEPENDENT STUDY IN OPHTHALMOLOGY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OPHTH 5900 - EXTRAMURAL OPHTHALMOLOGY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in ophthalmology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Oral Biololgy

ORBIOL 3501 - MOLECULAR AND CELL BIOLOGY PART 1

Minimum Credits: 4
Maximum Credits: 4
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ORBIOL 3502 - MOLECULAR AND CELL BIOLOGY PART 2

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ORBIOL 5817 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

Oral and Maxillofacial Path

OMFP 2101 - SURGICAL ORAL AND MAXILLOFACIAL PATHOLOGY

Minimum Credits: 2
Maximum Credits: 4
This course will provide training and experience in the full range of oral surgical pathology procedures. The course will train the resident through hands-on experience in de scribing gross specimens as they arrive from the contributor, proper preparation for embedding, microscopic description, generation of a diagnosis, and decision-making in the need to order special stains and immunohistochemical procedures. This course includes instruction in laboratory administration, contributor relations, and histopathologic methods.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

OMFP 2111 - SURGICAL ORAL PATHOLOGY 1

Minimum Credits: 1
Maximum Credits: 1
This course will provide training and experience in the full range of oral surgical pathology procedures. The course will train the resident through hands-on experience in de scribing gross specimens as they arrive from the contributor, proper preparation for embedding, microscopic description, generation of a diagnosis, and decision-making in the need to order special stains and immunohistochemical procedures. This course includes instruction in laboratory administration, contributor relations, and histopathologic methods.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

OMFP 2112 - SURGICAL ORAL PATHOLOGY 1

Minimum Credits: 4
Maximum Credits: 4
This course will provide training and experience in the full range of oral surgical pathology procedures. The course will train the resident through hands-on experience in de scribing gross specimens as they arrive from the contributor, proper preparation for embedding, microscopic description, generation of a diagnosis, and decision-making in the need to order special stains and immunohistochemical procedures. This course includes instruction in laboratory administration, contributor relations, and histopathologic methods.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

OMFP 2121 - ORAL AND MAXILFACL HISTOPATHOLOGY

Minimum Credits: .5
Maximum Credits: .5
This course will expose the resident to the microscopic features of a wide range of common and uncommon lesions of the head and neck. Because many lesions are so rare that they would be unlikely to be encountered from biopsy specimens received in a surgical oral pathology course, this course utilizes the department's extensive archive of glass and digital microscopic slides from continued competency courses, exchange sets from other programs, and from faculty members' personal collections. The student will be expected to provide a differential diagnosis and make appropriate requests for additional special stains for each case.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad HSU Basis

OMFP 2122 - ORAL AND MAXILFACL HISTOPATHOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course will expose the resident to the microscopic features of a wide range of common and uncommon lesions of the head and neck. Because many lesions are so rare that they would be unlikely to be encountered from biopsy specimens received in a surgical oral pathology course, this course utilizes the department's extensive archive of glass and digital microscopic slides from continued competency courses, exchange sets from other programs, and from faculty members' personal collections. The student will be expected to provide a differential diagnosis and make appropriate requests for additional special stains for each case.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

OMFP 2132 - LITERATURE REVIEW

Minimum Credits: 0
Maximum Credits: 0
This course is a conference where departmental faculty and residents meet to discuss current scientific articles of interest to the field. This will serve as a forum to address controversial and evidence-based topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

OMFP 2142 - TMJ AND ORAL AND MAXILLOFACIAL PAIN 1

Minimum Credits: 0
Maximum Credits: 0
This course will involve analysis of case histories of patients who have pain in the head and neck region. Stu dents will be provided cases beforehand and will investigate patient medical and dental history, current medications, differential diagnosis, possible treatments, and treatment outcomes. Topics may also include trigeminal neuralgia, multiple sclerosis, migraine headaches, cranial arteritis, and temporomandibular joint surgery.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

OMFP 2151 - RESEARCH

Minimum Credits: 1
Maximum Credits: 3
The resident, with the assistance of the program director, will select a research mentor and research project that ex poses him/her to methods of research, critical review of the scientific literature, analysis of data, and presentation of the results before his/her peers. A comprehensive understanding of institutional review board and human subject's committee policies will be required. The research may include, but is not limited to, basic research, clinical trials, epidemiologic studies, and public health issues.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

OMFP 2161 - ORAL MEDICINE CLINIC

Minimum Credits: 1
Maximum Credits: 1

This course has two main components. The first will be observing and assisting faculty members with their clinical oral pathology/oral medicine patients. The second component is the resident's coverage of the Oral Medicine/Clinical Oral Pathology consultations with the dental students, dental hygiene students, and dental residents.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

OMFP 2162 - ORAL MEDICINE CLINIC

Minimum Credits: 4
Maximum Credits: 4
This course has two main components. The first will be observing and assisting faculty members with their clinical oral pathology/oral medicine patients. The second component is the resident's coverage of the Oral Medicine/Clinical Oral Pathology consultations with the dental students, dental hygiene students, and dental residents.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

OMFP 2172 - CLINICOPATH CORRELATIONS 1

Minimum Credits: 1
Maximum Credits: 1
Using clinical histories, clinical photographs, imaging, and histopathology, residents will discuss clinical consultation cases from the school of dental medicine, from the faculty practice, and clinical cases sent as a part of an exchange program. This process will involve differential diagnosis and management.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

Oral and Maxillofacial Surgery

ORSUR 5241 - ORAL SURGERY 1

Minimum Credits: 1
Maximum Credits: 1
In this course, students will gain foundational knowledge related to the evaluation, management, and treatment of patients requiring dentoalveolar surgery. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

ORSUR 5283 - ORAL SURGERY 2

Minimum Credits: 0
Maximum Credits: 0
This preclinical course provides students with an opportunity to practice basic extraction, soft tissue biopsy, and suturing techniques with oral surgical instruments that are commonly used in the third- and fourth-year clinic, and the future scope of practice of a general dentist. This course includes lectures and hands-on preclinical exercises.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

ORSUR 5313 - ORAL SURGERY 3

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be presented with information related to the management of patients with co-existing medical diseases; patients requiring oral surgery in a hospital setting; the treatment of advanced oral and maxillofacial conditions such as odontogenic infections and facial trauma; and medical/legal considerations with an emphasis on the informed consent process. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

ORSUR 5344 - ORAL SURGERY 4

Minimum Credits: 1
Maximum Credits: 1
This course is team-taught and designed to reinforce and present advanced oral and maxillofacial surgical fundamentals and techniques. The course will also enable the student to be competent to appropriately evaluate, treat, or refer medically compromised patients or patients that require advanced oral surgery procedures. Students who participate in the course will gain knowledge and understanding of the full scope of oral and maxillofacial surgery and reinforce the treatment of craniomaxillofacial conditions. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

ORSUR 5388 - CLINICAL ORAL SURGERY 1

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of oral surgery for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with oral surgery needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with oral surgery needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5449 - CLINICAL ORAL SURGERY 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of oral surgery for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with oral surgery needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with oral surgery needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5800 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 4
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

ORSUR 5802 - ADVANCED ORAL SURGERY CLINIC

Minimum Credits: 2
Maximum Credits: 2
This course is designed to give fourth-year predoctoral dental students with an interest in pursuing a career in oral and maxillofacial surgery an opportunity to further their knowledge and skills in preparation for continuing their education in an oral and maxillofacial surgery residency program.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 4
This independent study course is designed for the pre doctoral dental student who desires to pursue additional knowledge in specific areas of oral and maxillofacial surgery. The content of the course is specified by the student and approved and monitored by a full-time faculty member. The teaching format is designed to encourage independent student experiences with the faculty acting in an advisory capacity with limited personal interaction.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

ORSUR 5911 - HOSPITAL EXTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
The participant will participate at MUH department of dental medicine for a two week rotation. During this time they will function with the oral surgery residents in the clinic seeing patients presenting with both inpatient and outpatient emergencies. Participants will also rotate in the operating room for an observational experience with oral and maxillofacial surgery staff and residents.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5912 - ADVANCED ORAL SURGERY

Minimum Credits: 3
Maximum Credits: 3
This advanced clinical oral surgery elective is a clinical rotation in oral surgery that is restricted to students who are interested in pursuing advanced training in oral and maxillofacial surgery. Students will have the opportunity to participate in and be exposed to oral surgery patients requiring more difficult surgical procedures along with man aging medically compromised patients.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5913 - BASIC ORAL SURGERY

Minimum Credits: 3
Maximum Credits: 3
This basic oral surgery elective is a clinical rotation in oral surgery where the student has the opportunity to participate in or be exposed to oral surgery patients requiring routine and surgical extractions, minor preprosthetic surgery, impacted teeth, odontogenic infections, oral pathologic lesions, assisting other students and managing medically compromised patients.
Academic Career: Dental Medicine

Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5941 - HOSPITAL EXTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
This course will consist of a rotating externship in oral and maxillofacial surgery at the university of Pittsburgh medical center hospitals. Students will participate in emergency room coverage, ward rounds, ambulatory clinical care and operating room coverage.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5942 - ADVANCED ORAL SURGERY

Minimum Credits: 3
Maximum Credits: 3
This advanced clinical oral surgery elective is a clinical rotation in oral surgery that is restricted to students who are interested in pursuing advanced training in oral and maxillofacial surgery. Students will have the opportunity to participate in and be exposed to oral surgery patients requiring more difficult surgical extractions, preprosthetic surgery, impacted teeth, odontogenic infections, oral pathologic lesions, and managing medically compromised patients.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5943 - BASIC ORAL SURGERY

Minimum Credits: 3
Maximum Credits: 3
This basic oral surgery elective is a clinical rotation in oral surgery where the student has the opportunity to participate in or be exposed to oral surgery patients requiring routine and surgical extractions, minor preprosthetic surgery, impacted teeth, odontogenic infections, oral pathologic lesions, and managing medically compromised patients.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5944 - HOT TOPICS IN DENTISTRY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: DMED
Course Component: Independent Study
Grade Component: Grad HSU Basis

ORSUR 5971 - HOSPITAL EXTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
This course will consist of a rotating externship in oral and maxillofacial surgery at the university of Pittsburgh medical center hospitals. Students will participate in emergency room coverage, ward rounds, ambulatory clinical care, and operating room coverage.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

Oral and Craniofacial Sciences

OCS 2035 - AGE RELATED CHANGES AND ORAL CAVITY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 2100 - RESEARCH PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
This course provides an opportunity to gain a working familiarity with the research goal(s) of a designated laboratory and with the experiments designed and methodologies employed to meet this end.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

OCS 2110 - TEACHING PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
This practicum encourages the acquisition and refinement of skills necessary to the delivery of effective instructive presentations in a classroom or laboratory setting. Performance is critiqued by the faculty.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

OCS 2160 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

OCS 2191 - PATHOBIOLOGY 1

Minimum Credits: 2
Maximum Credits: 2
This Didactic Conference is designed to introduce graduate students to the basic and advanced concepts on the biological basis of oral diseases and oral manifestations of systemic diseases. Emphasis is given on the molecular basis of diseases. In addition, the control of cell/tissue functions by drugs and host defense during bacterial and viral infections, autoimmune diseases, transplantation, cancer, and immunodeficiency will be discussed. This course will provide an overview of the biological basis of emerging technologies such as genetic engineering, bone remodeling and wound repair, tissue engineering, stem cell technology, as well as genetic basis of human diseases, temporomandibular joint diseases and craniofacial anomalies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 2241 - PHYSICAL ANTHROPOLOGY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3110 - TEACHING PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
This practicum encourages the acquisition and refinement of skills necessary to the delivery of effective instructive presentations in a classroom or laboratory setting. Performance is critiqued by the faculty.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

OCS 3210 - INTRODUCTION TO DENTAL ASSISTING

Minimum Credits: 2
Maximum Credits: 2
Students engage in online learning modules on radiography/imaging, infection control/sterilization techniques, chairside assisting, and dental office management. Virtual simulation exercises provide students with a simulated dental office environment to practice chairside assisting techniques, instrument handling, and patient interaction scenarios. Students receive preparation materials for radiology certification and for the Dental Assisting National Board exam.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

OCS 3211 - BIOCHEMISTRY AND NUTRITION

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of the chemistry of living things and the molecular structure and function of biological molecules, which are important for understanding systemic and oral health. Lecture material includes the impact of protein structure on biochemical reactions, enzyme kinetics, and metabolic reactions and homeostasis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3212 - BIOLOGICAL SCIENCE 3

Minimum Credits: 3
Maximum Credits: 3
This course presents the basic physiology of the digestive, cardiovascular, respiratory, endocrine, urinary and nervous systems. Examples of how course materials relate to the clinical practice of dental medicine are incorporated throughout the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3213 - INTRODUCTION TO HUMAN AND DENTAL ANATOMY

Minimum Credits: 3
Maximum Credits: 3
This course serves as an introduction to the anatomical sciences relevant to the scope of the dental profession. Students gain exposure to

content through lecture instruction and 3D virtual anatomy resources. Anatomical concepts and relationships including systemic, oral, and dental anatomy are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3214 - PATHWAY TO DENTAL SCHOOL

Minimum Credits: 1
Maximum Credits: 1
The focus of this course is to help the students transition to the new dental school environment by providing them with tools for personal wellness and educational success. Students are empowered to understand the fundamentals of clinical excellence in dental practice, develop essential communication and patient management skills and foster a commitment to continuous professional development and ethical practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3220 - INTRODUCTION TO DENTISTRY

Minimum Credits: 2
Maximum Credits: 2
This course provides an overview of the activities of each dental specialty. The lectures introduce the students to the terminology, content, and scope of each specialty area of dentistry, and the clinical service delivered and professional responsibilities of each member of the dental team.a¯
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

OCS 3221 - BODY TISSUES

Minimum Credits: 2
Maximum Credits: 2
Body Tissues presents an overview of cellular biology, including cell structure and function, the cell cycle, and mitosis. The four basic tissue types (epithelial, connective, muscle, and nervous) are explored at both the microscopic and macroscopic level. Histology and methods used to prepare and stain tissues are described, with emphasis placed on the link between normal histology and microscopic changes seen in disease states.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3222 - EVIDENCE BASED DENTISTRY

Minimum Credits: 1
Maximum Credits: 1
Evidence Based Dentistry provides an introduction to clinical and basic research study design and analysis. Course content introduces a range of experimental techniques in the clinical sciences as well as ethical issues in oral health sciences. Students demonstrate, both verbally and in writing, the ability to apply reasoning and critical thinking skills when analyzing literature and the ability to communicate professional knowledge clearly to colleagues and patients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3223 - INTRODUCTION TO CRANIOFACIAL GENETICS

Minimum Credits: 2
Maximum Credits: 2
An overview of basic genetic concepts followed by in-depth craniofacial and dental genetics subjects are introduced in this course. Dental and oral diseases influenced by genetics are explored and circumstances in which dental genetics can be used to advance craniofacial health are presented. Students engage with course content through didactic lessons and analysis of research articles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3224 - DENTAL ASSISTING 1

Minimum Credits: 2
Maximum Credits: 2
Students participate in clinical rotations within the varied clinics of the School of Dental Medicine. Students engage in chairside dental assisting under the supervision of licensed dental professionals providing care to a diverse population of patients.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

OCS 3310 - OROFACIAL PAIN AND TEMPOROMANDIBULAR JOINT DISORDERS

Minimum Credits: 1
Maximum Credits: 1
Patients with orofacial pain (OFP) present to dental practices for treatment on a regular basis. In the United States, temporomandibular disorders (TMD) and OFP affect up to 15% of the adult population. As such, the dental student must be able to identify and appropriately manage these patients
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

OCS 3504 - JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

OCS 3505 - DIRECTED RESEARCH

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

OCS 3506 - SKULL ANATOMY AND CEPHALOMETRY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

OCS 3507 - HEAD & NECK SOFT TISSUE ANATOMY

Minimum Credits: 4
Maximum Credits: 4
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

OCS 3508 - CURRENT TOPICS IN ORAL HEALTH RESEARCH

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3509 - COMPOSITION, STRUCTURE, AND FUNCTION OF MINERALIZED TISSUES

Minimum Credits: 3
Maximum Credits: 3
Mineralized tissues such as bones, dentin, and enamel are exceptional materials with their properties uniquely optimized to the function. These functional properties are determined by the tissue structure and composition. The aim of this course is to examine how the composition and structural organization of the mineralized tissues affects their functional properties in norm and disease. All registrants for the course are expected to attend all lectures and prepare a presentation and discussion on the assigned research paper. Presentation of the research paper and class participation will be the basis for evaluation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3510 - DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis

OCS 3511 - THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 9
THESIS RESEARCH
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis

OCS 3513 - CRANIOFACIAL GENETICS

Minimum Credits: 1
Maximum Credits: 1
This course introduces students to modern concepts of genetics and discusses topics that are specifically relevant to dentistry and craniofacial biology. Content emphasizes the genetic etiology of common oral diseases and also includes less common craniofacial and dental conditions.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3515 - GRADUATE INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

OCS 3516 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

OCS 3517 - EMBRYOLOGY AND ORAL TISSUES

Minimum Credits: 4
Maximum Credits: 4
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3519 - MOLECULAR AND CELL BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
In this course, students will be provided foundational knowledge of molecular structures and the metabolism of biomolecules that underlie normal human health, deviations associated with human disease, and alterations resulting from clinical interventions supporting evidence-based clinical decisions. This course includes lectures with a very pronounced interactive dimension.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3520 - INTRODUCTION TO SYSTEMIC GROSS ANATOMY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3546 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad HSU Basis
Course Requirements: PREQ: ORBIOL 3516

OCS 3550 - FOUNDATIONS IN MODERN LAB METHODS

Minimum Credits: 3
Maximum Credits: 3
To develop an understanding of the physical principles underlying scientific laboratory methods and to provide experiential learning in practical implementation the methods used in dental regenerative medicine and developmental biology. These principles include molecular cell biology, gene expression, enzymatic chemistry, photometry, and materials processing. Students will perform experiments using bacterial transformation, cell transfection, plasmid preparation, serial sectioning, histochemical and immunohistochemical staining, and real-time polymerase chain reaction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3553 - FOUNDATIONS IN GENETIC EPIDEMIOLOGY

Minimum Credits: 3
Maximum Credits: 3
FOUNDATIONS IN GENETIC EPIDEMIOLOGY
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3554 - FOUNDATIONS OF CRANIOFACIAL ANATOMY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3556 - FOUNDATIONS OF CRANIOFACIAL SKELETAL REGENERATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OCS 3603 - HUMAN GROWTH AND DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

OCS 3878 - COMPETING FOR FACULTY POSITIONS IN DENTAL SCHOOLS

Minimum Credits: 1
Maximum Credits: 1

Provide students with the necessary knowledge about the academic system so they can be motivated to opt for a career in academics as well as successfully compete for faculty positions.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

OCS 3923 - BEHIND THE SCENES: THE ADMINISTRATIVE SIDE OF TEACHING

Minimum Credits: 1
Maximum Credits: 3
This course provides an opportunity for D4 ACT ARCO students to work alongside a faculty member and experience what is involved in teaching "behind the scenes", including preparing and updating instructional materials and working within a learning management system under the supervision of faculty. This course provides an additional optional experience for the ACT ARCO students to learn more about different aspects of an academic career and responsibilities of a faculty member. This experience supplements students' knowledge and experience gained in the following ACT ARCO courses that they complete during their D3 year: "Fundamentals of Teaching: Principles and Methods," "Principles of Clinical Teaching" and "Clinical Teaching Practicum."
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

OCS 3981 - FUNDAMENTALS OF TEACHING: PRINCIPLES AND METHODS

Minimum Credits: 1
Maximum Credits: 1
This course introduces students to learning theories, basic tools and skills that are necessary for university-level instruction. Topics include adult learning theories, principles of course design, teaching goals and values, effective means of presenting instructional information, developing and leading discussions, active and interactive learning, as well as different forms of assessment and feedback. Students develop a mini lecture applying the pedagogical content and educational skills learned in the course and present it to their peers in a mini teaching simulation. Summarizing the knowledge and experience gained in the course, students develop a teaching philosophy.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

OCS 3999 - FULL-TIME DISSERTATION CREDITS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Dental Medicine
Course Component: Thesis Research
Grade Component: Grad SN Basis

OCS 5000 - DEAN'S SUMMER RESEARCH SCHOLARSHIP PROGRAM

Minimum Credits: 3
Maximum Credits: 3
The Dean's Summer Research Scholarship Program was established to support a summer research-intensive training experience for students who have been accepted, but have not yet matriculated into the School of Dental Medicine's DMD Program. This is a twelve-week program in which accepted students develop a research project between May and August prior to enrollment into the School of Dental Medicine. Three independent study credits will be earned during the summer program, as well as the opportunity to present a poster at the Annual Research Symposium.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

OCS 5115 - MICROBIAL PHYSIOLOGY AND IMMUNOLOGY

Minimum Credits: 3
Maximum Credits: 3
In this course, students will be provided with foundational knowledge of microbiology, focusing on the complex inter-relationships that have evolved between microbes and humans. Topics include the properties of prokaryotic and eukaryotic cells; microbial metabolism; microbial genetics and growth; the control of microbial growth; microbial classification; and the properties of viruses and basic immunology. Emphasis is placed on the role of microorganisms in the development of dental caries and periodontal disease. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5118 - EMBRYOLOGY AND ORAL TISSUES

Minimum Credits: 4
Maximum Credits: 4
In this course, during lectures and class discussions, the students will be introduced to the basic principles of development, structure, and function as they relate to craniofacial region. The students will gain knowledge of the principles of human development starting from fertilization and extending to postnatal growth of the craniofacial skeleton. This course will introduce students to the differentiation, structure and function of the tissues and organs in the head, including bone, teeth, periodontal complex, oral mucosa and saliva. The course is designed to emphasize the basic processes underlying oral diseases. In this course, students will be provided an in-depth understanding of the developmental and structural features of the oral cavity and face so that the student can understand the scientific basis for oral diagnosis and how they may impact treatment planning. In addition, the students will be begin to connect concepts from other disciplines i.e., anatomy, physiology, biochemistry, to oral histology and assess their impact on common clinical procedures. At the completion of the course, the students will be able to describe in depth craniofacial embryology, anatomy and growth, and be able to integrate the fundamental knowledge to describe how congenital anomalies arise.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5119 - MOLECULAR AND CELL BIOLOGY

Minimum Credits: 4
Maximum Credits: 4
In this course, students will be provided foundational knowledge of molecular structures and the metabolism of biomolecules that underlie normal human health, deviations associated with human disease, and alterations resulting from clinical interventions supporting evidence-based clinical decisions. This course includes lectures with a very pronounced interactive dimension.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5120 - BODY TISSUES

Minimum Credits: 2
Maximum Credits: 2
This course introduces students to the microscopic anatomy of the various tissues and organs that make up the human body. The course starts with a description of the structural elements of the cell, followed by a discussion of epithelial, glandular, connective, muscle and nervous tissues. The course continues with coverage of the microscopic features of the cells and tissues that form the various body systems, such as the integumentary, circulatory, respiratory, digestive, endocrine, and urinary systems. The function of the cells found within these tissues and organs is also addressed at an introductory level. Histopathologic correlates are introduced throughout the course, and will help the student understand the link between normal histology and microscopic changes seen in diseased states. The course format is predominantly lecture-based, with an emphasis on histologic slides. This course provides a strong foundation in histology that will be useful for subsequent courses in Oral Tissues and Embryology (ORBIOL 5130), Systemic Human Physiology (ORBIOL 5141), General and Systemic Pathology (DIASCI 5170), and Oral and Maxillofacial Pathology (DIASCI 5212).

Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5140 - SYSTEMIC GROSS ANATOMY

Minimum Credits: 4
Maximum Credits: 4
This is a gross anatomy course for predoctoral dental students that presents the anatomy of the human body from a systems-based approach using lecture and laboratory formats. The primary educational goal of this course is to instruct predoctoral dental students in gross anatomy so that they will have a clear and lasting understanding of the anatomical concepts and relationships that are prerequisites for future courses in their education and for the years of practice that will follow. The course will provide students with an in-depth knowledge of, and appreciation for, the gross anatomy of the human body, particularly those portions directly involved in the practice of dentistry.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5141 - SYSTEMIC HUMAN PHYSIOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
As the first of two courses in the systemic Human Physiology series, this course is organized to provide a basic foundation for the dental student that explains 1) how each organ functions in the body; and 2) how all the organs work together as one functional unit to maintain body homeostasis with a recognition that any deviations from this normal organ functions would lead to organ failure of these systems. The topics covered in the systemic Human Physiology 1 course include: nervous system, muscular system, cardiovascular system, urinary system and respiratory organ system. Oral implications of systemic physiology are introduced. The goals of the course are therefore to provide an opportunity for the dental students to learn the principles of cellular and systemic organ functions; apply these principles and concepts to explain the significance of normal human physiology; and identify deviation(s) from normal organ functions that can affect dental treatments, thus establishing a foundation for the practice of dental medicine.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5142 - HEAD AND NECK GROSS ANATOMY

Minimum Credits: 4
Maximum Credits: 4
In this course, students will be provided with a thorough introduction to the gross anatomy of the head and neck fundamental to future coursework and relevant to the practice of dental medicine that follows. This course includes lecture and lab components.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5143 - HEAD AND NECK SOFT TISSUE ANATOMY

Minimum Credits: 4
Maximum Credits: 4
In this course, students will be provided with a thorough introduction to the gross anatomy of the head and neck fundamental to future coursework and relevant to the practice of dental medicine that follows. This course includes lecture and lab components.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

OCS 5144 - SYSTEMIC HUMAN PHYSIOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
As the second of two courses in the systemic Human Physiology series, this course is organized to provide basic foundation for the dental student that explains 1) how each organ functions in the body; and 2) how all the organs work together as one functional unit to maintain body homeostasis with a recognition that any deviation from normal organ functions would lead to organ failure of these systems. The topics covered in the systemic Human Physiology 2 course include: sensory, gastrointestinal tract and endocrine systems that include pituitary, thyroid, parathyroid, insulin/glucagon/pancreas, male and female reproduction, metabolism and temperature regulation. Oral implications of systemic physiology are introduced. The goals of the course are therefore to provide an opportunity for the dental students to learn the principles of cellular and systemic organ functions; apply these principles and concepts to explain the significance of normal human physiology; identify deviation(s) from normal organ functions that can affect dental treatments, thus establishing a foundation for the practice of dental medicine.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5176 - IMMUNOLOGY

Minimum Credits: 2
Maximum Credits: 2
In this course, students will focus on the structure and function of the immune system as well as on the major human infectious diseases. Microbial Physiology and Immunology I (ORBIOL 5115) is a required prerequisite. Emphasis is placed on the role of microorganisms in the development of dental caries and periodontal disease. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5245 - CRANIOFACIAL GENETICS

Minimum Credits: 1
Maximum Credits: 1
This course introduces dental students to modern concepts of genetics and discusses topics that are specifically relevant to dentistry. Content emphasizes the genetic etiology of common oral diseases and also includes less common craniofacial and dental conditions. The course builds on the need for a contemporary general dentist to be an active health professional who can work within a multidisciplinary team and reinforce the model of personalized dentistry/medicine. The importance of being able to explain to patients the etiological basis of their diseases, and the impact of risk factors for individuals and their relatives, are also addressed.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

OCS 5340 - CURRENT TOPICS IN ORAL HEALTH RESEARCH

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF with +/- Values

OCS 5800 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

OCS 5878 - COMPETING FOR FACULTY POSITIONS IN DENTAL SCHOOLS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

OCS 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This course is designed to provide the student with an opportunity to conduct in-depth study in a particular subject area of their choice.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

OCS 5913 - CURRENT TOPICS IN TMJ

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

OCS 5914 - CLINICAL GERIATRICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

OCS 5940 - SURVIVAL SKILLS FOR A CAREER IN DENTAL RESEARCH

Minimum Credits: 2
Maximum Credits: 2
The focus of this course will be applied and, as such, students will be required to read and discuss scientific literature and other materials. Particular emphasis will be placed on the process of defining ideas and hypotheses. As a result, students will understand how research is planned, supported and published.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

OCS 5943 - SOFT TISSUE HEAD AND NECK ANATOMY TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

OCS 5951 - SYSTEMS GROSS ANATOMY TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

OCS 5977 - CRANIOFACIAL GENETICS TEACHING PRACTICA

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

ORBIOL 5944 - COMPOSITION OF MINERALIZED TIS

Minimum Credits: 2
Maximum Credits: 2
Mineralized tissues such as bones, dentin, and enamel are exceptional materials with their properties uniquely optimized to the function. These functional properties are determined by the tissue structure and composition. The aim of this course is to examine how the composition and structural organization of the mineralized tissues affects their functional properties in norm and disease. All registrants for the course are expected to attend all lectures and prepare a presentation and discussion on the assigned research paper. Presentation of the research paper and class participation will be the basis for evaluation.
Academic Career: DMED
Course Component: Lecture
Grade Component: Grad Letter Grade

Oral Medicine and Pathology

OMP 5817 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
This course will provide the student the opportunity to do research in an area of oral medicine/pathology of mutual interest to the faculty and student.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

OMP 5847 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
This course will provide the students with the opportunity to do research in an area of oral medicine/pathology of mutual interest to the faculty and student.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

Organization Studies

BORG 2060 - INDEP STUDY IN ORGNIZTN BEHAVIOR

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BORG 2061 - INDEPENDENT STUDY IN ORGANIZATIONAL BEHAVIOR 2

Minimum Credits: 1
Maximum Credits: 9
Self-designed elective course in organizational behavior
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BORG 2402 - LEADING PEOPLE IN HEALTHCARE ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
The effective management of people is a critical component of organizational competitiveness. This course addresses problems and issues concerning leadership, interpersonal effectiveness, and challenges for managers in the 21st century
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BORG 3005 - SEMINAR ON INNOVATION AND ORGANIZATIONAL CHANGE: A MICRO-LEVEL PERSPECTIVE

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on individual-level and team-level behaviors aimed at innovation and change in organizations. We will be exploring topics such as employee voice and proactive behaviors, team diversity and innovation, innovation implementation, creativity, and barriers to change in organizations. The purpose of this course is to examine theory and empirical research in these areas in order to help you to develop skills in developing conceptual models and research questions, as well as understanding, critiquing, and extending theory and research published in top academic journals. Each week we will cover a topic in depth, review a selected set of readings, discuss critical issues relating to theory and research methods, and discuss ways to extend conceptual and empirical models.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BORG 3010 - INDEP STUDY ORGNZTNL STUDIES

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BORG 3020 - TOPICS ORGANIZATIONAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
Doctoral seminar designed to introduce students to theory and research in the field of organizational behavior. Some topics that might be included are: individual differences, individual-organizational fit, motivation theory, job design, leadership, participative decision making, and group dynamics. Course is oriented toward critically evaluating the existing theory and research and discussing useful extensions of the literature in these topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BORG 3039 - GROUP DYNAMICS, INTERGROUP RELATIONS & IDENTITY

Minimum Credits: 3
Maximum Credits: 3
This doctoral seminar will focus on the area of group dynamics and intergroup relations across different organizational contexts. The content will focus on the social and psychological processes that drive how individuals in groups perceive, judge, interact and identify with people at the group and intergroup levels of analyses. The readings and discussion will include intergroup dynamics that take the form of task, work and social groups. remember, reason about, feel, and behave toward people in other groups. This content will include research and theory from management literature and other relevant disciplines (e.g., psychology, sociology, etc.). Research focuses on issues such as intergroup conflict and identity will also be discussed throughout the seminar. Students will be assigned weekly readings, engage in content discussions during class, provide weekly reflection papers, and present a final research proposal as requirement elements of this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BORG 3099 - READINGS ORGANIZATIONAL STUDIES

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

BORG 3510 - ORGANIZATIONAL SCIENCE 1

Minimum Credits: 3
Maximum Credits: 3
Organizational Science 1 (Topic: Evidence-Based Management) Evidence-based management means making organizational decisions through the conscientious and explicit use of the best available evidence to increase the likelihood of a favorable outcome for stakeholders. Evidence-based management requires a set of skills and knowledge whereby practitioners translate an issue or problem into an answerable question; systematically search the evidence and critically assess its quality; and incorporate that evidence into the decision making process. It blends science with practice with the goal of ensuring that organizational decisions are based on quality social science research. In this seminar our focus will be on topics in organization science. These topics include leadership, motivation, job design, incentives, and other foundational topics in organizational science. Students will use this information, as well as the principals of evidence-based management, to develop a proposal for addressing a relevant issue or problem to address within their own organizations or industries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BORG 3510 - ORGANIZATIONAL SCIENCE 1

Minimum Credits: 3
Maximum Credits: 3
Organizational Science 1 (Topic: Evidence-Based Management) Evidence-based management means making organizational decisions

through the conscientious and explicit use of the best available evidence to increase the likelihood of a favorable outcome for stakeholders. Evidence-based management requires a set of skills and knowledge whereby practitioners translate an issue or problem into an answerable question; systematically search the evidence and critically assess its quality; and incorporate that evidence into the decision making process. It blends science with practice with the goal of ensuring that organizational decisions are based on quality social science research. In this seminar our focus will be on topics in organization science. These topics include leadership, motivation, job design, incentives, and other foundational topics in organizational science. Students will use this information, as well as the principals of evidence-based management, to develop a proposal for addressing a relevant issue or problem to address within their own organizations or industries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BORG 3511 - ORGANIZATIONAL SCIENCE: EVIDENCE-BASED MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on individual and collaborative behavior in organizations. The purpose of this course is to examine and understand fundamental theories and empirical research in the field of organizational behavior, and to increase our understanding of people's behavior in organizations. To do so, we will study a blend of classic and contemporary literature so that we can appreciate the prevailing theories and findings within a broader context. We will focus on identifying underlying theoretical and conceptual frameworks characterizing organizational research and helping you to develop a sense of the issues and questions that organizational behavior addresses. Each week we will cover an area in depth, explore major theories, review a selected set of readings, and discuss some of the critical issues that the readings raise with regard to both theory and research methods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BORG 3512 - ORGANIZATIONAL SCIENCE: INNOVATION RESEARCH

Minimum Credits: 1
Maximum Credits: 1
The objectives of this seminar are to give students an overview of the foundations of innovation research and familiarize them with recent research on the topic. This is a broad domain and scholars from multiple disciplines contribute. Researchers adopt a range of epistemologies from positivist to pragmatic to constructivist, with important implications for their methodologies (kinds of data they use as well as analytical approaches and claims they can make about the type of new knowledge they create). We will sample from a variety of epistemological, methodological, and ontological approaches to explore research on innovation. Substantive issues we will study include: technological change and incumbent inertia, corporate innovation in the 2020s and beyond, via modules on innovation processes, innovation ecosystems, AI and innovation; financing innovation; and leading innovation. This seminar examines innovation strategy from a multidisciplinary perspective and utilizes theories emanating from economics, public policy, sociology, psychology, and management. There are many interesting levels of analysis in innovation strategy research, including individual, dyadic, group, firm, inter-organizational, and industry level. In addition, this seminar will introduce students to a variety of research designs and techniques for doing innovation strategy research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BORG 3513 - ORGANIZATIONAL SCIENCE: HUMAN RESOURCES MANAGEMENT

Minimum Credits: 1
Maximum Credits: 1
This doctoral seminar examines the field of Human Resource Management (HRM), focusing on advanced theoretical frameworks, methodological approaches, and contemporary issues. The course emphasizes critical analysis, scholarly research, and the development of expertise necessary for contributing to both academia and practice. By the end of the seminar, students will possess a robust understanding of contemporary issues in HRM.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

Organizational Behavior

BUSORG 1101 - WORKPLACE COMMUNICATIONS

Minimum Credits: 3
Maximum Credits: 3
Business leaders continue to seek candidates who solve problems with critical thinking, explain solutions to both management and peers, and then face opportunities and challenges with powerfully written documents and confident, convincing presentations. And now there's even more. Today, executives add: "I want to hire someone who can tell a story with data." Effective written, oral, and interpersonal skills are expected of you when you enter the business world. Data confirm this. Annual surveys of corporate recruiters indicate that these business communication skills are among the most sought-after in hiring today. The overriding goal of this course, then, is to make you more successful as a candidate, as an employee, and as a professional. In Workplace Communications, you will continue to develop the kinds of communications skills you'll be expected to use both here at the university and then there, that is, at work for the entirety of your career. You will develop and produce pieces of business writing, practice and deliver oral presentations, learn to lead and follow teammates and give and take constructive criticism. Although you will develop many of these skills independently, you will also get more practice working with others. Early in the term, you will be named to one of six teams that comprise this section of Business Communications. You will work with that team throughout the term. Course Outcomes: To successfully complete the course, you will know and be able to ¿ Identify significant forms of current business communication, such as bad news and persuasive and informative messages. Develop greater familiarity with visual and digital communications. Use the conventions of current business etiquette among and between colleagues and clients. Follow directions accurately. Provide and receive a constructive critique of written and presentation work, the foundation of successful interpersonal communications.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: Restricted for School of Business

Organiztnl Beh & Human Resrcs

BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS

Minimum Credits: 1
Maximum Credits: 1
The effective management of people is a critical component of organizational competitiveness. This course addresses problems and issues concerning leadership, interpersonal effectiveness, and challenges for managers in the 21st century. The student is prepared to manage himself or herself and others in a rapidly-changing global environment. Topics covered include leadership, teamwork, power, politics, and influence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BOAH 2421 - HUMN RESORC COMPETITIVE ADVNTG

Minimum Credits: 1
Maximum Credits: 1
This course identifies the key role of human resources management in the organization's effort to create value and explores its link with competitive strategy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BOAH 2401 or BOAH 2409 ; PROG: Katz Graduate School of Business

BOAH 2517 - INTERPERSONAL SKILLS FOR MANAGERS

Minimum Credits: 1
Maximum Credits: 1
Explicit training in interpersonal skills; presenting oneself to others, effective verbal and nonverbal communication, persuasion, and the use of interpersonal resources to become an effective manager and leader.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BOAH 2519 - NEGOTIATIONS 1

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to explore the nature of negotiations so that we might become better bargainers. To be an effective manager, an individual must develop negotiation and bargaining skills. Although the contexts change, managers are regularly involved in bargaining.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BOAH 2401; CREQ: BOAH 2520; PROG: Katz Graduate School of Business

BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

Minimum Credits: 1
Maximum Credits: 1
This 1.5 credit course is a required course for the MBA degree. Students will learn frameworks that enable them to communicate persuasively to influence key strategic stakeholders within and external to the organization. A variety of experiential elements will be incorporated such as presentations, projects, and guest speakers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BOAH 2532 - NEGOTIATIONS, TEAMWORK AND CHANGE 1

Minimum Credits: 1
Maximum Credits: 1
We negotiate daily in a variety of contexts: business, family, and social. Negotiation serves several purposes: (1) establishing new or renewing old relationships; (2) changing behaviors and expectations; and (3) resolving disputes. A key goal of this course is to learn the techniques of effective negotiating and collaborative problem solving. Successful negotiations and teamwork reduce costs, improve outcomes, and build constructive relationships. Negotiations are part of a broader set of exchanges that take place within and across organizational contexts. This is the first half of a two-part course on negotiations, teamwork, and change. This course will introduce you to effective techniques for negotiating and collaborative decision making in dyads, as well as in groups. It will further cover the methods for negotiating, facilitating, and leading change in organizational contexts. This is an experiential course and you will be involved directly in negotiating, leveraging team dynamics, and facilitating change in a range of contexts. These experiences will involve a host of tangible and not-so-tangible outcomes, ranging from monetary terms and conditions to matters of goodwill, trust, and information-sharing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BOAH 2401; CREQ: 2409; PROG: Katz Graduate School of Business

BOAH 2537 - CONFLICT RESOLUTION IN THE WORKPLACE 1

Minimum Credits: 1
Maximum Credits: 1
This course is designed to build on the skills you learned in the prerequisite negotiation course (BOAH 2532 Negotiations, Teamwork and Change) to improve your skills in analyzing and resolving disputes in a variety of settings. Most of the lessons and principles covered in the course are not necessarily specific or unique to business-related or managerial applications, even though that will be the focal setting of study. A basic premise of the course is that while analytic skills are needed to discover optimal solutions to problems, a broad array of conflict management skills are often needed to get these solutions accepted and implemented. The course will allow participants the opportunity to develop these skills experientially, where considerable emphasis will be placed on learning from simulations and case analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BOAH 2532; PROG: Katz Graduate School of Business

BOAH 2551 - PROJECT COURSE IN ORGANIZATIONAL LEADERSHIP 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BOAH 2552 - PROJECT COURSE IN ORGANIZATIONAL LEADERSHIP 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BOAH 2801 - ORG BEHAV: LDRSHP & GRP EFFECT

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BOAH 3002 - FOUNDATIONS OF ORGANIZATIONAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on individual and group behavior in organizations. We will be exploring the primary topics in organizational behavior, including person-organization interactions, motivation, employment relationships, leader-member influences, and group processes. Each week we will cover an area in depth, explore major theories, review a selected set of readings, and discuss some of the critical issues that the readings raise with regard to both theory and research methods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BOAH 3019 - RESEARCH IN ORGANIZATIONAL THEORY

Minimum Credits: 3
Maximum Credits: 3
Organizations are the fundamental social building blocks that enable large-scale planning and coordination in modern societies. This PhD seminar will introduce students to the major theoretical approaches and ongoing debates in organizational theory, an inter-disciplinary subject area that explains the origins, persistence, and internal dynamics of organizations. For each area of scholarship, we will read both classic works and more recent contributions. We will focus on theoretical contributions but we will also consider the empirical strategies, settings, and research designs that scholars have used to explore these issues. After an introduction to the field in the first week, we will spend the following three weeks exploring "rational systems" theories of organization, including bureaucracy, the behavioral theory of the firm, and contingency theory. Next, we will turn to "natural systems" theories: culture, exploitation and consent, sensemaking, and social networks. Finally, we will turn to "open systems" theories, including resource dependence, population ecology, and institutional theory. In the final two weeks, we will explore two contemporary phenomenon-driven areas of scholarship: social enterprise and decentralized organizations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BOAH 3027 - OBHR RESEARCH WORKSHOP 1

Minimum Credits: 3
Maximum Credits: 3
Survey of methods used in organizational behavior research and a critical review of major research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BOAH 3028 - OBHR RESEARCH WORKSHOP II

Minimum Credits: 3
Maximum Credits: 3
The primary objective of this course is to provide a hands-on experience in the development, design and execution of rigorous behavioral science research within the fields of organizational behavior and human resource management. We will review a variety of trends and issues facing the management of people and process in organizations and require students to identify a critical area of interest or research to pursue across this two semester course. As a class, we will explore a variety of different methodological approaches and discuss the fit between students' specific research questions and different techniques. Our goal is two-fold: (1) to help students develop a sophisticated understanding for what constitutes rigorous research within the field; and (2) to coach students through the research process in order to create an empirical or theoretical paper that can be used to shape a future program of research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BOAH 3099 - RDGS ORGNZTNL BEHAVIOR/HR MGT

Minimum Credits: 3
Maximum Credits: 3
Readings in research topics and independent study in organizational behavior and human resources.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

Orthodontics & Dentofacial Orthopedics

ODO 2011 - GRADUATE ORTHODONTIC CLINIC 1

Minimum Credits: 2
Maximum Credits: 2
Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patients' treatment.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2012 - GRADUATE ORTHODONTIC CLINIC 2

Minimum Credits: 2
Maximum Credits: 2
Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patient's treatment.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2013 - GRADUATE ORTHODONTIC CLINIC 3

Minimum Credits: 2
Maximum Credits: 2
Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patients treatment.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2014 - GRADUATE ORTHODONTIC CLINIC 4

Minimum Credits: 3
Maximum Credits: 3
Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patients' treatment.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2015 - GRADUATE ORTHODONTIC CLINIC 5

Minimum Credits: 3
Maximum Credits: 3
Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patient's treatment.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2016 - GRADUATE ORTHODONTIC CLINIC 6

Minimum Credits: 3
Maximum Credits: 3
Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patients treatment.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2021 - CLINICAL PEDIATRIC ORTHODONTICS 1

Minimum Credits: 1
Maximum Credits: 1
The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experiences necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by early utilization of limited procedures. Residents will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under supervision of faculty from the department of pediatric dentistry and the department of orthodontics and dentofacial orthopedics.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2022 - CLINICAL PEDIATRIC ORTHODONTICS 2

Minimum Credits: 1
Maximum Credits: 1
The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experiences necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by the early utilization of limited procedures. Residents will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under supervision of faculty from the department of pediatric dentistry and the department of orthodontics and dentofacial orthopedics.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2024 - CLINICAL PEDIATRIC ORTHODONTICS 4

Minimum Credits: 1
Maximum Credits: 1
The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experiences necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by the early utilization of limited procedures. Residents will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under supervision of faculty from the department of pediatric dentistry and the department of orthodontics and dentofacial orthopedics.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2025 - CLINICAL PEDIATRIC ORTHODONTICS 5

Minimum Credits: 1
Maximum Credits: 1
The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experiences necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by the early utilization of limited procedures. Residents will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under supervision of faculty from the department of pediatric dentistry and the department of orthodontics and dentofacial orthopedics.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2027 - CLINICAL PEDIATRIC ORTHODONTICS 3

Minimum Credits: 1
Maximum Credits: 1
The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experience necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by the early utilization of limited procedures. Clinical experiences in this course series will be gained through patient screenings in the department of pediatric dentistry and the cleft palate-craniofacial center, as well as through rendering clinical care in the department of orthodontics and dentofacial orthopedics. Residents enrolled in this course will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under the supervision of faculty from the department of pediatric dentistry, the department of orthodontics and dentofacial orthopedics as well as attending professionals from the cleft palate-craniofacial center. The course is intended for residents enrolled in the advanced specialty education program in pediatric dentistry.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2031 - ADVANCED ORTHODONTIC CLINIC 1

Minimum Credits: 4
Maximum Credits: 4
Clinical cases treated in the areas of (1) maxillo-facial surgical orthodontic treatment, (2) growth modification cases, (3) congenital syndromes including cleft palate. The resident treats the patient under the guidance of a faculty team that may include maxillo-facial surgery, prosthodontics, periodontics, psychology, speech pathology, and orthodontics.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2032 - ADVANCED ORTHODONTIC CLINIC 2

Minimum Credits: 4
Maximum Credits: 4
Clinical cases treated in the areas of (1) maxillo-facial surgical orthodontic treatment, (2) growth modification cases, (3) congenital syndromes including cleft palate. The resident treats the patient under the guidance of a faculty team that may include maxillo-facial surgery, prosthodontics, periodontics, psychology, speech pathology, and orthodontics.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2033 - ADVANCED ORTHODONTIC CLINIC 3

Minimum Credits: 2
Maximum Credits: 2
Clinical cases treated in the areas of (1) maxillo-facial surgical orthodontic treatment, (2) growth modification cases, (3) congenital syndromes including cleft palate. The resident treats the patient under the guidance of a faculty team that may include maxillo-facial surgery, prosthodontics, periodontics, psychology, speech pathology, and orthodontics.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2041 - BIOMECHANICAL ORTHODONTICS 1

Minimum Credits: 0
Maximum Credits: 0
This course is an introduction to solid mechanics and materials science and emphasis is placed towards the application to orthodontic structure. Also special emphasis is placed upon the application of mechanics principles to the analysis, materials selection, and design of orthodontic elements and orthodontic appliances.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2042 - BIOMECHANICAL ORTHODONTICS 2

Minimum Credits: 0
Maximum Credits: 0
This course is a continuation of the study of orthodontic appliance systems, to include fixed, removable and complex appliances. Special emphasis is placed upon the design of orthodontic appliances to meet unique patient treatment needs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2043 - BIOMECHANICAL ORTHODONTICS 3

Minimum Credits: 0
Maximum Credits: 0
The Biomechanical Orthodontics 3 course is designed to provide the graduate orthodontic resident with advanced instruction in the biomechanical aspects of the modern edgewise orthodontic appliance. Students will follow the course of instruction historically utilized at the Tweed Foundation's Advanced Edgewise Course. The biomechanics of the Tweed orthodontic philosophy will be studied and applied to the modern edgewise orthodontic appliance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2051 - ORTHODONTIC LAB TECHNIQUES 1

Minimum Credits: 5
Maximum Credits: 5
The objective of this course is to train the graduate residents in all phases of arch wire formation and mechanics concerned with the application of any current, acceptable orthodontic mechanics. The clinical manifestations of these appliances are taught. The use and proper construction of extra oral anchorage appliances and the full range of intra oral anchorage elastic systems is taught.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

ODO 2056 - ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING 1 LABORATORY

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad HSU Basis

ODO 2057 - ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING 1

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide the first year student in orthodontics with a fundamental understanding of the concepts of orthodontic diagnosis and treatment planning. In the first term students will acquire knowledge pertaining to orthodontic diagnostic records, the etiology of malocclusion and various treatment modalities common to the practice of orthodontics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2058 - ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING 2

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide the first year student in orthodontics with a fundamental understanding of the concepts of orthodontic diagnosis and treatment planning. In the first term students will acquire knowledge pertaining to orthodontic diagnostic records, the etiology of malocclusion and various treatment modalities common to the practice of orthodontics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2059 - ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING 3

Minimum Credits: 1
Maximum Credits: 1
The third term of orthodontic diagnosis and treatment planning provides students with the opportunity to apply diagnostic and treatment planning skills acquired in the first two sections of the course. Students will have additional opportunities to apply diagnostic and treatment planning skills previously acquired to additional orthodontic cases. The application of independent thought in case analysis is stressed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2060 - ORTHODONTICS SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2061 - ORTHODONTICS SEMINAR 2

Minimum Credits: 0
Maximum Credits: 0
These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and

short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2062 - ORTHODONTICS SEMINAR 3

Minimum Credits: 2
Maximum Credits: 2
These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the student and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2063 - ORTHODONTICS SEMINAR 4

Minimum Credits: 1
Maximum Credits: 1
These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2064 - ORTHODONTICS SEMINAR 5

Minimum Credits: 0
Maximum Credits: 0
These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2065 - ORTHODONTICS SEMINAR 6

Minimum Credits: 1
Maximum Credits: 1
These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2066 - ORTHODONTICS SEMINAR 7

Minimum Credits: 1
Maximum Credits: 1
These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2067 - ORTHODONTICS SEMINAR 8

Minimum Credits: 0
Maximum Credits: 0
These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2068 - ORTHODONTICS SEMINAR 9

Minimum Credits: 1
Maximum Credits: 1
These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2069 - ORTHODONTICS SEMINAR 10

Minimum Credits: 1
Maximum Credits: 1
Seminars devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress and short and long term treatment results. Treatment objective and methods are discussed by the students and faculty.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2071 - DENTOFACIAL PROGRAM 1

Minimum Credits: 1
Maximum Credits: 1
This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2072 - DENTOFACIAL PROGRAM 2

Minimum Credits: 1
Maximum Credits: 1
This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2073 - DENTOFACIAL PROGRAM 3

Minimum Credits: 0
Maximum Credits: 0
This course emphasizes the team approach to the treatment of patients with congenital and/or acquired deviations manifested in the craniofacial complex. Case presentations with group discussions is the format utilized. The differential diagnosis and treatment planning of these patients is completed and recommendations for treatment made.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2074 - DENTOFACIAL PROGRAM 4

Minimum Credits: 1
Maximum Credits: 1
This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2075 - DENTOFACIAL PROGRAM 5

Minimum Credits: 1
Maximum Credits: 1
This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2076 - DENTOFACIAL PROGRAM 6

Minimum Credits: 0
Maximum Credits: 0
This course emphasizes the team approach to the treatment of patients with congenital and/or acquired deviations manifested in the craniofacial complex. Case presentations with group discussions is the format utilized. The differential diagnosis and treatment planning of these patients is completed and recommendations for treatment made.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2077 - DENTOFACIAL PROGRAM 7

Minimum Credits: 1
Maximum Credits: 1
This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2078 - DENTOFACIAL PROGRAM 8

Minimum Credits: 1
Maximum Credits: 1
This course emphasizes the team approach to the treatment of patients with congenital and/or acquired deviations manifested in the craniofacial complex. Case presentations with group discussions is the format utilized. The differential diagnosis and treatment planning of these patients is completed and recommendations for treatment made.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2081 - SCIENTIFIC ORTHODONTIC LITERATURE 1

Minimum Credits: 1
Maximum Credits: 1
Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2082 - SCIENTIFIC ORTHODONTIC LITERATURE 2

Minimum Credits: 1
Maximum Credits: 1
Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2083 - SCIENTIFIC ORTHODONTIC LITERATURE 3

Minimum Credits: 1
Maximum Credits: 1
Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2084 - SCIENTIFIC ORTHODONTIC LITERATURE 4

Minimum Credits: 1
Maximum Credits: 1
Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2085 - SCIENTIFIC ORTHODONTIC LITERATURE 5

Minimum Credits: 0
Maximum Credits: 0
Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are

presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2086 - SCIENTIFIC ORTHODONTIC LITERATURE 6

Minimum Credits: 0
Maximum Credits: 0
Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2087 - SCIENTIFIC ORTHODONTIC LITERATURE 7

Minimum Credits: 0
Maximum Credits: 0
Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2088 - SCIENTIFIC ORTHODONTIC LITERATURE 8

Minimum Credits: 1
Maximum Credits: 1
Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2089 - SCIENTIFIC ORTHODONTIC LITERATURE 9

Minimum Credits: 1
Maximum Credits: 1
Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2091 - GROWTH AND DEVELOPMENT 1

Minimum Credits: 1
Maximum Credits: 1
Objectives of this course include introducing the resident to the processes of normal growth and development and to enable them to recognize and identify deviations from normal.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2092 - GROWTH AND DEVELOPMENT 2

Minimum Credits: 1
Maximum Credits: 1
Objectives of this course include introducing the resident to the processes of normal growth and development and to enable them to recognize and identify deviations from normal.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2094 - DENTAL MANAGEMENT OF SLEEP BREATHING DISORDERS

Minimum Credits: 0
Maximum Credits: 0
Sleep breathing disorders encompass a wide range of conditions in which abnormal ventilation occurs during sleep. With recent advances in the field of sleep medicine, the role of dentistry in the management of Obstructive Sleep Apnea (OSA) has become more significant. This course will provide students with the required knowledge to manage OSA patients in the dental setting. Evidence-based guidelines will be reviewed and discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

ODO 2095 - BIOLOGY OF TOOTH MOVEMENT

Minimum Credits: 1
Maximum Credits: 1
This lecture series occurs once per week (1-hr) for 1st year orthodontic residents. Orthodontic tooth movement (OTM) is required to correct/mask malocclusion. Malocclusion is considered to be a relatively recent phenomenon, and potentially an epidemic caused by genetic and environmental changes that lead to effects on oral posture and orofacial dysfunction. Current potential and proven etiologic factors contributing to malocclusion will be presented and discussed. Physiologic (i.e., tooth eruption and drift) and orthodontic tooth movements are complex processes defined by the supporting craniofacial structures, most importantly by the periodontium (i.e., enamel, dentin, cementum, alveolar bone, and periodontal ligament). Physiologic and orthodontic tooth movement undergo similar biological processes and each type of tooth movement may inform each other with all types of tooth movement essentially requiring forces (innate or external) and the periodontal ligament (PDL). Without the PDL or its precursor, the dental follicle or some type of force, any tooth movement is impossible. Cellular and molecular mechanisms underlying physiologic and orthodontic tooth movement, such as the RANK, OPG, RANKL system will be presented. Methods to accelerate or decrease OTM have shown varying degrees of success, and these will be discussed. Lastly, the adverse effects that may be associated with OTM will be discussed. An understanding of the basic biological and environmental mechanisms is key to understanding malocclusion and tooth movement, and evidence-based dentistry should be the primary determinants for formulating comprehensive dental treatments. The ultimate goal of this course is to provide orthodontic residents with sufficient biological knowledge so that they will understand the scientific basis of malocclusion and tooth movement.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2096 - ORTHODONTIC-PERIODONTIC INTERRELATIONSHIPS

Minimum Credits: 1
Maximum Credits: 1
Students of both the advanced education program in orthodontics and the advanced education program in periodontics participate in treatment planning conferences that focus on interdisciplinary case discussions and selected topics from the current literature.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

ODO 2117 - DENTOFACIAL DEFORMITIES

Minimum Credits: 2
Maximum Credits: 2
This seminar emphasizes the team approach for the treatment of patients with congenital and or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2121 - NORMAL AND MALOCCLUSION 1

Minimum Credits: 1
Maximum Credits: 1
This course is intended to provide the resident with the opportunity to critically examine the pertinent dental literature on the subject of occlusion. The course deals with (a) the morphologic relation of the dentition in static occlusion (b) the dynamic relationship of the functioning dentition and (c) the role that the dental occlusion plays in the etiology of TMJ disorders and methodologies utilized in their treatment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2131 - INTRODUCTION TO ORTHODONTIC RESEARCH 1

Minimum Credits: 1
Maximum Credits: 1
Major goal is to enhance the residents' ability to utilize learned research methodology as a tool in seeking solutions to significant problems related to the field of orthodontics. This course is to guide the residents toward completion of their thesis in order to obtain their md degree and publication of their research. Appropriate form of orthodontic research and ethics involved are also covered.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2142 - CRANIOFACIAL ANOMALIES

Minimum Credits: 1
Maximum Credits: 1
The Craniofacial Anomalies course is offered to students in the School of Dental Medicine's Advanced Education Programs as an Elective Core Course. The material presented is a comprehensive introduction to the diagnosis and treatment planning principles of an interdisciplinary team approach to cleft lip and palate and craniofacial anomalies. The objectives of this course are to provide a sound basis for the clinical examination, diagnosis and interactive team management of patients principally with the severe dental presentations associated with various craniofacial anomalies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

ODO 2150 - CONTEMPORARY ORTHODONTICS 1

Minimum Credits: 0
Maximum Credits: 0
The course will review the textbook, "contemporary orthodontics", by W. Proffit and H. Fields and the textbook, "orthodontics; current principles and techniques", by Graber, Vanarsdall and Vig. During the course, the orthodontic resident will be introduced to the fundamental concepts of orthodontics that will enable a better understanding of the everyday orthodontic decisions, practice, and

techniques.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2151 - CONTEMPORARY ORTHODONTICS 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2161 - ETHICS IN ORTHODONTICS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2171 - EVIDENCE BASED CARE 1

Minimum Credits: 0
Maximum Credits: 0
The course series in evidence-based care is designed to introduce the graduate student in orthodontics to the concepts of evidence-based health care. Pertinent literature regarding the efficacy of currently accepted treatment modalities as well as the methods for evaluation of process and outcome will be included in the initial portion of the course. The student will also be exposed to currently accepted outcomes. The presentation of clinical cases for diagnosis and treatment planning will allow the student to plan evidence-based care for their own patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2172 - EVIDENCE BASED CARE 2

Minimum Credits: 0
Maximum Credits: 0
The course series in evidence-based care is designed to introduce the graduate student in orthodontics to the concepts of evidence-based health care. Pertinent literature regarding the efficacy of currently accepted treatment modalities as well as the methods for evaluation of process and outcome will be included in the initial portion of the course. The student will also be exposed to currently accepted outcomes. The presentation of clinical cases for diagnosis and treatment planning will allow the student to plan evidence-based care for their own patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2173 - EVIDENCE BASED CARE 3

Minimum Credits: 0
Maximum Credits: 0
This series in evidence based care is designed to introduce the graduate student in orthodontics to the concepts of evidence based care. Pertinent literature regarding the efficacy of currently accepted treatment modalities as well as the methods for evaluation of processes and outcome will be included in the initial portion of course. The students will also be exposed to currently accepted outcome measures and

methods of evaluating clinical outcomes. The presentation of clinical cases for diagnosis and treatment planning will allow the students to plan evidence based care for patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2220 - THE BUSINESS OF ORTHODONTICS

Minimum Credits: 0
Maximum Credits: 0
The Business of Orthodontic Course is designed to provide the graduate orthodontic resident with basic instruction and general principles of money management, utilization of insurance policies, retirement planning and private practice appraisals. In addition, the course will concentrate on the current state of orthodontics and potential future trends in the profession.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2400 - AMERICAN BOARD OF ORTHODONTICS PREPARATION COURSE 1

Minimum Credits: 1
Maximum Credits: 1
The American Board of Orthodontics Preparation Course 1 is designed to introduce First Year residents in Orthodontics and Dentofacial Orthopedics to the nature of the Board Certification process offered by the American Board of Orthodontics. An overview of the two-part certification process comprising the first phase Written Examination followed by the second phase Scenario-based Oral Clinical Examination for attaining Diplomate status will be provided. Under the supervision of Dr. John Buzzatto, Diplomate of the ABO, in the ABO Prep 1 course, the resident will instructed on how to utilized the ABO diagnostic tools, and prepare and evaluate treated cased in the ABO format in preparation for the phase II Scenario-based Oral Clinical Examination.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2410 - AMERICAN BOARD OF ORTHODONTICS PREPARATION COURSE 2

Minimum Credits: 1
Maximum Credits: 1
The American Board of Orthodontics Preparation Course 2 is designed to continue the preparation of First Year residents in Orthodontics and Dentofacial Orthopedics for the Board Certification process offered by the American Board of Orthodontics. The two-part certification process comprising the first phase Written Examination followed by the second phase Scenario-based Oral Clinical Examination for attaining Diplomate status will be reviewed. Under the supervision of Dr. John Buzzatto, Diplomate of the ABO, in the ABO Prep 2 course, the resident will be prepared for the Written Examination by reviewing and discussing the ABO's published reading list and other preparatory materials.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2420 - AMERICAN BOARD OF ORTHODONTICS PREPARATION COURSE 3

Minimum Credits: 1
Maximum Credits: 1
The American Board of Orthodontics Preparation Course 3 is designed to complete the preparation of Second Year residents in Orthodontics and Dentofacial Orthopedics for the Board Certification process offered by the American Board of Orthodontics. The two-part certification process comprising the first phase Written Examination followed by the second phase Scenario-based Oral Clinical Examination for attaining Diplomate status will be reviewed. Under the supervision of Dr. John Buzzatto, Diplomate of the ABO, in the ABO Prep 3 course, the resident will be prepared for the second phase examination by reviewing case analysis and cephalometric superimposition, steriolithic model evaluation with ABO gauges, and finally case review and analysis in preparation for the Scenario-based

Oral Clinical Examination.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2430 - AMERICAN BOARD OF ORTHODONTICS PREPARATION COURSE 4

Minimum Credits: 1
Maximum Credits: 1
The American Board of Orthodontics Preparation Course 4 is designed to complete the preparation of Third Year residents in Orthodontics and Dentofacial Orthopedics for the Board Certification process offered by the American Board of Orthodontics. The two-part certification process comprising the first phase Written Examination followed by the second phase Scenario-based Oral Clinical Examination for attaining Diplomate status will be reviewed. Under the supervision of Dr. John Buzzatto, Diplomate of the ABO, in the ABO Prep 4 course, the resident will be prepared for the second phase examination by reviewing case analysis and cephalometric superimposition, steriolithic model evaluation with ABO gauges, and finally case review and analysis in preparation for the Scenario-based Oral Clinical Examination.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2501 - EARLY AGE ORTHODONTIC TREATMENT 1

Minimum Credits: 0
Maximum Credits: 0
This course intends to guide the students to identifying and correcting developing malocclusions. A thorough didactical and clinical review of fundamentals on growth and development of a malocclusion attempting to demonstrate interceptive approaches to correct and/or minimize developing problems.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2503 - EARLY AGE ORTHO TREATMENT 3

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 5242 - INTRODUCTION TO ORTHODONTICS

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be provided with foundational knowledge in the orthodontic field of dentistry. It is the only orthodontic lecture series in the four-year curriculum, and consists primarily of lectures along with class participation. The purpose of this course is to provide students, as future clinicians, the ability to recognize orthodontic malocclusion and orthodontic related oral health problems. This course introduces students to the basic knowledge, materials, and clinical procedures that are commonly seen in orthodontic treatment. In addition, this course aims to provide students with the ability to communicate with other professionals within the disciplines of dentistry with the ultimate goal of excellence in patient care. Finally, this foundational orthodontic course will provide resources to initiate further study within the field of orthodontics.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

ODO 5275 - INTRODUCTION TO ORTHODONTICS LAB

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be introduced to the practical knowledge and skills associated with recognizing malocclusions in the mixed dentition, warranting interceptive orthodontic treatment involving space maintenance. Students will become familiar with simple clinical procedures which can be employed for children in the mixed dentition who would benefit from simple space maintenance procedures. Students will also review tracing and landmark identification of a lateral cephalometric radiograph and learn how to perform the following analyses: Steiner, Sassouni, Tweed and Wits appraisal. This course includes laboratory sessions.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: ABCF

ODO 5319 - CLINICAL ORTHODONTICS

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experience in the area of orthodontic dentistry for predoctoral dental students. By the end of this course, students will be able to demonstrate competence in orthodontic dentistry for dental patients at the level of a general dentist. Students will complete a week long hands on clinical orthodontics experience that leads to an understanding of the overall clinical procedures which are undertaken during treatment of malocclusions. Orthodontic treatment of patients in mixed and adolescent dentitions will be addressed, including space management procedures.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: ABCF

ODO 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This course is available for the design of special projects of reading and/or research on topics related to orthodontics.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

ODO 5911 - ADVANCED ORTHODONTICS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

ODO 5941 - ADVANCED CARDIAC LIFE SUPPORT

Minimum Credits: 1
Maximum Credits: 1
The content presented in this course is a standardized curriculum developed by the American heart association for the purpose of managing acute cardiac events prior to the initiation of more definitive care. The objectives of this course are to provide the student with the knowledge and skills necessary to become certified in advanced cardiac life support.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

ODO 5942 - CRANIOFACIAL ANOMALIES

Minimum Credits: 1
Maximum Credits: 1
This course presents a comprehensive introduction to the diagnosis and treatment planning principles of an interdisciplinary team approach to cleft lip and palate and craniofacial anomalies. The objectives of this course are to provide a sound basis for the clinical examination, diagnosis and interactive team management of patients principally with the severe dental presentations associated with the various craniofacial anomalies.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

Orthopedic Surgery

OSURG 5320 - PEDIATRIC ORTHOPAEDICS

Minimum Credits: 0
Maximum Credits: 0
This four-week elective will allow the student concentrated exposure to all aspects of pediatric orthopaedics with a primary object of gaining an appreciation of the physical examination of musculoskeletal disorders in children. Students will be assigned to one of several specific orthopaedic teams and will be integrated to the service and have close contact with orthopaedic residents. Assignment choices will include concentrations in sports medicine, spina bifida/cerebral palsy and adult spinal disorders and there will also be significant exposure to general pediatric orthopaedics and fracture care. Students will be on the call schedule once a week with the pediatric orthopaedic resident. The student may choose to have operating room exposure.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OSURG 5325 - SPORTS MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This four-week elective offers exposure to general sports medicine. Students will be assigned to one of several specific orthopedic teams, which may include concentration in shoulder and elbow disorders or knee disorders. The student will observe orthopedic evaluations in the office as well as become involved in the medical coverage of sporting events depending on the season. While not required, the student may observe surgery if desired. The course objectives are: to understand the mechanism and pathophysiology of sports-related injuries; to become knowledgeable in orthopedic sports medicine physical examination; and to evaluate and monitor rehabilitation following sports-related injuries.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OSURG 5330 - ORTHOPAEDIC TRAUMA

Minimum Credits: 0
Maximum Credits: 0
This is an intensive 4-week exposure to orthopaedic trauma during which the student will be assigned to the orthopaedic trauma team. Students will take call in the hospital once per week. Students will participate in the real-time evaluation of acutely-injured patients in the emergency department; the initial evaluation to include interpretation of radiographic studies, as well as the pre- and postoperative management of acutely-injured patients with orthopaedic injuries. Course objectives include: appreciate the implications of multiple trauma; understand the role of orthopaedic injuries in the management of the multiply-injured patient; understand the trauma care system of a major tertiary medical care system; and become comfortable with the basic skills required to evaluate a multiply-injured patient with

orthopaedic injuries.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OSURG 5335 - ORTHOPAEDIC FOOT AND ANKLE

Minimum Credits: 0
Maximum Credits: 0
This elective is a four week exposure to foot and ankle orthopaedics. The student will be integrated on to the service and will have close contact with the orthopaedic resident. The student will observe foot and ankle evaluations in an office setting and will have the opportunity to observe surgery. Course objects include: appreciate the clinical and radiographic assessment of the foot and ankle; gain an appreciation and understanding of the evaluation and treatment of foot and ankle injuries; and become knowledgeable in the examination of the foot and ankle.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OSURG 5340 - ORTHOPAEDIC HAND SERVICE

Minimum Credits: 0
Maximum Credits: 0
This elective is a four week exposure to hand orthopaedics. The student will be integrated on to the service and will have close contact with the orthopaedic resident. The student will observe hand evaluations in an office setting and have the opportunity to observe surgery. Objectives include: appreciate the clinical assessment of the hand and upper extremity; gain an appreciation and understanding of the evaluation and treatment of hand and upper extremity conditions and procedures; and become knowledgeable in the examination of the hand and upper extremity.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OSURG 5389 - CLINICAL CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
This elective will offer the student early in his/her clinical experience an opportunity to learn more about diseases of the musculoskeletal system, their diagnosis and their treatment. The student will be assigned to a clinical service and will participate in both in-patient and ambulatory care. Teaching by preceptorship and demonstration will recognize the student's limited clinical experience.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OSURG 5392 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0
Maximum Credits: 0
A student may participate as a member of an existing research team in the orthopaedic research laboratory or pursue independent research interests. Students interested in this elective should plan the rotation well-in advance with both the preceptor and the department's student coordinator. Time periods for this elective are in four week blocks of time.
Academic Career: Medical School
Course Component: Directed Studies

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OSURG 5410 - ORTHOPAEDIC SURGERY ADVANCED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
The Orthopaedic Acting Internship elective is designed for a fourth year medical student to receive a comprehensive overview of musculoskeletal medicine and surgery. The medical student will be responsible for evaluating patients and caring for them. The student will be an integral member of the orthopaedic team. A chief resident and an attending staff member will supervise the student at all times. The student will also be expected to help with on-call duties and play an integral part in caring for emergency orthopaedic patients. The medical student will also be taught how to read radiographs in detail and be able to describe a wide variety of pathologic findings on radiographs. The student will be expected to assist in the operating room and during this time will learn musculoskeletal anatomy. Our goal is for the student to learn about the devices used in orthopaedics and the basic biomechanics of these instruments. The medical student will be a part of the preoperative and postoperative management team for numerous patients. At the end of the elective, the student should have a broad base of orthopaedic knowledge. The student should be able to evaluate, order appropriate studies, diagnose the condition, and have an understanding of the principles of treatment. The medical student will also be expected to attend rounds everyday along with trauma conference, Grand Rounds and any conference associated with their service. The student will also be expected to present a case at these conferences and be able to discuss the patient's condition at a medical student's level.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OSURG 5420 - CLINICAL PRECEPTORSHIP

Minimum Credits: 0
Maximum Credits: 0
This rotation is designed for students who are interested in learning about the musculoskeletal system, its disease processes and treatment. The student will be integrated into one of the clinical services at the university hospitals will be involved in the outpatient care of the patients in the emergency room and the orthopaedic ambulatory care clinic. The elective is four weeks in duration.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OSURG 5451 - OPERATIVE SPORTS MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This four-week elective will integrate the students into the sports medicine orthopaedic services in both an inpatient and an outpatient setting. The course objectives are: to improve the student's musculoskeletal system exam skills; to assess and manage the various musculoskeletal injuries encountered frequently in a sports medicine/musculoskeletal outpatient setting; to develop an appreciation of the roles of surgeons, primary care physicians, athletic trainers, and physical therapists in the sports medicine team approach to the care of athletes.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OSURG 5455 - PRIMARY CARE/SPORTS MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This four-week elective is for the student who is interested in learning more about sports medicine, the musculoskeletal system, its exam

and their treatment. Students will be exposed to a variety of sports/musculoskeletal injuries in a multi-provider outpatient sports medicine team approach. Objectives are: improve the student's musculoskeletal system exam skills; assess and manage the various musculoskeletal injuries encountered frequently in a sports medicine/musculoskeletal outpatient setting; develop an appreciation in the sports medicine team approach to the care of athletes.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OSURG 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department of orthopaedic surgery to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's advisory dean. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OSURG 5881 - ORTHOPAEDIC RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Students interested in orthopaedic research may participate as a member of an existing research team in the orthopaedic research laboratory or pursue independent research interests. Students interested in this elective should contact the coordinator and plan the rotation months in advance. Time periods for this elective are in four week blocks.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OSURG 5899 - INDEPENDENT STUDY ORTHOPAEDIC SURGERY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

OSURG 5900 - EXTRAMURAL ORTHOPAEDIC SURGERY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in orthopaedic surgery may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Otolaryngology

OTO 5390 - OTOLARYNGOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Students undertaking this elective may join ongoing basic research projects in the laboratory. The student will be given an opportunity to learn research techniques.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

OTO 5420 - HEAD AND NECK SURGERY

Minimum Credits: 0
Maximum Credits: 0
This four-week course concentrates on the management of patients with tumors of the head and neck. Special emphasis is on oncologic surgery, but the elective includes reconstructive surgery of the head and neck, major inflammatory diseases, and management of the airway and swallowing disorders. There will be general ear, nose, and throat experience as well. The objectives are to record and interpret a complete medical history, perform and evaluate an examination of the head and neck and to develop an appropriate management plan.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OTO 5425 - COMBINED OTOLARYNGOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four-week elective combines two weeks each of the head and neck and pediatric otolaryngology rotations. The course will constitute an intensive rotation as a member of the surgical teams. The focus is on management of patients with tumors of the head and neck and children with a variety of diseases of the ear, nose and upper digestive tract. Each week the student will spend two days in the patient office and three days in the operating room, functioning as an integral member of the teams. Teaching rounds will be conducted twice daily by the house staff and attending staff.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OTO 5430 - OTOLARYNGOLOGY PRIVATE PRACTICE

Minimum Credits: 0
Maximum Credits: 0
In this four-week course the student will work as a colleague in a private practice office two days a week seeing patients and working as an assistant in the operating room three days a week. The preceptor is involved in the practice of general ear, nose, and throat to offer experience in recognizing and managing common ENT complaints such as headaches, dizziness, neck mass, trouble swallowing, etc. The objectives are to record a complete medical history, record and evaluate a complete examination of the head and neck and to develop a plan of management.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OTO 5450 - PEDIATRIC OTOLARYNGOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four-week elective course is designed for the student desiring a career in primary medicine, pediatrics or otolaryngology. The student will attend the pediatric otoloaryngology outpatient department, surgery and work rounds with staff and residents. In addition, all department activities, including participation in ongoing research, will be available to the students. The objectives of the course are to record and to interpret a pediatric otolaryngology history, to perform a complete pediatric head and neck exam and to formulate a management plan.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OTO 5460 - NEUROTOLOGY

Minimum Credits: 0
Maximum Credits: 0
This course deals with patients with disorders of the hearing and balance systems. Special emphasis is on evaluation, physical examination and special testing -vestibular and audiological -of patients who present with complaints related to hearing, balance, facial dysfunction and medical and surgical management. In addition, the student will have the opportunity to participate in otologic surgery. The objectives are to learn techniques used in evaluation of hearing and balance disorders, to interpret a medical history and to outline a plan of management.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OTO 5475 - INTRO TO OTOLARYNGOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to provide an introductory overview of the clinical and surgical aspects of the field of otolaryngology. Participants will spend approximately 50% of days in a clinic setting and 50% of days in the OR. Students will spend 1 week each at 2 clinical sites including: Head and Neck Oncology (Montefiore Hospital) focuses on diagnosis and treatment of head and neck cancer and benign upper airway pathologies. Pediatric Otolaryngology (Children's Hospital) focuses on diagnosis and treatment of the full spectrum of ENT pathology in healthy and medically complex pediatric patients. Mercy Hospital includes subspecialty focus on sleep surgery, laryngology (voice and swallowing disorders), and general ENT. The VA offers a wide array of subspecialty ENT, including otology, sleep, laryngology, facial plastics, and head and neck cancer. Site choice will be granted on a first-come, first-served basis.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

OTO 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department of otolaryngology to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OTO 5816 - OTOLARYNGOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
This 4 week experience allows a student to participate in a clinical or basic laboratory research project in otolaryngology. The student can select to work with any faculty in the department. Participation in design, data collection and analysis, and manuscript preparation is expected. The actual total participation may extend beyond the 4 week period.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OTO 5899 - INDEPENDENT STUDY IN OTOLARYNGOLOGY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OTO 5900 - EXTRAMURAL OTO LARYNOLOGY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in otolaryngology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Pathology

MSPTH 5375 - CAREER EXPLORATION IN ANATOMIC PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to enable students to see and appreciate what anatomic pathologists do and allow those considering a career in pathology to get an idea of what such a career would be like. Each student will be assigned to a surgical pathology "bench" for approximately 3 days. Each bench processes specimens of a specific type. The benches available on this rotation include those for large gastrointestinal specimens, small biopsy gastrointestinal specimens, head and neck specimens, and may also include rotations in cytopathology and autopsies. Each student will be assigned to the pathology resident or fellow or pathology assistant or attending staff pathologist for the bench they are assigned to. These pathology faculty, residents and staff will help the student learn about the discipline and practice of pathology. The student will work closely with the resident -- observing the resident grossing specimens, performing frozen sections and reviewing slides cases prior to signing out the cases at daily sign out with the staff pathologist. The student will be supervised at all times. If deemed to be competent by the attending or resident and if the student demonstrates interest, the student may be given a case to preview on their own (with supervision by the resident as necessary) in order to formulate a diagnosis prior to signout with the attending pathologist.
Academic Career: Medical School

Course Component: Practicum
Grade Component: S/U Basis

MSPTH 5376 - AUTOPSY ANSWERS THE QUESTIONS

Minimum Credits: 0
Maximum Credits: 0
Autopsy pathology is one of the true "general specialties" in medicine. This brief elective is designed to introduce the curious student to all aspects of after-death care of patients, including autopsy pathology, medical examiner/coroner systems, funeral home practice and embalming procedures, family concerns about death and autopsy examinations, and the needs of clinical medicine practitioners for accurate autopsy assessments. During the elective the students will spend significant time on the UPMC autopsy service working with autopsy pathologists as they interact with the hospital, families and the community to provide comprehensive after death care. They will help the team to review patient histories, interpret gross and microscopic autopsy findings, complete cause-of-death statements, and effectively communicate those findings with clinical staff. Students may assist with hospital autopsies, if they choose. They can interact with other members of the after death care team including morticians, pastoral care staff, embalmers, and decedent affairs service members. The ultimate goal is to give the physician-in-training an understanding of after death care of patients and be able to place that care in the context of their future medical practice.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

MSPTH 5381 - INDIVIDUAL STUDY

Minimum Credits: 0
Maximum Credits: 0
Opportunities are available for third year students to do a variety of electives in the department of pathology. These electives include: anatomic pathology, immunopathology, ob/gyn and perinatal pathology, pediatric pathology, neuropathology, pathology practice, clinical chemistry, and tumor immunology. Independent study is also available in other areas pending consultation with individual faculty.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MSPTH 5382 - PATHOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Research opportunities are available for third year students within the department of pathology. Research areas include: anatomic pathology, immunopathology, ob/gyn and perinatal pathology, pediatric pathology, neuropathology, clinical chemistry, and tumor immunology. Research opportunities are also available in other areas pending consultation with individual faculty.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

MSPTH 5420 - ANATOMIC PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
During this four or eight week elective, the student will have the opportunity to study and review normal and pathologic anatomy as provided by surgical and autopsy materials. Under the direction of the staff, the student will process surgical specimens and perform autopsies. The findings will be correlated with the clinical data to provide insight into disease processes and their progression, may participate in ongoing investigations being conducted by the staff.
Academic Career: Medical School
Course Component: Clinical

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5421 - BASIC PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
This fourth year level elective will conduct a systematic, hands-on review, covering many organ systems, of gross and microscopic pathology. Cpc cases will be studied representing a wide variety of medical, surgical, pediatric and ob/gyn problems. Gross and microscopic specimens will be used. Various pathology facilities will be visited and students will be invited to attend regularly scheduled conferences in anatomic and clinical pathology.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5422 - PRACTICAL PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
Remote online course working with Death Certificates, frozen sections, lab medicine 2-3 hpw plus independent work. Will count as an ILS
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U

MSPTH 5425 - INTRODUCTION TO AUTOPSY PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
The autopsy remains an enigma in the medical community. Myths and misconceptions continue to be pervasive. This course will introduce the student to the field of autopsy pathology, teaching them to communicate the benefits and expectations of the autopsy to their clinical colleagues and patient's families. Each student will participate in the UPMC hospital autopsy service, working with pathology residents, attending physicians and pathology assistants as we attempt to answer difficult medical questions, correlate clinical and pathological findings, and present this information to the clinical services. Activities include review of hospital charts and case discussions with clinical services prior to the autopsy; observing autopsy gross dissections; review of histologic slides to make pathologic diagnoses; interpretation of clinical laboratory tests as they relate to the autopsy; and completion of autopsy reports and death certificates. There will also be opportunities for participation in clinical conferences and active presentation at pathology meetings. Objective are to: 1. To learn the policies and procedures for UPMC hospital autopsies. 2. To learn the various myths and misconceptions about autopsies. 3. To learn how to communicate autopsy findings to clinical services and patient's families. 4. To understand how pathologists use clinical information, autopsy gross and microscopic examinations, and clinical testing to conclude a patient's cause of death.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5426 - THE PROBLEMATIC PANCREAS

Minimum Credits: 0
Maximum Credits: 0
This multidisciplinary month long elective includes a preoperative diagnostic component and an operative/postoperative treatment component to highlight all aspects of pancreatic and biliary disease and particularly pancreatic cancer. This multidisciplinary course is created similarly to the successfully implemented Nodular Thyroid (MSPTH 5427) and Musculoskeletal Oncology (MSPTH 5487) electives available to MS3 and MS4 students. In the pancreas elective, the student will evaluate patients both preoperatively and postoperatively, focusing on radiographic imaging, endoscopic ultrasound guided fine needle aspiration of the pancreas and biliary tract, cytopathology of the pancreas and biliary tract, molecular testing of pancreatic cyst fluid and the bile duct, use of the Whipple procedure,

neoadjuvant and adjuvant therapy, surgical pathology of the pancreas and biliary tract and interpretation of Oncomine molecular testing and determining molecular treatment targets. A weekly multidisciplinary clinic and pancreas specific conference are included as part of the experience. In this way the student is immersed in all aspects of the assessment and treatment of pancreaticobiliary disease. Students will correlate information on the patients they see so that a complete understanding of the course of disease can be obtained.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

MSPTH 5427 - INTEGRATED ENDOCRINE ELECTIVE THE NODULAR THYROID

Minimum Credits: 0
Maximum Credits: 0
This elective is intended for MSIII and IV level medical students. The student will follow patients through three phases of predominantly outpatient thyroid nodule management including preoperative assessment, operative procedures and postoperative follow-up. Cooperation of the departments of surgery, radiology, endocrine medicine and pathology will be required. The student will maintain a patient log (learning log) and at the conclusion of the rotation will give a 10-15 minute focused presentation on a relevant topic of the student's choice. The student will gain an in depth understanding of the multi-disciplinary approach to thyroid disease. Preoperative phase will include: thyroid interdisciplinary conference; non-gynecologic cytology sign out; molecular anatomic pathology; endocrine clinic; surgery clinic, clinical chemistry; immunopathology; radiologic us guided FNA biopsies; and medical management of non-surgical thyroid disease. Goals of the preoperative phase include: clinical assessment of patients with thyroid nodules and correlation with radiologic, pathologic and molecular data; understanding of thyroid related laboratory values; and applications and limitations of fna of the thyroid. Operative phase will include intraoperative involvement in thyroidectomies; understanding of indications; and complications and postoperative care. Goals of the operative phase include: understanding of the indications and complications of thyroidectomy; lymph node dissection; follow through of thyroid surgical specimens; gross evaluation; microscopic features of specific thyroid processes; and staging of carcinomas. Postoperative phase will include: surgery clinic; discussion with patients regarding thyroid disease; follow-up of surgical pathology cases; and presentation of a relevant topic. Goals for the postoperative phase include: completion of clinical-radiologic-pathologic-molecular correlation of data as applied to diseases of the thyroid.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5430 - CLINICAL IMMUNOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four or eight week elective is designed to provide a broad exposure to both clinical and laboratory immunology. The student will become familiar with the diagnostic evaluations and clinical management of a variety of patients with immunodeficiency diseases or autoimmune disorders. Daily teaching sessions will be held covering patient and laboratory aspects of immunology.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5441 - BREAST, GYNECOLOGIC, AND PERINATAL PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
Students scheduling this elective will be assigned to the Department of Pathology Magee Women's Hospital. Students may elect to spend four or eight weeks on this rotation. This elective is designed to provide an opportunity for the student to tailor a program within surgical pathology with emphasis on women's care and obstetrical and perinatal pathology that meets their current or future career objectives. This elective is particularly suitable for students with interest in Obstetrics and Gynecology, Maternal-Fetal Medicine, Neonatology, and related specialities. Activities may include a research project or participation in department functions, such as diagnostic work and teaching conferences. We encourage the opportunity to learn via activities that concentrate on clinicopathological correlation, such as Morbidity and Mortality conferences with the teams from Neonatology, Obstetrics and Gynecology, High Risk Pregnancy and Maternal-Fetal Medicine;

tumor board; breast care consultation center conference, ultrasound pathology correlation and oncology teaching rounds. Close collaboration with Magee Women's Hospital Medical Genetics and Genomics Laboratories allows for involvement in projects and clinical work-up in cases of congenital malformations , gestational trophoblastic disease and novel genetic links between placental morphology and clinical syndromes presenting in later life. The student may also become involved in on-going investigations being conducted by various staff pathologists including studies on gynecological tumors (clinicopathologic, immunohistochemical as well as DNA analysis using flow cytometry and molecular studies); breast tumors (clinicopathologic, immunohistochemical and DNA analysis using flow cytometry and molecular studies) and others.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5442 - CLINICOPATHALOGIC APPROACH TO INTERSTITIAL LUNG DISEASE

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to give students a stronger foundation in interstitial lung disease for internship and residency training. It it emphasizes three core concepts: (1) the sine qua non of an interdisciplinary approach to lung disease (during this elective involving physicians from at least four different specialties), (2) the indications, benefits and limitations of laboratory testing including blood tests and histologic examination in the setting of lung disease, and (3) the importance of confirming or excluding interstitial lung disease as the cause of shortness of breath, since some interstitial lung diseases are readily curable with intervention while others are potentially devastating. The lungs possess two noteworthy properties. First, their large surface area forms the most extensive interface between the human organism and the environment. However, this interface with is the one most difficult to protect and often even voluntarily exposed to noxious stimuli. Secondly, the lungs are the only organs that encounter the entire cardiac output of blood, and are theoretically exposed to hematogenous factors of all other tissues in the body. It is therefore not surprising that the lungs are often involved in systemic diseases. Despite its anatomic complexity, histologically the lung only exhibits a rather limited repertoire of reaction patterns to injury. The three most important ones are airspace organization, inflammatory infiltrates and fibrosis. Each one has characteristic radiographic and physical examination correlates. Although most clinical entities of lung disease have well described histopathologic findings, many of these entities show significant histopathologic overlap. It is therefore of high importance to integrate the findings and impressions of primary caregivers, radiologists and pathologists in order to arrive at the correct diagnosis and formulate the most appropriate treatment plan. This constitutes the rationale and strength of this elective. While many medical school rotations emphasize and encourage interdisciplinarity, the primary responsibilities of the student usually lies within a single specialty. This elective, although initiated by pathologists, is meant to be a true multidisciplinary and in-depth experience. Students will be held accountable by faculty from all participating specialties. The focus shall be the need for diagnosis and treatment of a patient with lung disease utilizing pathology, radiology and medicine as tools, rather than teaching pathology, radiology or medicine utilizing patients as ways and means.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5450 - PEDIATRIC PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four or eight week course is to introduce the student to a range of procedures used in diagnostic anatomic pathology as well as in research. This includes anatomic, histologic and histochemical techniques. The student would be expected to take full part in the diagnostic work and daily departmental teaching conferences. Each student will be given a defined research or clinically-oriented problem to be completed by the end of the elective.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5460 - NEUROPATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four or eight week course is offered as an introduction to special aspects of pathology, neurology and neurosurgery. The student will participate in the major academic activities of the unit including multidisciplinary conferences and seminars, brain dissections, microscopic review and investigations in progress within the division.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5465 - INTRODUCTION TO BREAST, GYNECOLOGIC AND PERINATAL PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to provide students with an opportunity to learn about how pathology is incorporated into women's health including breast, gynecologic, and obstetric healthcare. It is particularly suitable for students with interest in Pathology, Obstetrics and Gynecology, Maternal-Fetal Medicine, Neonatology, or related specialties. The student will work closely with the resident -- observing the resident grossing specimens, performing frozen sections and reviewing slides cases prior to signing out the cases at daily sign out with the staff pathologist. The student will be supervised at all times. If deemed to be competent by the attending or resident and if the student demonstrates interest, the student may be given a case to preview on their own (with supervision by the resident as necessary) in order to formulate a diagnosis prior to signout with the attending pathologist. Students will attend clinicopathological correlation activities, such as Morbidity and Mortality conferences with teams from Neonatology, and High Risk Pregnancy/Maternal-Fetal Medicine; breast tumor board; gynecology oncology tumor board; breast care educational series conference; and gynecology colposcopy/pathology correlation conference. Students will observe clinical work-up in benign and malignant cases of the breast and female gynecologic tract, congenital malformations, gestational trophoblastic disease, pregnancy loss, placentas from complex/high risk deliveries, and novel genetic links between placental morphology and clinical syndromes presenting in later life.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MSPTH 5468 - INTRODUCTION TO LABORATORY MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This elective offers many interesting and useful experiences for the medical student and provides a snapshot exposure to the clinical laboratories. The student is exposed to clinical chemistry, hematology, microbiology, immunopathology, transfusion medicine, and coagulation, point of care testing, information systems, laboratory administration and quality assurance. The student will be exposed to testing basics, result interpretation, clinical correlation and principles of transfusion medicine. The student is expected to attend all teaching sessions.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

MSPTH 5470 - INTRODUCTION TO HEMATOPATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective serves as a brief introduction to diagnostic hematopathology using a multiparameter approach. The medical student will observe how hematopathologists evaluate peripheral blood and bone marrow specimens as well as lymph node biopsies using laboratory data and special studies performed in the hematopathology division and elsewhere in the department such as flow cytometry, cytogenetics and molecular testing, to arrive at a diagnosis guiding patient care. The student will participate in the daily diagnostic signout with a hematopathologist and pathology trainees.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

MSPTH 5471 - HEMATOPATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
An introduction to diagnostic hematopathology introducing a state-of-the-art approach to diagnosing disorders of the hematopoietic/lymphoid system, evaluation of proliferations, in-depth exposure to selected disorders, evaluation of peripheral smears and biopsies, a variety of hematologic laboratory tests, and the utility of bone marrow and lymph node examinations.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5480 - PATHOLOGY PRACTICE

Minimum Credits: 0
Maximum Credits: 0
In this four-week clerkship, the student will become familiar with the activities of both clinical and anatomical pathology. The former will encompass brief tours of duty in the hematology, microbiology and clinical chemistry sections of the laboratory. The student assigned to anatomical pathology will visualize the activities of surgical pathology including frozen section diagnosis. Students will also attend autopsies when performed.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5485 - LABORATORY MEDICINE

Minimum Credits: 0
Maximum Credits: 0
This four-week elective is designed to provide a broad exposure to the clinical laboratories. The student is exposed to chemistry, hematology, microbiology, immunology, histocompatibility, transfusion medicine, coagulation, point-of care testing, information systems, laboratory administration and quality assurance. The student learns testing basics, result interpretation, clinical correlation and principles of transfusion medicine. The student also has an opportunity to undertake a small research project. Attendance at all teaching sessions is expected.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5487 - MUSCULOSKELETAL ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
This medical school elective is intended for MS3 and MS4 levels. The goal of the experience is increased awareness of multidisciplinary modalities in the diagnosis of musculoskeletal disease, particularly oncologic processes. The student will rotate through the three main components of the course each week: outpatient orthopedics, musculoskeletal radiology and bone/soft tissue pathology. The student will evaluate patients in outpatient orthopedic clinics with Drs. Goodman, Mcgough and Weiss. Opportunities to scrub in and participate in operative procedures will be incorporated. Review of pertinent radiographic imaging will occur both in clinic and in the UPMC Shadyside radiology department with subspecialty musculoskeletal radiologists. The student will participate in evaluation of musculoskeletal imaging and observe procedures performed by interventional radiologists in order to obtain diagnostic tissue for cytologic and/or histologic examination. The student will also attend surgical pathology sign-out in the upmc department of pathology bone and soft tissue center of excellence. During these exposures to orthopedics, radiology and pathology, the student will maintain a log of patients seen, imaging reviewed and pathology case material reviewed with differential diagnoses and plans for further workup as necessary. Patient follow-up correlation with radiologic and pathologic data and cost effective diagnostic strategies will be emphasized. Experiences in the frozen section laboratory and in the fluorescence in situ hybridization (FICH) laboratory are included. Weekly orthopedic conference is also an

important component allowing for complete clinical, radiologic and pathologic correlation. At the conclusion of the rotation, the student will give a 15 minute oral presentation on a relevant topic. The purpose of this course is to outline the diagnostic evaluation of musculoskeletal diseases encountered with attention to cost effective strategies, demonstrate understanding of history and physical examination findings and integrate radiographic and pathologic data where appropriate and demonstrate understanding of the pathologic basis of the disease process and how the pathologic information impacts treatment.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5524 - PITT-AI-CADEMY: A NO-CODE AI EDUCATION IN HEALTHCARE COURSE

Minimum Credits: 0
Maximum Credits: 0
Pitt-AI-cademy is a suite of 25+ fully interactive, no-code educational applications designed to democratize artificial intelligence education across all levels of learners, including medical students, graduate students, resident physicians, clinical fellows, attending physicians, nurses, Physician Assistants, clinical and biological scientists, and other healthcare practitioners. Pitt-AI-cademy serves as the foundation of the University of Pittsburgh School of Medicine's AI curriculum, providing a fully intercative self-paced, evidence-based learning experience that requires no prior coding, software engineering, or artificial intelligence experience. The learners start by learning the foundations of data science /AI first (e.g. data elements, regulatory, and ethical and bias aspects) followed by a deeper dive into both non-generative AI / predictive analytics studies and tools (e.g. how supervised learning AI models are used to make cancer or sepsis predictions or unsupervised learning AI models are used to group diabetic patients based on their response to certain therapies, etc.) and generative AI and multi-agent tools (e.g. Chat-GPT, Large Language models, image generators, etc.). The suite is built on a standardized, interactive instructional framework to ensure consistent learner engagement, knowledge retention, and educational effectiveness. Each application is purposefully designed to address core AI concepts relevant to healthcare, including non-generative AI / predictive analytics (e.g. supervised learning, unsupervised learning, reinforcement learning), and generative AI (e.g. large language models (LLMs), image generation, and multi-agentic AI frameworks). The curriculum is fully evidence-based and supported by a companion series of 14 peer-reviewed AI review articles in medicine published in Modern Pathology and Fronteriers etc. (including our most recent 7 AI review article series just published in Modern Pathology). These articles provide the foundational medical and statistical framework for the Pitt-AI-cademy applications, ensuring that all content is clinically relevant, methodologically sound, and aligned with current best practices (this includes a journey that start with basic AI terminologies and concepts, followed by a deeper dive of non-generative AI / predictive analytics and generative AI studies and tools, along with statistical and study design best practices with AI, regulatory and ethical/bias aspects in AI and the future of multi-agent frameworks that will encompass many of our AI operational processes). Each Pitt-AI-cademy application incorporates hands-on, interactive web-based learning, allowing users to explore AI concepts using example or user-defined datasets and to assess comprehension through topic-specific knowledge check exercises and quizzes. High-quality figures and narrated instructional videos are integrated throughout each of the apps/ mini-courses to reinforce learning objectives and support diverse learning styles. Application topics include, but are not limited to: supervised learning (e.g. machine learning classification and regression studies and models in medicine); classification and regression statistical performance metrics; unsupervised learning tasks and examples in healthcare which include but are not limited to principal component analysis (PCA), k-means clustering, and outlier detection; and finally a deep dive into the generative AI approaches for text, image, and tabular data as they pertain to the healthcare domains.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

MSPTH 5606 - PEDIATRIC PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to enable students to see and appreciate what pediatric pathologists do and allow those considering a career in pathology to get an idea of what such a career would be like. Each student will be assigned to a surgical pathology "bench" for one week at a time. The benches available on this rotation include "first bench" (new tumors, transplant biopsies, rectal suction biopsies, and inpatient specimens) and the "routine benches 2-4" (outpatient specimens and cytology cases). Each student will be assigned to the pathology resident or fellow or pathology assistant or attending staff pathologist for the bench they are assigned to. These pathology faculty, residents and staff will help the student learn about the discipline and practice of pathology. The student will work closely with the resident -- observing the resident and reviewing slides cases prior to signing out the cases at daily sign out with the staff pathologist. The student will also work closely with the pathology assistant to observe grossing specimens and performing frozen sections. The student will be

supervised at all times. If deemed to be competent by the attending or resident and if the student demonstrates interest, the student may be given a case to preview on their own (with supervision by the resident as necessary) in order to formulate a diagnosis prior to signout with the attending pathologist.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U

MSPTH 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5860 - IMMUNOLOGY

Minimum Credits: 0
Maximum Credits: 0
The immunology program in the division is oriented toward basic and clinical immunology genetics. These problems focus on the structure and function of the major histocompatibility complex and the genetic and immunological interactions that occur between the mother and the fetus. The student will learn some of the basic principles of transplantation immunobiology and how basic research in this area impinges on a variety of problems in clinical medicine. A minimum of 2 four-week blocks is required.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5861 - BIOLOGY OF CANCER

Minimum Credits: 0
Maximum Credits: 0
This four or eight week course will stress the investigations relevant to clinical oncology. Subjects include carcinogen target cell interactions, analysis of tumor progression and regression, tumor metastasis, cell differentiation and therapeutic responses. Students will be exposed to various experimental techniques such as electron microscopy, tissue and cell cultures, animal models and selected biochemical studies.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5862 - BIOCHEMISTRY PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four or eight week elective is to provide students with an experience studying the biochemical basis for both clinical and experimental disease. Students will have a brief rotation through selective areas of the clinical biochemistry laboratory and will then be assigned to work with a staff pathologist, providing review of laboratory data and consultation on unusual clinical problems.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5863 - TUMOR IMMUNOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to provide exposure to basic and clinical aspects of tumor immunology. Students may elect to spend up to four weeks on this rotation. During this elective the student will have the opportunity to investigate various aspects of tumor immunology as it relates to pathophysiology of tumor invasion and metastasis. The student may also have the opportunity of rotating through clinical labs.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5865 - HEAD, NECK AND ORAL PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
The student participates in slide sign-out in the morning and afternoon with the attending pathologists. The slide readings offer a focused review of head, neck and oral histology and histopathology as well as integrate the related case histories. The student also takes part in frozen section call for the operating room with the head and neck pathologist to learn evaluation of gross specimens and appropriate margins of resection. A portion of the rotation will also include participation in clinical consultations in the hospital or outpatient clinics, where experience will be gained in assessment and diagnosis of head and neck pathology. The student also plans a review of slides from the pathology case files to ensure a comprehensive review of head, neck and oral histopathology is obtained. The student attends relevant pathology conferences and ENT tumor board as time and schedule permit. The student will also construct an oral presentation on a pertinent head and neck pathology topic agreed upon between the attending and student.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 4

MSPTH 5869 - INDEPENDENT STUDY IN PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
Opportunity for flexible independent study in anatomic, clinical or investigative pathology for a maximum of 3 months. Must be arranged and approved in advance.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5900 - EXTRAMURAL PATHOLOGY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in pathology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Pediatric Dentistry

PEDENT 2010 - GRADUATE PEDIATRIC DENTAL CLINIC 1

Minimum Credits: 1
Maximum Credits: 1
This clinic will provide training and experience in principles of preventive dentistry, cavity preparations and restorative procedures, interceptive orthodontic appliance fabrication, and treatment of the handicapped patient for newly enrolled advanced pediatric dentistry specialty residents.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PEDENT 2020 - GRADUATE PEDIATRIC DENTAL CLINIC 2

Minimum Credits: 1
Maximum Credits: 3
This clinic will provide training and experience for the first year advanced pediatric dentistry specialty resident in the treatment of pediatric dental patients. Patients with handicapping conditions, and patients requiring limited orthodontic therapy.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PEDENT 2030 - GRADUATE PEDIATRIC DENTAL CLINIC 3

Minimum Credits: 1
Maximum Credits: 3
This clinic will provide training and experience for the first year advanced pediatric dentistry specialty resident in the treatment of pediatric dental patients, patients with handicapping conditions, and patients requiring limited orthodontic therapy.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PEDENT 2040 - GRADUATE PEDIATRIC DENTAL CLINIC 4

Minimum Credits: 1
Maximum Credits: 1
This clinic will provide training and experience for the first year advanced pediatric dentistry specialty resident in the treatment of pediatric dental patients. Patients with handicapping conditions, and patients requiring limited orthodontic therapy.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PEDENT 2050 - GRADUATE PEDIATRIC DENTAL CLINIC 5

Minimum Credits: 1
Maximum Credits: 3
This clinic will provide training and experience for the second year advanced pediatric dentistry specialty resident in the dental treatment of patients with cleft lip, cleft palate, and orofacial abnormalities, patients requiring general anesthesia for dental treatment, and pediatric dental patients with advanced restorative and orthodontic treatment needs will be managed in this clinic.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PEDENT 2060 - GRADUATE PEDIATRIC DENTAL CLINIC 6

Minimum Credits: 1
Maximum Credits: 3

This clinic will provide training and experience for the second year advanced pediatric dentistry specialty resident in the dental treatment of patients with cleft lip, cleft palate and orofacial abnormalities. Patients requiring general anesthesia for dental treatment and pediatric dental patients with advanced restorative and orthodontic treatment needs will be managed in this clinic.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PEDENT 2070 - GRADUATE PEDIATRIC DENTAL CLINIC 7

Minimum Credits: 1
Maximum Credits: 1
This clinic will provide training and experience for the second year advanced pediatric dentistry specialty resident in the dental treatment of patients with cleft lip, cleft palate and orofacial abnormalities. Patients requiring general anesthesia for dental treatment, and pediatric dental patients with advanced restorative and orthodontic treatment needs will be managed in this clinic.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PEDENT 2110 - GRADUATE PEDIATRIC DENTAL SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
This course will provide an introduction to the specialty of pediatric dentistry. Material on preventive principles, restorative techniques, and dental materials will be provided. Seminars on physical and mental handicapping conditions will be given.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PEDENT 2120 - GRADUATE PEDIATRIC DENTAL SEMINAR 2

Minimum Credits: 1
Maximum Credits: 1
This course will provide an introduction to advanced pediatric dentistry. Various topics on pediatric dentistry are included for discussion. Diagnosis, case presentation and case review will be included in this seminar.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PEDENT 2130 - GRADUATE PEDIATRIC DENTAL SEMINAR 3

Minimum Credits: 1
Maximum Credits: 3
This course will provide material to the first year advanced pediatric dentistry specialty resident on pulp biology. Topics on pulp morphology, response and treatment are discussed. Diagnosis, case presentation and case review will be included in this course.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

PEDENT 2140 - GRADUATE PEDIATRIC DENTAL SEMINAR 4

Minimum Credits: 1
Maximum Credits: 1
This course will provide material to the first year advanced pediatric dentistry specialty resident on the diagnosis and treatment of traumatic injuries. The use of pharmacotherapeutic agents in the management of the pediatric dental patient will also be discussed in this course.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PEDENT 2150 - GRADUATE PEDIATRIC DENTAL SEMINAR 5

Minimum Credits: 1
Maximum Credits: 1
This course will provide the second year advanced pediatric dentistry specialty resident material on the dental treatment of patients with cleft lip, cleft palate and/or other craniofacial abnormalities. Topics on genetics, epidemiology, pathogenesis, growth and development, speech, and syndromes will be included in this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PEDENT 2160 - GRADUATE PEDIATRIC DENTAL SEMINAR 6

Minimum Credits: 1
Maximum Credits: 3
This course will provide material to second year advanced pediatric dentistry specialty residents on the maintenance of the dental arch through the use of space maintaining appliances. Additional topics on systemic diseases, fluorides and general anesthesia are discussed.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

PEDENT 2170 - GRADUATE PEDIATRIC DENTAL SEMINAR 7

Minimum Credits: 1
Maximum Credits: 1
This course will provide material to the third year advanced pediatric dentistry specialty resident on pediatric dental practice management. Office design, practice finance and payment options are discussed in this course. Computer utilization and practice alternatives are also presented.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PEDENT 2230 - SPECIAL WORK

Minimum Credits: 1
Maximum Credits: 3
This course will provide the opportunity for the advanced specialty resident to pursue the independent study of a topic of interest in pediatric dentistry.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

PEDENT 5211 - PEDIATRIC DENTISTRY 1

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be presented with material specific to the specialty of pediatric dentistry. The goal of the course is to introduce the second year predoctoral student to foundational knowledge in pediatric dentistry and provide information on various topics concerning the pediatric dental patient, including: morphology and eruption of teeth; oral habits; evaluation of the developing occlusion; clinical management of arch length; physical growth and development; prenatal and infant oral health; caries disease prevention and management;

adolescent oral health care dentistry; behavior guidance and modification; and advanced behavior management. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PEDENT 5242 - PEDIATRIC DENTISTRY 2 LAB

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be introduced to current concepts of clinical pediatric dentistry. Students will be provided with opportunities to develop the skills, techniques, and motor coordination required for the care of the pediatric dental patient in a preclinical setting. Successful completion of this course is a pre-requisite for the student to engage in clinical care in the Department of Pediatric Dentistry. This course includes small group preclinical sessions and is taught in conjunction with didactic course, PEDENT 5253 Pediatric Dentistry 2.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PEDENT 5253 - PEDIATRIC DENTISTRY 2

Minimum Credits: 1
Maximum Credits: 1
In this course, students will learn concepts of development of occlusion, space maintainers and pediatric dental treatment planning. Students will also be presented with foundational knowledge in radiographic techniques, local anesthesia administration, pulp therapy, dental trauma and child abuse. These foundational concepts are all part of the requisite skills for a dental student to begin pediatric dental care. Some lecture content parallels the techniques taught concurrently in the preclinical course, PEDENT 5242 (Pediatric Dentistry 2 Lab).
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PEDENT 5379 - CLINICAL PEDIATRIC DENTISTRY 1

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in pediatric dentistry for predoctoral dental students. By the end of the course, students will be able to provide care to pediatric dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the pediatric patient.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PEDENT 5447 - CLINICAL PEDIATRIC DENTISTRY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PEDENT 5449 - CLINICAL PEDIATRIC DENTISTRY 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of pediatric dentistry for predoctoral dental students. By the end of the

fourth year of the curriculum, students will be able to demonstrate competence in providing care to pediatric dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the pediatric patient.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PEDENT 5801 - COMMUNITY OUTREACH EXPERIENCES WITH VULNERABLE POPULATIONS

Minimum Credits: 1
Maximum Credits: 1
This course will provide community outreach opportunities for students interested in gaining experiences working with vulnerable populations. Faculty from SDM and community center coordinators of the Pittsburgh area will communicate with the course director and present dates of potential volunteering options. Students, when available, will be teaching individuals of the community about the foundation and importance of oral health habits and increasing oral health literacy. This course will assist students in treating vulnerable patients by practicing effective communication and education on healthy oral habits.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PEDENT 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 1
This course will provide the opportunity for the first professional dental student to pursue the independent study of a topic of interest in pediatric dentistry.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

PEDENT 5915 - ADVANCED PEDIATRIC DENTISTRY

Minimum Credits: 1
Maximum Credits: 1
The advanced pediatric dentistry elective is a clinical rotation in the graduate pediatric clinic where the student has the opportunity of treating advanced pediatric restorative and management cases. Treatment of children requiring advanced management techniques including, but not limited to, premedication, n20/02, and general anesthesia will be provided by the dental students under the direct supervision of attending faculty. Advanced treatment planning and restorative procedures will also be undertaken.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

Pediatrics

PEDS 5345 - PEDS CLERKSHIP REPEAT COURSE

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when the necessity to record a student's makeup of an unsatisfactory clerkship is required. This course will be used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

PEDS 5348 - 2-WEEK ELECTIVE IN PEDIATRIC PULMONOLOGY

Minimum Credits: 0
Maximum Credits: 0
1. This 2- week elective will focus on our Out-patient service. Students (MS-3 or MS-4) will attend clinics, which are held daily (M-F)- although not all will have attendings, in which case students can work with our Nurse Practitioners (who have substantial experience). 2. Students who are MS-3 without a previous Pediatric Rotation, will spend the first days as "observers". Later in their first week, they will be encouraged to see patients with attending physicians and work on documentation of the encounter (to be co-signed by Attending after editing/approval). If the student progresses, by the second week of the elective we anticipate they will see 1-2 patients/families per clinic independently before presenting to faculty, documenting the visit, and getting direct feedback from each attending. 3. Students who are MS-4 and/or have had the Pediatric Rotation will be expected to see 1-2 patients/families per clinic, initially with close supervision/observing by attendings, but moving more quickly to independent H&P, presentation to attending, and documentation of the visit. Again, direct feedback from each attending will be part of this experience. 4. Students will be encouraged to learn about the patients they see by going to the available literature and/or textbooks. The Division has a dedicated collection of several thousand pdfs of articles on a wide variety of Pulmonology topics. Students will be shown how they can access this collection for teaching purposes. 5. Students can also observe Out-patient bronchoscopies, usually occurring in the morning hours (7:30 AM or later). 6. Students will attend any Didactic or Research Conferences that occur while they are in the Elective. They will also attend Grand Rounds (Thursday AM) and Zitelli Rounds (Friday AM) if held. 7. Students will have the opportunity to observe out-patient Pulmonary function testing; this includes Out-patient Infant Pulmonary Function testing (CHP is one of only a handful of hospitals in the U.S. where these are regularly done.)
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

PEDS 5351 - PEDIATRIC INPATIENT MEDICINE

Minimum Credits: 0
Maximum Credits: 0
A 4 week inpatient pediatric clerkship in which students will participate in all aspects of patient care and management. Expectations are to read both the current literature and the standard pediatric textbooks in order to understand childhood growth and development and important pediatric disease processes. Attendance at conferences, lectures and rounds is expected. Students are part of the floor medical team and take call every 4 days. Each student will present a clinicopathologic conference (CPC). At the end of the rotation a 3 hour multiple choice exam is given.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

PEDS 5352 - PEDIATRIC CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
This 8-week clerkship exposes students to ambulatory and inpatient pediatrics. The 4-week inpatient experience is comprised of 3-weeks with an inpatient team and 1-week on a sub-specialty team. The 4-week ambulatory experience provides exposure to primary, acute, complex, adolescent, and newborn care and pediatric behavioral health. Students participate in all aspects of patient care and management, including performing histories and physical examinations; presenting patients in a family- and patient-centered manner; providing organized assessments and plans; and communicating in a professional manner with other members of the interprofessional staff, the clinical team, consultants, families, and patients. Students read the current literature and standard pediatric textbooks and complete on-line modules in order to understand childhood growth and development and major pediatric disease processes and therapies. In addition, students attend conferences, didactic sessions, and participate in rounding with the clinical team. Students also present an evidence-based case conference as part of their final grade
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PEDS 5353 - PEDIATRIC CLERKSHIP 3RC

Minimum Credits: 0
Maximum Credits: 0
This 8-week clerkship exposes students to ambulatory and inpatient pediatrics. The 4-week inpatient experience is comprised of 3-weeks with an inpatient Pediatric Hospital Medicine (generalist) team and 1-week on a sub-specialty team. The 4-week ambulatory experience provides exposure to primary, acute, complex, adolescent, and newborn care and pediatric behavioral health. Students participate in all aspects of patient care and management, including performing histories and physical examinations; presenting patients in a family- and patient-centered manner; providing organized assessments and plans; and communicating in a professional manner with other members of the inter-professional staff, the clinical team, consultants, families, and patients. Students read the current literature and standard pediatric textbooks and complete on-line modules in order to understand childhood growth and development and major pediatric disease processes and therapies. In addition, students attend conferences, didactic sessions, and participate in rounding with the clinical team. Students also present an evidence-based case conference as part of their final grade.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PEDS 5386 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0
Maximum Credits: 0
The department of pediatrics will arrange an individual study or research experience for third year medical students in an area of their interest.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

PEDS 5401 - ADV PEDIATRIC IN-PATIENT (AI)

Minimum Credits: 0
Maximum Credits: 0
Four week acting internship at children's hospital. Students have same responsibility as intern-total patient care including complete history, physical exam, assessment lab data, case formulation, communication with attending and referring physician, formulation of discharge plans, discharge summary. Performance of procedures including lumbar punctures, iv and intra-arterial punctures, bladder tap, bone marrow aspiration, performance and interpretation gram stain of CSF, blood smear for red cell, white cell platelet morphology. Interpret routine films and urinalysis.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5406 - EXTRAMURAL ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
Students will register for this course when participating in a pediatric acting internship at an institution outside of the University of Pittsburgh School of Medicine. This experience will not fulfill the required acting internship experience to meet graduation requirements
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5410 - PRIMARY CARE PEDIATRICS

Minimum Credits: 0
Maximum Credits: 0

The general purpose of this elective is to provide students with component experiences of a primary care physician. To this end, the student will 1) examine newborn infants in a neonatal high-risk setting, counsel parents regarding well baby issues and help formulate plans for common newborn problems; 2) develop management plans for children who present for initial neonatal visits, acute illnesses and chronic problems; 3) enhance knowledge of common pediatric behavioral and developmental issues and diagnosis and follow-up of otitis media & 4) learn how to provide telephone advice.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5415 - NICU ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
4-week neonatal intensive care unit acting internship at Magee-Womens Hospital NICU through the Division of Newborn Medicine, Department of Pediatrics. Students have the same clinical responsibilities as the pediatric interns, including spending time in our Triage unit and giving a presentation on a core Neonatology topic. The NICU team is made up of an attending neonatologist, neonatal-perinatal medicine fellows, an advanced practice provider (PA or NP), pediatric interns, neonatal nurses, and other specialized providers, including pharmacists, nutritionists and therapists. Students will assume a panel of up to 4 patients and be responsible for evaluation, performing procedures, formulating plans for these patients. Students will have the opportunity to perform procedures such as arterial puncture, umbilical arterial or venous catheterization, lumbar puncture, thoracentesis, paracentesis, and endotracheal intubation under the supervision of NICU staff. The NICU is covered at night and on weekends by an attending neonatologist, NICU fellow, senior resident and a team of neonatal nurse practitioners. Students will not be required to take night or weekend call. Students will attend radiology rounds and other educational talks. Up to one student per rotation can be accommodated to maximize the experience.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PEDS 5421 - ALLERGY AND IMMUNOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four week elective offers an opportunity to participate in the clinical evaluation and management of ambulatory patients who present with a large variety of immunologically mediated diseases of either hypersensitivity or deficient immune response origin. Under supervision, students will carry out the initial evaluation and subsequent re-evaluation of patients with asthma, allergic rhinitis, urticaria, drug allergy, insert allergy, immunodeficiency syndromes, as well as a large variety of clinical immunology and/or collagen-vascular diseases.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5422 - VIRTUAL UNDERREPRESENTED IN MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Logistics and Educational Methods: This first two weeks of elective will be delivered virtually via Zoom meetings. These events will include morning reports, small group discussions, patient management simulation, didactic lectures, interactive patient cases, and interviews with patients who have consented and volunteered their time. Additionally, there will be community discussions and engagement led by Dr. Noble Maseru, Professor of Public Health Practice and Director of Social Justice, Racial Equity and Faculty Engagement through the University of Pittsburgh Schools of Health Sciences. Evaluation: Grading will be P/F. Grading will be based on attendance at and participation in required sessions and completion of assignments. Students will also have opportunities for formative feedback and facilitated self-reflection. The second two weeks of this elective will be in person clinical rotation in a pediatric subspecialty clinic at Children's Hospital of Pittsburgh. The two weeks will include morning reports, working directly with attending pediatric subspecialists in the areas of adolescent medicine, child advocacy, primary care, hematology & oncology and emergency medicine.

Additionally, there will in person discussions and local field experiences with UPGSHS faculty Dr. Nobel Maseru. Students will have the opportunity to choose to participate in additional hours of community engagements leading to a certificate in Social Justice, supervised by Dr. Maseru. Grading will be based on attendance at and participation in required sessions and completion of assignments. Students will also have opportunities for formative feedback and facilitated self-reflection.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PEDS 5423 - SUPPORTIVE CARE IN THE COMMUNITY AT CAMP WAKCHAZI

Minimum Credits: 0
Maximum Credits: 0
The Division of Palliative Medicine and Supportive Care invites medical students to participate in an innovative elective focused on child developmental milestones in the context of grief. Through engagement with Camp Wakchazi, a sibling bereavement camp, students will gain hands-on experience in communication and supportive care principles. Participants will participate in virtual and in-person training, work directly with children coping with the loss of a sibling, lead small processing group sessions, and engage in facilitating social and emotional development in bereaved children. This unique opportunity will enhance students' understanding of grief in children and provide valuable skills in compassionate care.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

PEDS 5425 - PEDIATRIC RHEUMATOLOGY

Minimum Credits: 0
Maximum Credits: 0
The students will get outpatient and inpatient exposure in the field of pediatric rheumatology with a particular emphasis on outpatient clinics. There is in-depth one-on-one teaching through the pediatric rheumatology attending physicians. Students will generally work with one particular attending physician for a clinic section, but will be exposed to different attending physicians throughout the rotation. The student will be directly involved in patient care, assessment and decision-making. Participation in academic conferences and selected lectures is mandatory.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 4

PEDS 5430 - PEDIATRIC CARDIOLOGY

Minimum Credits: 0
Maximum Credits: 0
Four week elective at children's hospital. Diagnosis and management of child with congential and rheumatic heart disease. Interpret EKG, echocardiograms and chest roentgenograms. Observe cardiac catherization lab, take pediatric cardiac history, attend cardiac catherization and cardiac surgery conferences. Pursue basis of selection of patients for cardiac catherization and cardiac surgery.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5440 - ENDCRNLGY, METBLSM & DIABETES

Minimum Credits: 0
Maximum Credits: 0
Four week elective at children's hospital. Out-patient evaluation of children with endocrine or metabolic disease. Participate in clinic and research activities, teaching rounds on endocrine ward and clinical research unit. Clinical diagnostic and management of endocrine disorders, metabolic bone disease, parathyroid and adrenal disorders, diabetes mellitus. Interpret endocrine and metabolic studies.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5450 - PEDIATRIC INFECTIOUS DISEASES

Minimum Credits: 0
Maximum Credits: 0
Four week elective at children's hospital of consult experience on infectious disease of hospitalized pediatric patients including rounds, lectures, conferences and seminars. Study antibiotic therapy, diagnosis and management of CNS, pulmonary and urinary tract infections. Evaluate gram-stained smear, urine cult results and antibiotic tests.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5455 - PEDIATRIC DERMATOLOGY

Minimum Credits: 0
Maximum Credits: 0
Medical students will be exposed to both common and rare skin disorders seen in both outpatient and inpatient settings. Objectives: 1) develop a familiarity with terminology used to describe primary and secondary skin lesions; 2) develop a familiarity with both the diagnosis and treatment of common skin disorders such as, acne and eczema, lesions, such as hemangiomas and nevi, as well as rare skin conditions such as Geno dermatoses including ichthyoses and epidermolysis bullosa; 3) develop interviewing skills with pediatric patients and their families; 4) obtain experience in performing cutaneous physical exams in pediatric patients.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 4

PEDS 5460 - NEONATOLOGY

Minimum Credits: 0
Maximum Credits: 0
Four week elective at Magee Women's Hospital neonatal intensive care unit joining residents as acting intern. Experience in all areas of newborn care including recognition and treatment of critical infants. Perform exams, utilize basic lab procedures and x-ray, perform umbilical vessel catherization, arterial and venous puncture, bladder tap, endotracheal intubation. Discuss dynamics of sick, premature and dying infants.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5465 - BREASTFEEDING ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This elective will prepare future physicians, especially those pursuing careers in OB/GYN, family physicians, pediatrics and internal medicine, to support women to breastfeed. During this four week elective, students will see mother-infant dyads in the newborn follow-up clinic in primary care center, seeing patients with other providers of lactation services in the hospital and community setting and completing directed readings.
Academic Career: Medical School
Course Component: Clinical

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5470 - GENETICS

Minimum Credits: 0
Maximum Credits: 0
Four week clinic and laboratory elective at children's hospital. Diagnostic and genetic counseling of common and rare hereditary disorders, syndromes of congenital anomalies, evaluation of in-and-out patients. Lab experience in cytotechnology techniques including interpreting karyotypes.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5480 - NEPHROLOGY

Minimum Credits: 0
Maximum Credits: 0
Four week elective at children's hospital. In- and outpatient rounds and consults, participation in hypertension and pathology conferences. Understanding of urinalysis; evaluation of laboratory studies and radiology of renal disease, electrolyte disorders and pediatric hypertension.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5490 - HEMATOLOGY/ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
Four week elective at children's hospital. Clinic exposure to pediatric hematology and oncology problems in outpatient chemotherapy unit and various inpatient services. Participate in hematology/oncology clinics and sickle cell clinics. Instruction in peripheral blood and marrow morphology. Participate in rounds and lectures and extensive reading.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5491 - NEONATOLOGY

Minimum Credits: 0
Maximum Credits: 0
The clinical elective in neonatology at Children's Hospital is designed to provide the student with an experience in neonatology that emphasizes the multidisciplinary care of the critically ill newborn. The CHP unit is the region's only level IIIC NICU, and offers the highest level of neonatal care, including surgical services and ECMO. As a referral center, the CHP NICU cares for a unique population of high-acuity, medically-complex infants with a wide variety of problems, including cardiorespiratory failure, infections, surgical issues, genetic disorders and congenital anomalies. Currently, the newborn medicine program only offers an elective in the magee women's hospital NICU, which cares for a very different population of infants, with an emphasis on premature infants and infants with transient problems related to the neonatal transition. The elective rotation in the CHP NICU will offer students exposure to a one-of-a-kind patient population, a full-spectrum of neonatal medicine, and a level of multidisciplinary care not available anywhere else in the region. Students will join the CHP NICU team under the direct supervision of neonatology faculty. The nicu team is made up of attending neonatologists, neonatal-perinatal medicine fellows, neonatal nurse practitioners, pediatric residents, neonatal nurses, and specialized ancillary providers, including pharmacists, nutritionists and therapists. The student will be involved in all aspects of care, including initial assessment, stabilization, diagnostic evaluation and ongoing ICU management. The student will perform procedures such as arterial puncture, umbilical

arterial or venous catheterization, lumbar puncture, thoracentesis, paracentesis and endotracheal intubation under the supervision of NICU staff. The student will gain experience in family-centered care. Students will be supervised directly by newborn medicine faculty, with one-on-one precepting throughout the rotation. Newborn medicine fellows and neonatal nurse practitioners will be available as teaching resources. The course director is available in the NICU should the student require additional support. Educational methods will include bedside teaching focused on the student's panel of patients, daily NICU rounds, demonstration of clinical skills and procedures, and didactic sessions (the newborn medicine program's seminars in neonatal medicine, core lecture series, and newborn grand rounds). Key references will be provided. Students may attend sessions of the AAP/AHA neonatal resuscitation program (scheduled bimonthly). The course director will provide an updated schedule of educational activities on the first day of the rotation. This 4 week inpatient rotation takes place in the neonatal intensive care unit at CHP. Students will assume the care of a panel of 2-4 NICU patients, selected according to their interests
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5500 - EMERGENCY PEDIATRICS

Minimum Credits: 0
Maximum Credits: 0
Four week elective at children's hospital in emergency department. Experience in assessment and management of acute illnesses and injuries. Technical skills such as drawing blood, starting IVs, lumbar punctures. Interpret lab studies and x-rays in acute situations. Distinguish mildly acute from serious in emergency situations. Interaction skills with acutely ill and injured child.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5510 - PEDIATRIC GASTROENTEROLOGY

Minimum Credits: 0
Maximum Credits: 0
Four week elective at children's hospital involves supervised direct patient contact and formal didactic sessions including inpatient consults, outpatient clinics and assisting in all GI procedures. Eight week research elective provides opportunity to gain skills in clinical or basic investigation of bilea cid metab, gastroesophageal reflux or GI immunology.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5520 - DEVELOPMENTAL PEDIATRICS

Minimum Credits: 0
Maximum Credits: 0
Four week elective in child development unit. Focuses on normal child development and development and behavioral disabilities. Includes didactic sessions, reading, field experience and team assessments in outpatient clinic setting. Develop assessments of inpatients at children's hospital and in the ICU at Magee Women's Hospital.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5521 - TRIPLE BOARD PEDIATRICS/PSYCHIATRY ADVANCED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0

The Triple Board (TB) Advanced Elective at the University of Pittsburgh Medical Center (UPMC) has been designed to provide the interested medical student with an exposure to the interface of pediatrics and child psychiatry. This four week internship will focus primarily on the psychiatric consultation-liaison service at Children's Hospital of Pittsburgh. This service provides inpatient and outpatient consultation to a wide variety of general and specialty pediatric services within this large pediatric hospital. Medical students will see patients and present them to one of a team of child psychiatrists and psychologists who work in this setting.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5524 - CHILD ADVOCACY

Minimum Credits: 0
Maximum Credits: 0
This elective will teach medical students how to recognize the signs and symptoms of children who may have been physically sexually abused and/or neglected and become familiar with the basic approach to the medical evaluation of each type of maltreatment
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PEDS 5530 - POISON CENTER

Minimum Credits: 0
Maximum Credits: 0
4 week elective at poison center. Basic principles of managing cases of exposure to toxic materials. Under close supervision, manage poison case via the telephone. Exposure to principals of development and operation of a poison center. Includes rounds on toxicology patients at Children's Hospital. 8 week elective includes independent research.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5540 - PEDIATRIC PULMONOLOGY

Minimum Credits: 0
Maximum Credits: 0
4 week elective at Children's Hospital. Includes history taking, physical exam, choice of diagnostic procedures, perform pulmonary lab tests, reading chest radiographs. Inpatient, outpatient and ICU patients seen. Basic review of pulmonary physiology. Observe and participate in lab testing procedures, interpret results with staff. Observe and help in research projects and clinical investigation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5550 - ADOLESCENT MEDICINE

Minimum Credits: 0
Maximum Credits: 0
4 week elective at children's hospital. Includes normal and abnormal adolescent development, reading and discussion. Learn exam skills and lab testing. Diagnosing sexually-related problems. Participate in psychosocial assessments of teens. Work in outpatient clinic and inpatient consults.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5560 - AMBULATORY PEDIATRICS

Minimum Credits: 0
Maximum Credits: 0
This four-week elective is designed to provide a primary care pediatric experience in a community setting. The hours and specific duties will be determined by each practice. The student is responsible for contacting and setting up the elective and then obtaining approval from the medical student program director in the department of pediatrics. Supervision and evaluation is provided by the primary care physicians in the practice.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5570 - ADOLSCNT AND YOUNG ADULT MEDICN

Minimum Credits: 0
Maximum Credits: 0
This four week elective encompasses a diverse offering in adolescent and young adult medicine. Its clinical content is based at an urban teaching hospital and its college health affiliates. Daily rounds, preceptorships and conferences are part of the rotation with supervision by mercy's full-time pediatric faculty.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5580 - SCHOOL HEALTH

Minimum Credits: 0
Maximum Credits: 0
This elective is designed to provide a unique school health experience utilizing urban and suburban schools including school based clinics for teaching sites. This specialized experience will include experience with health education, team meetings and school consultation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5582 - PEDIATRIC STUDENT CHIEF

Minimum Credits: 0
Maximum Credits: 0
The UPSOM Pediatrics Student Chief is a one-year longitudinal, non-clinical medical education leadership elective designed for Bridges phase medical students with a strong interest in pediatrics or pediatrics-focused specialties. Student Chiefs serve as near-peer educators, mentors, and liaisons between clerkship phase medical students completing the Pediatrics Clerkship and pediatric residency/clerkship leadership. Students participate in clerkship orientation, structured teaching sessions, mentorship of learners, curriculum feedback processes, and the design and implementation of an educational leadership project. This elective promotes leadership development, communication skills, systems-based practice, professional identity formation, and scholarship in medical education. The course does not involve research as a primary activity and complies with Longitudinal Elective Experience (LEE) requirements.
Academic Career: Medical School
Course Component: Practicum
Grade Component: S/U Basis

PEDS 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department of pediatrics to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5710 - IMMUNIZATION, IMMUNE DEFICIENCY, AND INFLAMMATION IN KIDS

Minimum Credits: 0
Maximum Credits: 0
In this ILS, students will learn practical and cutting-edge clinical applications of basic science immunology topics including immunization development, primary immune deficiency and immune dysregulation conditions, and pathophysiologic manifestations of inflammation as it pertains to numerous pediatric disease states. This course will highlight ways in which an in-depth understanding of the immune system and mechanisms of inflammation enhances the practice of precision medicine, especially as it pertains to genetic testing and initiation of biologic and immunomodulatory therapies. Students may have some clinical experiences (i.e. time spent in Primary Immunodeficiency Clinic at UPMC Children's Hospital and with genetic counselors), however, most of the course time will be dedicated to small case-based group sessions in which students and facilitators will discuss the clinical applications of basic immunology topics.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PEDS 5715 - GENETICS/GENOMICS IN PRIMARY CARE

Minimum Credits: 0
Maximum Credits: 0
In this ILS, students will learn about how genetics and genomics can be used to enhance precision medicine in primary care settings like pediatrics, medicine, and family practice. Students will return to the basic sciences of genetics, molecular biology, and pharmacology, discussing how to apply cutting edge insights from those disciplines to a variety of practice settings. This course will address newborn screening, how to take an effective family history, effective communication strategies around genetic conditions, care for individuals with genetic conditions, ethical issues around genetic testing, pharmacogenomics, and the use of registries. Students may have some clinical experiences (e.g., with genetics counselors), but most of the time will be spent in the classroom discussing the science and its application. An interprofessional component will include collaboration with pharmacy and other disciplines.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PEDS 5720 - MOLECULAR MEDICINE (ILS)

Minimum Credits: 0
Maximum Credits: 0
This course is designed to teach the fourth year medical student some basics of molecular biology and how molecular techniques are being employed to diagnose and treat disease. This course will focus on several single-gene diseases. Forensic use of DNA will also be featured. This course will have 3 lectures and 3 clinics per week and each student will be obliged to give a presentation on a topic selected.
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5845 - PEDIATRIC RESEARCH

Minimum Credits: 0
Maximum Credits: 0
4 week research elective available with individual pediatric faculty members at children's hospital.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5899 - INDEPENDENT STUDY PEDIATRIC

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

PEDS 5900 - EXTRAMURAL PEDIATRICS

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in pediatrics may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Periodontics

PERIO 2072 - ADVANCED IMPLANTOLOGY: COLLABORATIVE RESIDENT SEMINARS IN SURGICAL AND PROSTHETIC INTEGRATION II

Minimum Credits: 1
Maximum Credits: 1
The "Advanced Implantology: Collaborative Resident Seminars in Surgical and Prosthetic Integration" course aim to provide comprehensive, interdisciplinary training in patient evaluation, surgical implant placement, and prosthetic rehabilitation. Led by board-certified specialists, this course is designed for dental residents specializing in Oral and Maxillofacial Surgery (OMFS), Periodontics, and Prosthodontics.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2110 - PERIODONTICS SPECIALTY CLINIC 7

Minimum Credits: 1
Maximum Credits: 1
This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planing and periodontal surgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2114 - MINERALIZED TISSUE BIOLOGY

Minimum Credits: 1
Maximum Credits: 1
Understanding the present efforts to elucidate mechanisms for bone healing encompasses study of numerous growth factors and signaling molecules. The role of each factor will be described and related to potential therapeutic products. At the completion of the course the student will be familiar with bone biology; given the opportunity to demonstrate capacity for critical evaluation of a paper on tissue engineering and its foundation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

PERIO 2120 - PERIODONTICS SPECIALTY CLINIC 8

Minimum Credits: 1
Maximum Credits: 1
This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planing and periodontal surgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2121 - PERIODONTAL LITERATURE REVIEW 1

Minimum Credits: 3
Maximum Credits: 3
The literature review seminars are designed to provide the graduate student with a review of the classical and up-to-date literature in the periodontal journals. The review of the literature also includes basic science literature and its relationship to periodontal disease.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2122 - SPECIAL TOPICS IN PERIODONTICS 1

Minimum Credits: 1
Maximum Credits: 1
This seminar will feature guest lecturers invited to present specific topics related to the practice of periodontics and periodontal therapy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2123 - PERIODONTICS SPECIALTY CLINIC 1

Minimum Credits: 9
Maximum Credits: 9
This course is the clinical practice of periodontics for the second year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration and implants.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2124 - PERIODONTICS SPECIALTY CLINIC 7

Minimum Credits: 9
Maximum Credits: 9
This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planing and periodontal surgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2125 - PERIODONTICS SPECIALTY CLINIC 8

Minimum Credits: 9
Maximum Credits: 9
This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planing and periodontal surgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2131 - PERIODONTICS SPECIALTY CLINIC 9

Minimum Credits: 9
Maximum Credits: 9
This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planing and periodontal surgery.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2132 - PERIODONTICS JOURNAL CLUB - 1

Minimum Credits: 1
Maximum Credits: 1
This course encompasses a review of the latest dental and medical journals for the most recent information related to the art, science and practice of periodontics. It will focus on correlating and comparing new information with established concepts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2139 - IMPLANT PROSTHODONTICS SEM 1

Minimum Credits: 2
Maximum Credits: 2
This is a didactic course designed to review all aspects of implant dentistry at the in depth level. Diagnostic and treatment planning procedures, selection of implants to include biomechanical and biomaterials considerations, surgical procedures for implant placement, prosthodontic procedures to include provisional and definitive implant restorations, and maintenance procedures will be presented and illustrated.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2140 - PERIODONTAL TREATMENT PLANNING 1

Minimum Credits: 1
Maximum Credits: 1

This course is the clinical practice of periodontics for the second year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration, and implants.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2141 - PERIODONTAL TREATMENT PLANNING 5

Minimum Credits: 1
Maximum Credits: 1
This course is the clinical practice of periodontics for the second year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration, and implants.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2142 - PERIODONTICS JOURNAL CLUB - 1

Minimum Credits: 0
Maximum Credits: 0
This course encompasses a review of the latest dental and medical journals for the most recent information related to the art, science and practice of periodontics. It will focus on correlating and comparing new information with established concepts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2144 - PERIODONTICS ASPECTS OF DENTAL IMPLANTS

Minimum Credits: 1
Maximum Credits: 1
This course is designed to present to the graduate resident the different implants systems, selection criteria of implant cases, and guided tissue regeneration as it applies to implantology. The management of failing implants will be also discussed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2147 - IMPLANT PROSTHODONTICS SEMINAR 2

Minimum Credits: 2
Maximum Credits: 2
This is a multidisciplinary didactic course planned to address advanced topics in oral and maxillofacial implant procedures; guided tissue regeneration in implant dentistry, management of failing implants, and advanced implant reconstructive procedures.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2150 - PERIODONTICS SPECIALITY CLINIC 10

Minimum Credits: 3
Maximum Credits: 3
This course is the clinical practice of periodontics for the third year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration, implants.
Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2154 - PERIODONTICS SPECIALTY CLINIC 9

Minimum Credits: 9
Maximum Credits: 9
This course is the clinical practice of periodontics for the third year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration, implants.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2156 - PERIODONTICS SPECIALTY CLINIC 2

Minimum Credits: 9
Maximum Credits: 9
This course is the clinical practice of periodontics for the first year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration and implants.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2157 - PERIODONTAL LITERATURE REVIEW 2

Minimum Credits: 3
Maximum Credits: 3
Literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journals. The review of the literature also includes basic science literature and its relationship to periodontal disease.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2160 - PERIODONTICS SPECIALTY CLINIC 11

Minimum Credits: 1
Maximum Credits: 1
This course is the clinical practice of periodontics for the second year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration, implants.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2179 - PERIODONTAL LITERATURE REVIEW 7

Minimum Credits: 3
Maximum Credits: 3
The literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journal. The review of the literature also includes basic science literature and its relationship to periodontal disease.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2182 - PERIODONTICS LITERATURE REVIEW 9

Minimum Credits: 2
Maximum Credits: 2
The literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journal. The review of the literature also includes basic science literature and its relationship to periodontal disease.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2185 - PERIODONTAL LITERATURE REVIEW 8

Minimum Credits: 3
Maximum Credits: 3
The literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journal. The review of the literature also includes basic science literature and its relationship to periodontal disease.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2190 - ADVANCED PERIODONTAL CONCEPTS

Minimum Credits: 2
Maximum Credits: 2
This advanced periodontal concepts course is designed to familiarize the graduate student with advanced concepts in the science and art of clinical periodontics through intensive study of textbooks and by means of clinical demonstrations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PERIO 2191 - ADVANCED PERIODONTAL CONCEPTS

Minimum Credits: 0
Maximum Credits: 0
This advanced periodontal concepts course is designed to familiarize the graduate student with advanced concepts in the science and art of clinical periodontics through intensive study of textbooks and by means of clinical demonstrations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PERIO 2192 - INTRODUCTION TO PERIODONTAL SPECIALTY CLINIC

Minimum Credits: 0
Maximum Credits: 0
This course allows the resident to select a special project.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

PERIO 2199 - INTRODUCTION TO PERIODONTICS SPECIALTY CLINIC

Minimum Credits: 3
Maximum Credits: 3
This course allows the resident to select a special project.
Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

PERIO 2209 - PERIODONTAL LITERATURE REVIEW 3

Minimum Credits: 1
Maximum Credits: 1
The literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journals. The review of the literature also includes basic science literature and its relationship to periodontal disease.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2210 - SPECIAL TOPICS IN PERIODONTICS 4

Minimum Credits: 1
Maximum Credits: 1
This course is a treatment planning seminar attended by the first year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2211 - PERIODONTAL LITERATURE REVIEW 3

Minimum Credits: 2
Maximum Credits: 2
The literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journals. The review of the literature also includes basic science literature and its relationship to periodontal disease.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2212 - SPECIAL TOPICS IN PERIODONTICS 2

Minimum Credits: 1
Maximum Credits: 1
This seminar will continue the guest lecture series related to specific topics in periodontics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2214 - HOSPITAL PERIODONTICS 1

Minimum Credits: 4
Maximum Credits: 4
This course is designed to provide hospital training in the management of periodontal problems in patients with chronic medical conditions. The graduate periodontics student will interact with VA Residents in the periodontal care of VA patients.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2223 - PERIODONTICS JOURNAL CLUB - 3

Minimum Credits: 1
Maximum Credits: 1
This course provides a continuing review of current dental and medical literature related to the art, science and practice of periodontics. Discussion will focus on the correlation of new information with established concepts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2230 - SPECIAL TOPICS IN PERIODONTICS 3

Minimum Credits: 1
Maximum Credits: 1
This course is a treatment planning seminar attended by the first year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2240 - PERIODONTAL TREATMENT PLANNING 2

Minimum Credits: 1
Maximum Credits: 1
This course is a treatment planning seminar attended by the second year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2242 - PERIODONTICS JOURNAL CLUB 2

Minimum Credits: 1
Maximum Credits: 1
This course provides a continuing review of current dental and medical literature related to the art, science and practice of periodontics. Discussion will focus on the correlation of new information with established concepts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2247 - PERIODONTAL TREATMENT PLANNING 3

Minimum Credits: 1
Maximum Credits: 1
This course is a treatment planning seminar attended by the second year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2248 - PERIODONTAL LITERATURE REVIEW 4

Minimum Credits: 1
Maximum Credits: 1
A literature review seminar designed to provide the graduate student with a review of the classical and up-to-date literature in the periodontal journals. The review of the literature also includes basic science literature and its relationship to periodontal disease.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2249 - PERIODONTICS SPECIALTY CLINIC 4

Minimum Credits: 1
Maximum Credits: 1
This course is the clinical practice of periodontics for second year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planning and periodontal surgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

PERIO 2250 - SPECIAL TOPICS IN PERIODONTICS 5

Minimum Credits: 1
Maximum Credits: 1
This course is a treatment planning seminar attended by the second year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2251 - CONCEPTS OF MODERN SEDATION

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2252 - INTRAOPERATIVE MANAGEMENT OF COMORBIDITIES

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2253 - PERIODONTICS TREATMENT PLANNING 4

Minimum Credits: 1
Maximum Credits: 1
This is a multidisciplinary didactic and clinical course planned to provide periodontic residents with a systematic approach to diagnosis, treatment planning and management of patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2254 - PERIODONTICS JOURNAL CLUB 4

Minimum Credits: 1
Maximum Credits: 1
This course provides a continuing review of current dental and medical literature related to the art, science and practice of periodontics. Discussion will focus on the correlation of new information with established concepts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2255 - HOSPITAL PERIODONTICS 2

Minimum Credits: 4
Maximum Credits: 4
This course is designed to provide hospital training in the management of periodontal problems in patients with chronic medical conditions. The graduate periodontics student will interact with VA residents in the periodontal care of VA patients.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2257 - PERIODONTICS SPECIALTY CLINIC 4

Minimum Credits: 9
Maximum Credits: 9
This course is the clinical practice of periodontics for second year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planning and periodontal surgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

PERIO 2260 - SPECIAL TOPICS IN PERIODONTICS 6

Minimum Credits: 1
Maximum Credits: 1
This course is a treatment planning seminar attended by the second year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2270 - DIGITAL IMPLANT DENTISTRY: ADVANCED WORKFLOW AND TECHNOLOGY INTEGRATION

Minimum Credits: 2
Maximum Credits: 2
This course offers an in-depth exploration of digital implant dentistry, focusing on the complete digital workflow for planning, diagnosing, and executing implant surgeries. Residents will learn to utilize CBCT imaging, different software platforms, and guided surgery techniques for both single implants and full-arch (all-on-x) cases, including the design and fabrication of custom healing abutments and immediate temporaries. The program emphasizes the practical integration of digital technology in clinical settings, ensuring predictable surgical outcomes and final prosthetic emergence profile for temporaries and custom healing abutments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PERIO 2271 - ADVANCED IMPLANTOLOGY: COLLABORATIVE RESIDENT SEMINARS IN SURGICAL AND PROSTHETIC INTEGRATION I

Minimum Credits: 1
Maximum Credits: 1
The "Advanced Implantology: Collaborative Resident Seminars in Surgical and Prosthetic Integration" course aim to provide comprehensive, interdisciplinary training in patient evaluation, surgical implant placement, and prosthetic rehabilitation. Led by board-certified specialists, this course is designed for dental residents specializing in Oral and Maxillofacial Surgery (OMFS), Periodontics, and Prosthodontics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2289 - PERIODONTICS SPECIALTY CLINIC 3

Minimum Credits: 1
Maximum Credits: 1
Continuation of previous periodontics specialty clinic courses involving increasing complexity of case types and treatments.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

PERIO 2290 - PERIODONTICS SPECIALTY CLINIC 3

Minimum Credits: 9
Maximum Credits: 9
Continuation of previous periodontics specialty clinic courses involving increasing complexity of case types and treatments.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

PERIO 2313 - HOSPITAL PERIODONTICS 3

Minimum Credits: 1
Maximum Credits: 1
This course is designed to expose the graduate periodontic student to different hospitals and interact residents in periodontal care of Montefiore University hospital patients. The graduate periodontic student will also interact with oral surgery residents and will perform implant procedures.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2314 - PERIODONTICS JOURNAL CLUB 5

Minimum Credits: 0
Maximum Credits: 0
Periodontics journal club 5 provides a continuing review of the recent dental and medical journals.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2315 - PERIODONTICS JOURNAL CLUB 6

Minimum Credits: 1
Maximum Credits: 1
Periodontics journal club 6 provides a continuing review of recent dental and medical literature related to the art, science and practice of periodontics. Discussion will focus on the correlation of new information with established concepts.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2321 - PERIODONTICS LITERATURE REVIEW 6

Minimum Credits: 2
Maximum Credits: 2
The literature review 6 seminars are designed to provide the graduate student with a review of the classical and current literature in the periodontal journals. The review of the literature also includes basic science literature and its relation to treatment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2322 - PERIODONTAL TREATMENT PLANNING 6

Minimum Credits: 1
Maximum Credits: 1
This is a multidisciplinary didactic and clinical course planned to provide periodontic residents with a systematic approach to diagnosis, treatment planning and management of patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2323 - PERIODONTICS SPECIALTY CLINIC 5

Minimum Credits: 9
Maximum Credits: 9
This course is the clinical practice of periodontics for the third year residents. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration and implants.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2325 - PERIODONTICS SPECIALTY CLINIC 6

Minimum Credits: 9
Maximum Credits: 9
This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planing and periodontal surgery.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2326 - PERIODONTAL LITERATURE REVIEW 5

Minimum Credits: 3
Maximum Credits: 3
The periodontal literature review 5 seminars are designed to provide the graduate student with a review of the classical and current literature in the periodontal journals.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2327 - PERIODONTAL LITERATURE REVIEW 6

Minimum Credits: 1
Maximum Credits: 1
The literature review 6 seminars are designed to provide the graduate student with a review of the classical and current literature in the periodontal journals. The review of the literature also includes basic science literature and its relation to treatment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2413 - CURRENT VIEWS IN PERIODONTAL BIOLOGY AND CLINICS 3

Minimum Credits: 2
Maximum Credits: 2
Residents will perform literature search for current topics in periodontics. Several articles will be selected for each topic and the residents will critically evaluate the methodology and results of each. Discussion will center around the evaluation of new evidence and the application of the findings to the clinical practice of periodontics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PERIO 2417 - CURRENT VIEWS IN PERIODONTAL BIOLOGY AND CLINICS 5

Minimum Credits: 1
Maximum Credits: 1
Residents will perform literature search for current topics in periodontics. Several articles will be selected for each topic and the residents will critically evaluate the methodology and results of each. Discussion will center around the evaluation of new evidence and the application of the findings to the clinical practice of periodontics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PERIO 2418 - CURRENT VIEWS IN PERIODONTAL BIOLOGY AND CLINICS 3

Minimum Credits: 1
Maximum Credits: 1
Residents will perform literature search for current topics in periodontics. Several articles will be selected for each topic and the residents will critically evaluate the methodology and results of each. Discussion will center around the evaluation of new evidence and the application of the findings to the clinical practice of periodontics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PERIO 2419 - CURRENT VIEWS IN PERIODONTAL BIOLOGY AND CLINICS 1

Minimum Credits: 1
Maximum Credits: 1
Residents will perform literature search for current topics in periodontics. Several articles will be selected for each topic and the residents will critically evaluate the methodology and results of each. Discussion will center around the evaluation of new evidence and the application of the findings to the clinical practice of periodontics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2420 - CURRENT VIEWS IN PERIODONTAL BIOLOGY AND CLINICS 2

Minimum Credits: 1
Maximum Credits: 1
This course encompasses a review of the latest dental and medical journals for the most recent information related to the art, science and practice of periodontics. It will focus on correlating and comparing new information with established concepts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 5141 - PERIODONTOLOGY 1

Minimum Credits: 1
Maximum Credits: 1
The 21st century dentist will see a shifting paradigm toward a more significant, and possibly dominant, role of bioscience in our biomechanical profession. Periodontology 1 will review, and address the application of, relevant basic science principles utilized in the field of periodontology. It will then build upon those basic principles in helping to achieve diagnostic, therapeutic, and preventive skills in the management of periodontal diseases. A major emphasis will be placed on the effect of oral health/disease on the systemic health/disease of our patients. Finally, in light of current, ongoing, and expanding research in the area of oral/systemic relationships, emphasis will be placed on the combined and cooperative roles of both the dentist and physician in providing comprehensive healthcare to our patients. This course will prepare the student for Periodontology 2 and includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PERIO 5143 - PERIODONTOLOGY 1 LAB

Minimum Credits: 1
Maximum Credits: 1
In this course you will learn proper ergonomics for periodontal (perio) procedures, patient and clinician positioning, perio instrument identification, grasp(s) and with discipline specific periodontal instruments. It is expected by the end of this course you will be able to accurately perform a periodontal assessment in a simulation setting and demonstrate proper subgingival calculus detection using an 11/12 explorer.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PERIO 5149 - PERIODONTAL INSTRUMENTATION 1

Minimum Credits: 0
Maximum Credits: 0
This course is intended to introduce the dental student to the instrumentation utilized in the performance of periodontal procedures via lectures and simulation clinic exercises. Topics such as instrument grasp(s), operator positioning, and an introduction to the proper use of scalers will be covered.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PERIO 5181 - PERIODONTOLOGY 2

Minimum Credits: 1
Maximum Credits: 1
In this course, students will build upon concepts learned in Periodontology 1 to develop foundational knowledge associated with the clinical aspects of periodontology. We begin by exploring various diseases and conditions affecting the periodontium. Students will then

begin to understand periodontal defense mechanisms and how different etiologies and risk factors lead to development of periodontal disease. Students will learn the periodontal clinical examination parameters and how they relate to diagnosis, prognosis, treatment planning, and maintenance therapies. Emphasis is placed on both the basic and clinical science knowledge necessary in the diagnosis, treatment, and prevention of periodontal diseases relative to the student's introduction to the dental clinics. This course includes lectures, quizzes, and, exams.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PERIO 5183 - PERIODONTOLOGY 2 LAB

Minimum Credits: 1
Maximum Credits: 1
This course is a continuations of the Periodontology 1 Lab course and emphasizes instrumentation skills for periodontal assessment and treatment. This course includes small group instruction in a simulation lab.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PERIO 5214 - PERIODONTOLOGY 3

Minimum Credits: 1
Maximum Credits: 1
In this course, students will take concepts learned in Periodontology 1 and 2 and apply them to clinical cases. Etiology and diagnosis of periodontal disease will be reviewed, and students will learn how to establish prognoses, treatment plan for initial and continuing supportive periodontal therapy. This course will prepare students to treat and manage clinical periodontal cases and will include lectures, presentations, and exams.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PERIO 5241 - PERIODONTAL INSTRUMENTATION

Minimum Credits: 1
Maximum Credits: 1
This course follows Periodontology Lab 2. In this course, students will be instructed in the proper use of periodontal instruments and equipment for the performance of preventive prophylaxis, and scaling/root planing procedures. Topics such as rest position, fulcrums, instrument grasp(s), and operator positioning will be covered. Rubber-cup polishing and ultrasonic instrumentation techniques will also be introduced and practiced. This course includes independent study activities (accessed in Canvas course) and requires the student to review the required material available prior to small group simulation clinic skill building and evaluation.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PERIO 5243 - PERIODONTAL CLINIC

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to develop diagnostic and clinical skills as they pertain to evaluation and evidence-based preventative treatment of periodontal disease through prophylaxis and/or fluoride application. The course format will consist of small group sessions in the Periodontal Undergraduate Clinic where each student will have the opportunity to act in the role of "student dentist" and "patient" in periodontal evaluation and prevention procedures. Students are expected to review the health history, determine any contraindications to care, perform a partial periodontal evaluation, review radiographs (if available) Students will chart relevant findings, and write a SHAPED note. Students will gain hands-on experience in instrumentation and technique while performing a prophylaxis including supragingival scaling/polishing as necessary. The course builds on the basic knowledge acquired previously in Periodontology 1 and 2;

Person[1]Centered Care; Immunology and Infectious Diseases; Evidence-Based Dentistry; Diagnosis and Treatment Planning 1; Pathology.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PERIO 5346 - PERIODONTOLOGY 4

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be introduced to the clinical, surgical, and interdisciplinary aspects of periodontal therapy along with supportive periodontal treatment.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PERIO 5379 - CLINICAL PERIODONTICS 1

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of periodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with periodontal needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with periodontal needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PERIO 5449 - CLINICAL PERIODONTICS 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of periodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with periodontal needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with periodontal needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PERIO 5800 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

PERIO 5818 - ADVANCED NON-SURGICAL PERIODONTAL THERAPY

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide students with the opportunity to boost their periodontal assessment, diagnostic, and clinical treatment skills. Students will be introduced to the concept of minimally invasive non-surgical therapy (MINST) as it applies to treating periodontally involved patients. This includes hands-on practice opportunities with non-surgical periodontal technologies.

Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PERIO 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This course is designed to provide the student with an opportunity to conduct in-depth study in a particular subject area of their choice.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

PERIO 5910 - ADVANCED PERIODONTICS

Minimum Credits: 3
Maximum Credits: 3
Dental students will have the opportunity to become familiar with periodontal surgical concepts and techniques through study of the periodontal literature and through participation in mentor - resident and faculty supervised periodontal flap procedures.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

Persian (Farsi)

PERS 2909 - SPECIAL TOPICS IN PERSIAN

Minimum Credits: 3
Maximum Credits: 3
This course will be a topics course, meaning that the specific content of the course will change each time the course is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Petroleum Engineering

PETE 2004 - PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide students who are engaged in thesis or dissertation research an opportunity to participate in an internship with an external organization. The internship must be related to the thesis or dissertation research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PROG: Swanson School of Engineering

PETE 2160 - PETROLEUM RESERVOIR ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course covers the principles of reservoir engineering and material balance calculation in petroleum reservoirs. The topics include petroleum origin and oil occurrence and migration; oil , gas, and gas-condensate reservoirs; basic drilling of oil and gas wells; p-v-t

behavior of natural gas; material balances in gas reservoirs; oil reservoirs under simultaneous dissolved gas drive, gas cap drive, and water drive; generalized material balance in petroleum reservoirs; basic equations for fluid flow in reservoirs, absolute, effective, and relative permeabilities; and a design project on reservoir calculations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

PETE 2201 - RECOVERY OF OIL BY WATERFLOODING

Minimum Credits: 3
Maximum Credits: 3
Theory of immiscible fluid displacement starting with frontal advance theory and applying it to waterflooding, fluid patterns, sweep efficiency, stratified reservoirs, etc. Relative permeability experiments are simulated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

PETE 2204 - ENHANCED OIL RECOVERY PROCESSES

Minimum Credits: 3
Maximum Credits: 3
This course covers different topics on enhance oil recovery processes (co2, thermal, miscible fluids and surfactants); coal-bed methane, enhanced methane recovery, and underground coal gasification; surface and in-situ heavy oil, tar sand and oil shale production; and co2 capture, sequestration and disposal. The fundamentals, thermodynamics, reaction kinetics and transport phenomena as well as the environmental issues and regulations related to these topics are also covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering
Course Attributes: MCSI - Sustainability Related

PETE 2205 - PETROLEUM PRODUCTION ENGINEERING

Minimum Credits: 3
Maximum Credits: 3
This course covers principles of oil and gas production from hydrocarbon-bearing formations. Topics include: flow through porous media of incompressible, compressible and slightly compressible fluids; reservoir, producing formation, vertical lift, and chock performances; principles of gas lift, gas lift valves and design; and sucker rod pumping design; and design project on artificial gas lift.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering (PENGR)

PETE 2206 - OIL RECOVERY TECHNIQUES

Minimum Credits: 3
Maximum Credits: 3
This course cover various oil recovery techniques, including waterflooding and enhanced oil recovery (EOR) methods. Emphasis is placed on polymer flooding, steam flooding, and CO2 flooding as well as the environmental issues and regulations associated with these methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PETE 2207 - PETROLEUM AND NATURAL GAS PROCESSING

Minimum Credits: 3
Maximum Credits: 3
The course covers different topics on natural gas, petroleum and petrochemical processing. The topics include natural gas cleanup, methane reforming for h2 production, partial oxidation of ch4 for synthesis gas production, and chemicals from methanol; refinery feedstocks, crude distillation and refinery products, alkylation, hydrotreating, catalytic reforming and isomerization, catalytic cracking, resid, tar sands and oil shale processing; and methanol/other alcohols, ethylene, fertilizer, and plastic production plants.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

PETE 2208 - PETROLEUM DRILLING AND WELL COMPLETION DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course covers different topics related to drilling operations; directional drilling techniques; completion operations; and work-over operations. The drilling operations encompass drilling rig components, bit selection program, drilling fluid types, cementing program design and well control/safety. The directional drilling techniques include: well-path design/applications, downhole motor components, directional surveys, and logging while drilling. The well completion operations contain: formation evaluation tools, open-hole log interpretation, coring tools, flow testing, perforating, hydraulic fracturing and other stimulation techniques. The work-over operations comprise work-over rig components, cased hole log interpretation, plugs/packers/fishing tools, squeeze job design, casing integrity tests and stimulation evaluation. A special project on casing design is also included.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

PETE 2209 - HYDRAULIC FRACTURING MECHANICS AND APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
Course description: this class will prepare students to wisely and critically design hydraulic fracturing treatments as well as make informed recommendations to employers, governments, and communities about the risks and benefits of hydraulic fracturing methods. Upon completion of this course, students will be equipped to use engineering formulae to estimate hydraulic fracture dimensions, evaluate strengths and weaknesses of various modeling approaches, characterize subsurface conditions from wellbore pressure analysis, make sound recommendations for monitoring, and compare and contrast approaches and risks for a range of application domains.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PETE 2211 - RESERVOIR SIMULATION

Minimum Credits: 3
Maximum Credits: 3
This course introduces the students to the simulation process of fluid flow in petroleum reservoirs. Governing equations required to describe fluid flow in porous media are derived, numerical techniques for solving the equations are introduced. Students will learn how reservoir flow simulators can be used in assessment studies of hydrocarbon reservoirs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

PETE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

PETE 2910 - SPECIAL PROJECTS

Minimum Credits: 1
Maximum Credits: 12
Individual study programs at M.S. Level.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

PETE 2980 - MS RESEARCH METHODOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course involves the discussion and application of research methodology important for the successful completion of MS thesis research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

PETE 2982 - ISSUES IN RESEARCH AND TRAINING

Minimum Credits: 2
Maximum Credits: 2
This course will present to graduate students issues relating to safety, ethics in science, and research methods. Topics in scientific writing, data analysis and oral presentation skills will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PETE 2999 - M.S. THESIS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Pharmacy

PHARM 2001 - PHARMACEUTICAL ANALYSIS

Minimum Credits: 4
Maximum Credits: 4
Current methods utilized in pharmaceutical research for the analysis and isolation of drugs and their metabolites. Theories of extraction, solvent partition and forms of chromatography (adsorption, partition, gas, liquid, counter current, ion exchange, gel-filtration and electrophoresis) are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: School of Pharmacy students only.

PHARM 2003 - PHARMACOEPIDEMIOLOGY

Minimum Credits: 2
Maximum Credits: 2
Introduction to the field of pharmacoepidemiology which uses epidemiologic methods to examine the benefits or risks of medications in the population.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Pharmacy students only.

PHARM 2005 - RESEARCH DISCUSSION COURSE

Minimum Credits: 2
Maximum Credits: 2
Course is designed for students enrolled in the non-thesis MS program. The focus of the course is enhancement of the students' understanding of scientific literature and research methodologies. It will also provide an opportunity for students to learn about and discuss research careers, challenges of clinical vs. Preclinical research, research ethics, and professional development.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 2010 - MASTER OF SCIENCE THESIS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Pharmacy students only.

PHARM 2015 - COMPREHENSIVE EXAM: NON-THESIS MASTER OF SCIENCE

Minimum Credits: 1
Maximum Credits: 3
Students will be assigned several research papers to study and review independently. The research papers will serve as the base for an in-class comprehensive examination to assess the student's critical thinking skills, writing competence, and ability to synthesize and integrate knowledge acquired during the MS program.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 2041 - MS THESIS RESEARCH PRACTICUM 1

Minimum Credits: 1
Maximum Credits: 1
MS Thesis Research Practicum I is the first course in a series of four practicum courses designed to provide MS Thesis students with foundational research training under the direct supervision of a faculty mentor. This course introduces students to the fundamental principles and practical skills necessary to function effectively and responsibly in a research environment. This course is grounded in hands-on, real-time, and application-based learning. Students will complete required compliance training in research integrity, laboratory safety, data safety, and human subjects protections; begin active participation in laboratory activities including shadowing and assisting with experiments and data analysis; develop proficiency in maintaining a laboratory notebook; and gain practical familiarity with research equipment, software, literature search engines, and reference managers. This course lays the groundwork for progressive independence in subsequent Research Practicum courses (II-IV).
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

PHARM 2042 - MS THESIS RESEARCH PRACTICUM 2

Minimum Credits: 2
Maximum Credits: 2
MS Thesis Research Practicum II is the second course in a series of four practicum courses in the MS Thesis track. Building directly on the foundational compliance training, laboratory skills, and research orientation established in Practicum I, this course transitions students from observer and assistant to increasingly independent contributor within their research project. This course is structured around hands-on, real-time, and application-based learning. Students will finalize their research design in close collaboration with their faculty mentor and thesis committee, pursue and obtain all necessary regulatory approvals (IRB and/or IACUC as applicable), complete equipment and methodology training required to execute their proposed experiments, and define measurable outcomes for their research project. In parallel, students will conduct in-depth literature reviews to support their proposed research and begin preliminary studies. Students will also initiate scholarly writing by creating an outline for both their thesis manuscript and the thesis document itself. Successful completion of this course positions students to enter Practicum III with an approved research plan and active preliminary data.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

PHARM 2043 - MS THESIS RESEARCH PRACTICUM 3

Minimum Credits: 5
Maximum Credits: 5
MS Thesis Research Practicum III is the third course in a series of four sequenced practicum courses in the MS Thesis track. This course represents the most intensive research engagement of the practicum series, reflecting the student's transition into a fully active, independently functioning researcher executing their approved thesis project. Building on the regulatory approvals, research design, preliminary studies, and scholarly foundations established in Practicum II, students now direct their effort toward the systematic design and execution of experiments, rigorous data collection and management, and analysis of results. This course is structured around hands-on, real-time, and application-based learning. In addition to sustained experimental work, students in Practicum III take on shared responsibility for laboratory maintenance, establish and convene their thesis committee, and engage in the broader scientific community through presentations to their advisor, lab group, and thesis committee, as well as participation in a local or national scientific conference. Students also continue building toward completion of a scientific manuscript. Successful completion of this course positions students to enter Practicum IV with a substantial body of thesis data, an active thesis committee, and meaningful progress toward a publishable paper.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

PHARM 2044 - RESEARCH PRACTICUM 4

Minimum Credits: 4
Maximum Credits: 4

MS Thesis Research Practicum IV is the fourth and final course in the MS Thesis Research Practicum series. This course represents the culminating research experience of the MS Thesis track, running concurrently with PHARM 2010 MS Thesis and PHARM 3025 Graduate Seminar. Together, these co-requisite courses form an integrated capstone in which students bring their thesis research to completion, synthesize their findings into a scholarly written product, and present their work formally to the scientific community. Building directly on the experimental foundation, data, and scholarly writing progress established in Practicum III, students in this course complete their primary research experiments, finalize data analysis and results interpretation, and bring a scientific paper - whether a primary research article, review paper, methods paper, or brief report - to a near-publication-ready state. Students also engage in the professional dimensions of program completion, including meeting with thesis committee members to discuss results, interpretation, and career trajectories; requesting letters of support; and updating their curriculum vitae or resume. A central milestone of this course is the preparation and delivery of a formal scientific seminar presentation through PHARM 3025. Successful completion of this course, in conjunction with PHARM 2010, fulfills the research and scholarly requirements of the MS Thesis track.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

PHARM 3002 - ADVANCED PHARMACOKINETICS

Minimum Credits: 4
Maximum Credits: 4
This course deals with fundamental aspects of pharmacokinetic concepts from model building, data analysis and parameter estimates after various routes of drug administration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES

Minimum Credits: 1
Maximum Credits: 1
Students will rotate to present recently published scientific papers from reputable journals that are typically chosen by the students with the approval of the course coordinators. This course, structured as a journal club, will introduce topics including but not limited to drug development, drug delivery, biochemical and clinical pharmacology, toxicology, and molecular medicine. The course is intended primarily for first and second year graduate students enrolled in the pharmaceutical sciences program.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: School of Pharmacy students only.

PHARM 3010 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Pharmacy students only.

PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Weekly program in which graduate students, faculty and invited speakers present seminars on topics of current interest.
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Weekly program in which graduate students, faculty and invited speakers present seminars on topics of current interest.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS

Minimum Credits: 4
Maximum Credits: 4
Topics include analgesics, antibiotics, antihistamines, autonomic drugs, CNS drugs, cardiovascular drugs, digestive pharmacology, drug abuse, drug laws, hypoglycemics, principles of drug action and reproductive pharmacology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Pharmacy students only.

PHARM 3032 - MEDICINAL CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3
The course is designed for graduate students starting the second year of a Ph.D. program in chemistry and pharmacy. It teaches the basics of medicinal chemistry and will endow the students with the necessary skills to understand medicinal chemistry scientific literature and to make meaningful proposals of the design/synthesis of drug-like compounds. Topics include energetics of drug-protein interactions, introduction to different types of target classes, introduction to structure based design, including computational chemistry, as well as optimization of hit into leads compound. The course incorporates an extensive exercising part where students are asked to propose and (virtually) perform small target oriented drug discovery projects. Students are required to verbally present twice during this course. Additionally, students are tested twice in written.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3034 - TOPICS IN TRANSLATIONAL RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course is structured as a journal club focused on translational investigations and is being offered jointly with the universities of Minnesota, North Carolina, and Pittsburgh for 1st and 2nd year graduate students from all three programs who will participate in discussions by live video teleconferencing. Articles emphasizing methods which allow for translation from preclinical to clinical investigation will be discussed in several different therapeutic areas with emphasis on pharmacometrics, genomics, biomarker validation, and drug discovery.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3036 - ADVANCES IN DRUG DELIVERY AND REGENERATIVE MEDICINE

Minimum Credits: 1
Maximum Credits: 1
Course is designed to provide the recent developments in the field of drug delivery and regenerative therapies to graduate students. This course, structured as a journal club, will introduce different concepts in drug/gene delivery research through analyzing recent scientific literature. It will also expose students to novel regenerative therapies under development and their role in personalized medicine. If possible, we will also introduce some clinical examples where such regenerative therapies have been successfully used in patients. The course will use scientific research articles from high impact factor journals to introduce these concepts. The course is intended primarily for first/second year graduate students enrolled in the MS or Ph.D. program specifically in the pharmaceutics track. Postdoctoral researchers may participate with prior approval from the course coordinators.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1

Minimum Credits: 2
Maximum Credits: 2
Course teaches basic skills of competitive grant writing. Topics include grant structure, grant writing, and preparation of a grant budget.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3039 - ESSENTIALS COMPETITIVE GRANT WRITING 2

Minimum Credits: 2
Maximum Credits: 2
Course teaches basic skills of competitive grant writing. Topics include grant structure, grant writing, and preparation of a grant budget.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3040 - STATISTICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Course is designed to teach graduate students standard and advanced statistical methods of data analysis. Where appropriate and consistent with the students' educational background, theoretical foundations for statistical methods will be discussed. Students will obtain skills necessary to analyze simple as well as complex data sets and to identify and apply methods appropriate for solving statistical problems presented during class sessions, homework assignments, and exams. At the end of this course, students will have skills to construct and test statistical models and will be able to understand statistical methods used in research articles and critique the methods selected.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3042 - RESEARCH PRACTICUM

Minimum Credits: 1
Maximum Credits: 12

Course provides practical training in advanced research methodology and skills. Students will be engaged in active research with a faculty member or designate as approved by the student's doctoral committee or by the graduate program director. Students enrolled in the graduate program may register to earn 1-12 units per term until they have advanced to candidacy for the Ph.D. Degree.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 3043 - TEACH ME TO TEACH YOU

Minimum Credits: 1
Maximum Credits: 1
Course is designed to introduce graduate students to the art and science of teaching. Course will essentially consist of a brief presentation by faculty on different aspects and approaches to teaching followed by a 30 minutes presentation of basic concepts related to individual research carried out by graduate students.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 3045 - ADVANCED STATISTICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Course is designed to teach graduate students advanced statistical methods of data analysis. Where appropriate and consistent with the students' educational background, theoretical foundations for statistical methods will be discussed. Students will obtain skills necessary to analyze complex data sets and to identify and apply methods appropriate for solving statistical problems presented during class sessions, in homework assignments, and in exams. At the end of the course, students will have skills to construct and test complex statistical models and will be able to understand statistical methods used in research articles and critique the methods selected.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3048 - DRUG DESIGN AND DEVELOPMENT JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
Course is designed to provide an opportunity for the students to informally learn and discuss concepts and applications in the area of drug discovery, design and development.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Pharmacy students only.

PHARM 3049 - SCIENTIFIC WRITING SKILLS

Minimum Credits: 2
Maximum Credits: 2
Course is designed to provide the systematic approach of reading and writing a scientific paper to graduate students. Writing a review or a research paper in the peer reviewed journals is an integral part of the graduate curriculum. Course will introduce different components of a scientific paper, how to read and summarize a scientific paper, methodical approach towards writing a paper and managing references using endnote software.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3050 - RESEARCH PREPARATION

Minimum Credits: 1
Maximum Credits: 1
Course is designed to provide an opportunity for the students to learn applications, guidelines, regulations, and procedures necessary for safe, ethical, and accountable research. Required course for all non-thesis MS students. Elective for all others.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 3052 - TOPICS AND METHODS IN PHARMACEUTICAL OUTCOMES AND POLICY RESEARCH

Minimum Credits: 1
Maximum Credits: 1
Topics and Methods in Pharmaceutical Outcomes and Policy Research is structured as a journal club and is designed to introduce recent developments in pharmaceutical outcomes and policy research, with a focus on observational study design and methodology. Students on the 2nd, 3rd or 4th year of graduate training will have the opportunity to discuss present scientific findings of their own.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 3053 - FOUNDATIONS IN BIOCHEMICAL PHARMACOLOGY

Minimum Credits: 4
Maximum Credits: 4
The Foundations in Biochemical Pharmacology course is intended for Ph.D./M.S. graduate students in the University of Pittsburgh School of Pharmacy Pharmaceutical Sciences Graduate Program to gain a comprehensive overview of pharmacology principles and practices with an emphasis on biochemical and molecular pharmacology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PHARM 3063 - GRADUATE RESEARCH ROTATION

Minimum Credits: 3
Maximum Credits: 3
Special research projects are conducted under the supervision of a faculty member to acquaint the graduate student with advanced research techniques.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3067 - CLINICAL PHARMACY ENVIROMENTS

Minimum Credits: 2
Maximum Credits: 2
The successful completion of clinical research is dependent upon an understanding of how healthcare is delivered in the environment where

it is conducted. A significant number of clinical studies involve drugs and/or the acquisition of drug concentrations. This course is designed for students who do not have clinical pharmacy experience within the U.S. Healthcare system. The goal is to improve these students' abilities to design clinical/translational research studies by introducing fundamental concepts of how pharmaceutical care is delivered in a U.S. Academic health system. To meet this objective, students will gain an appreciation of how pharmaceutical care is delivered through didactic lectures and guided exposures to multiple clinical pharmacy environments with experienced clinical pharmacists. During each field observation, students will be expected to identify the application of pharmacy and therapeutics interventions. Students will also learn how clinical data is generated and stored to deliver daily patient care and how databases may be used for research purposes. Additionally, students are expected to gain an appreciation for the privacy regulations that are associated with accessing protected health information (phi) for research and their implications for designing and conducting clinical/translational research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3068 - COMPUTATIONAL SYSTEMS PHARMACOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will teach the fundamentals of computational systems pharmacology (CSP) modeling and their applications to study drug actions and rational development of new drugs through network analysis, Theoretical concepts pertaining to computational systems pharmacology, such as drug target identification and computer aided drug design (CADD), will be taught. The course also includes hands-on training with the mainstream network analysis and CADD software, such as Symbiology of Matlab, Tetrad, drug discovery package of Schrodinger. This is a mandatory course to be taken for the PSP program.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3069 - PHARMACOMETRICS

Minimum Credits: 3
Maximum Credits: 3
This course will provide training in the fundamentals of pharmacometrics & systems pharmacology (PSP) modeling and their applications to study drug actions through multiscale modeling and simulations [mechanism-driven] and data analysis [data-driven]. Theoretical concepts pertaining to PSP, such as population pharmacokinetics/pharmacodynamics (pop PK/PD) modelling both from mechanistic and statistical points of view, physiologically-based pharmacokinetics (PBPK) data analysis, will be taught. The course covers the advanced pharmacokinetics/pharmacodynamics (PK/PD) topics, such as drug-drug interactions, disease progression, as well as multi-scaling PK/PD modeling of drug actions for selected diseases, including cancers, type 2 diabetes, etc. The course also offers hands-on training on using mainstream population PK/PD and PBPK modeling and simulation software. This is a mandatory course to be taken for the PSP program.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3070 - GENOMICS & CANCER THERAPEUTICS

Minimum Credits: 1
Maximum Credits: 1
This course, structured as a journal club, is designed to provide an opportunity for students to informally learn and discuss concepts and applications in the area of genomics and cancer therapeutics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3071 - FOUNDATIONS OF PHARMACEUTICAL SCIENCES

Minimum Credits: 4
Maximum Credits: 4
The discovery, development, and evaluation of new medications and dosage forms, is a cornerstone of pharmaceutical sciences research. This course provides an overview of the drug development process, from preclinical discovery through clinical testing and evaluation. The course begins with a discussion of natural products, small molecule development, physicochemical properties of drugs, computational approaches to lead generation and drug design, target identification, and high throughput screening methods for identifying active compounds. This is followed by an overview of screening methods for identifying the best drug candidates, and then how drug candidates are formulated to overcome barriers to effective drug delivery. The next segment of the course focuses on clinical evaluation of drug safety and efficacy. This includes how animal models are used in transitioning from preclinical to clinical drug development, followed by discussions of how biomarkers are used in drug development, human equivalent dosing, the different phases of clinical trial design, and how PK/PD modeling and simulation can be used to model and predict clinical efficacy. The final segment of the course focuses on methods for evaluating the impact of medications on patient disease populations. Knowledge of Biochemistry is preferred prior to course enrollment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3072 - TOPICS IN PHARMACOKINETICS/PHARMACODYNAMICS JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
Course involves a discussion of current topics of interest in pharmacokinetics and pharmacodynamics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: School of Pharmacy students only.

PHARM 3073 - APPLIED MULTIVARIATE STATISTICAL ANALYSIS IN PHARMACEUTICAL SCIENCES

Minimum Credits: 3
Maximum Credits: 3
This course is designed to teach graduate students multivariate statistical methods. Where appropriate and consistent with the students' educational background, theoretical foundations for multivariate statistical methods will be discussed. Students will obtain skills necessary to analyze complex data sets and to identify and apply multivariate statistical methods appropriate for analyzing complex data sets and statistical problems presented during class sessions, in homework assignments, and in an exam. At the end of this course, they will have skills to construct and test and analyze complex statistical models. Furthermore, they will be able to understand multivariate statistical methods used in research articles and critique the methods selected. The major topics covered in this course will be (1) matrix and vector algebra, (2) measures of central tendency, dispersion, and association, (3) graphical display of multivariate data, (4) multivariate normal distribution, (5) inference for means, (6) multivariate regression, (9) multivariate analysis of variance, (10) canonical correlation coefficient, (11) repeated measures analysis, (12) principal component analysis, (13) factor analysis, (14) cluster analysis, (15) discriminant analysis, classification and pattern recognition. Students will be required to apply statistical software packages, such as STATA, SPSS, SAS, R or other appropriate programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3074 - INTRODUCTION TO REGULATORY ASPECTS OF DRUG DEVELOPMENT

Minimum Credits: 1
Maximum Credits: 1

This course is designed to orient graduate students and students of PharmD program with foundational knowledge on regulatory aspects of drug development process including drug and biologic products. This course will introduce students with various regulatory agencies worldwide with emphasis on regulations by the US Food and Drug Administration (FDA). It will introduce types of applications in drug approval process including Investigational New Drug application (IND), New Drug Application (NDA), Abbreviated New Drug Application (ANDA), and Biologic Licensing Application (BLA). The course will provide overview of various requirements for approval of a drug product such as Preclinical toxicology, Chemistry, Manufacturing and Controls (CMC), clinical data required to establish safety and effectiveness (Phase 1 to Phase 3 trials) and post-marketing regulations. Through this introductory course, graduate students of School of Pharmacy will gain basic knowledge about regulatory pathways for drug and biologic products. The students can then use the acquired knowledge in their research projects (if applicable) or take additional courses in regulatory affairs. This course will also expose the students to various career opportunities in regulatory affairs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3075 - TOPICS IN PHARMACOGENOMICS AND PRECISION MEDICINE

Minimum Credits: 1
Maximum Credits: 1
This course is a journal club for students interested the application of pharmacogenomics and precision medicine. The course will cover specific topics related to pharmacogenomics implementation, genotype-phenotype discovery, informatics, data science, and implementation science as they relate to pharmacogenomics and precision medicine.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

PHARM 3076 - FOUNDATIONS OF PRECLINICAL DRUG DEVELOPMENT AND DELIVERY

Minimum Credits: 2
Maximum Credits: 2
The discovery, development, and evaluation of new medications and dosage forms, is a cornerstone of pharmaceutical sciences research. This course provides an overview of initial stages of the drug development process, including principles of preclinical drug discovery and development as well as factors that contribute to the formulation and delivery of medications. The course begins with a discussion of natural products, and quickly moves into small molecule development, physicochemical properties of drugs, computational approaches to lead generation and drug design, target identification, and high throughput screening methods for identifying active compounds. This is followed by an overview of screening methods for identifying the best drug candidates, including metabolic and toxicology screening, transporter screening, and methods for identifying drug-drug/drug-gene interactions. The last portion of the course focuses on how drug candidates are then formulated to overcome barriers to effective drug delivery. Emphasis is placed on understanding the drug development process and methods that are used to identify, develop, and formulate drug candidates for preclinical testing. Knowledge of Biochemistry is preferred prior to course enrollment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PHARM 3011; PROG: School of Pharmacy

PHARM 3077 - FOUNDATIONS OF CLINICAL DRUG DEVELOPMENT AND ASSESSMENT

Minimum Credits: 1
Maximum Credits: 1
The development and testing of medications for clinical safety and effectiveness is an essential component of the drug development process. This course provides an overview of the principles and methods used to evaluate the safety and efficacy of medications in individuals and in patient disease populations. The course begins with a brief discussion of how animal models are used in transitioning from preclinical to clinical drug development. This is followed by discussions of how biomarkers are used in drug development, human equivalent dosing, the different phases of clinical trial design, and a discussion of how PK/PD modeling and simulation can be used to model and predict clinical efficacy. The next part of the course focuses on methods for evaluating the impact of medications on patient

disease populations. Topics include causal inference and study design, data sources and collection methods, phase 4 trials, the use of big data including pharmacogenomics data in clinical research, and methods for adverse effect detection and reporting. Emphasis is placed on understanding the processes and methods that are used to evaluate medication safety and effectiveness. Knowledge of Biochemistry is preferred prior to course enrollment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PHARM 3011; PROG: School of Pharmacy

PHARM 3078 - MEDICATION PHARMACOLOGY: A PHARMACOLOGIC FRAMEWORK FOR UNDERSTANDING DRUG ACTION

Minimum Credits: 2
Maximum Credits: 2
This course is intended for pharmacoanalytics graduate students without previous pharmacology courses. The course provides a pharmacologic framework for understanding drug action. Students will gain an understanding of general mechanisms of action for drugs, what happens to the drug after ingestion, sources of variability in drug response and the research needed to show a drug is safe and effective. Students will gain insight into the many disciplines and skills that contribute to development of new medications by examining and evaluating content from new drug applications, post-marketing evaluations and marketing materials of currently marketed drug products.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PHARM 3300 - CONCEPTS IN PHARMACOECONOMIC AND OUTCOME EVALUATIONS IN HEALTH AND MEDICINE

Minimum Credits: 1
Maximum Credits: 1
This course serves as a competency-based application of advanced concepts in economic and outcomes evaluation in health and medicine. The theories and necessity of health economic evaluations will be reinforced with examples from real-world scenarios and emphasize hands-on advanced modeling activities. Topics include Markov modeling, sensitivity analyses to address model uncertainty, budget impact analysis, and health state utility assessment. Knowledge of data manipulation in Excel is preferred prior to course enrollment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3301 - SECONDARY DATABASE APPLICATIONS

Minimum Credits: 1
Maximum Credits: 1
This course serves as an introduction to commercially and publicly available databases including administrative datasets, clinical datasets, spontaneous reporting datasets and datasets for national representative surveys used for large-scale data analyses. Students will understand how to accrue commercially and publicly databases. Students will explore the advantages and disadvantages to various databases. Students will develop skills in using tools to assist with management and analysis of secondary databases. Knowledge of data manipulation in some platform (STATA, SAS, Python, R, Tableau); secondary data sources, methods and tools are preferred prior to course enrollment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PHARM 3302 - CONDUCTING RESEARCH WITH LARGE BIOMEDICAL DATABASES

Minimum Credits: 1
Maximum Credits: 1
This course serves as an introduction to core data science methods for querying large-scale datasets, primarily focusing on relational databases. The course is entirely online via short videos and web-based homework assignments. Students will develop skills understanding data found in clinical information systems, biomedical data standards and terminologies, and strategies for managing and storing biomedical data. Knowledge of data manipulation in some platform (STATA, SAS, Python, R, Tableau); basic statistics course and introductory to programming experience are preferred prior to course enrollment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3303 - TOPICS AND METHODS FOR SECONDARY DATABASE EVALUATIONS

Minimum Credits: 1
Maximum Credits: 1
Topics and Methods for Secondary Database Evaluations is structured as a journal club and is designed to discuss pragmatic research with large secondary databases, with a focus on observational study design, analytics and methods. Students will have the opportunity to discuss, critique and present published literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

PHARM 3304 - RESEARCH METHODS FOR PHARMACEUTICAL PRACTICE AND POLICY

Minimum Credits: 1
Maximum Credits: 1
This course serves as competency-based application of research methods for pharmaceutical practice and policy. This course will address the conceptualization and operationalization of research, study design considerations, and secondary data analysis. Students will also learn how to operationalize data metrics for medications and outcomes using large databases. Knowledge of data manipulation in some platform (STATA, SAS, Python, R, Tableau); basic statistics course and introductory to programming experience are preferred prior to course enrollment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3306 - INTRODUCTION TO THE UNITED STATES HEALTHCARE SYSTEM AND PHARMACEUTICALS

Minimum Credits: 1
Maximum Credits: 1
This is a competency-based course designed to introduce students to the US Healthcare System and pharmaceutical policy. This course will cover the organization, financing, and principal stakeholders of the US healthcare system. Additionally, this course will examine central concepts related to pharmaceutical policy; including, pharmaceutical pricing, spending, and use within the healthcare system. Students will also learn concepts in healthcare policy, pharmacoeconomics, and value-based healthcare.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3308 - DATA PRIVACY AND SECURITY

Minimum Credits: 1
Maximum Credits: 1
This course is designed to introduce students to policies and regulations regarding privacy and security for using clinical and sensitive data for clinical research. Students will learn about de-identification methods, encryption standards and network security. The students will be required to write and evaluate data security and sharing plans as well as organizational policies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PHARM 3310 - SECONDARY DATA SOURCES, METHODS AND TOOLS

Minimum Credits: 1
Maximum Credits: 1
This course will give the student an understanding of how to develop and use a software infrastructure to support projects using secondary data. Students will learn methods for selecting appropriate software tools for a project and gain exposure to software tools to support natural language processing, machine learning and neural networks. The course will include discussions of real-world examples of successful projects using various infrastructures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3312 - COMMUNICATING DATA

Minimum Credits: 1
Maximum Credits: 1
This course will offer a survey of methods for communicating the results of data analyses in healthcare. Best practices for different modes of presenting (oral and written) data will be introduced and applied. As data visualization has grown in importance, students will learn which figures and plots are most effective in specific cases. These methods will be reviewed, applied to various scenarios, and assessed in this course. Knowledge of data manipulation in some platform (STATA, SAS, Python, R, Tableau); descriptive statistics course and project data or familiarity with utilizing open data sets are preferred prior to course enrollment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Pharmacy students only.

PHARM 4999 - FULL TIME STATUS

Minimum Credits: 0
Maximum Credits: 0
Designed to accommodate summer billing for pharmacy students.
Academic Career: Graduate
Course Component: Clinical
Grade Component: No Grade Required
Course Requirements: School of Pharmacy students only.

PHARM 5110 - PHARMACIST PATIENT CARE 1: PROCESS AND SKILLS

Minimum Credits: 3
Maximum Credits: 3
First of six semester sequence of courses that support the students' development of competence in four major areas- clinical skills, the psychosocial dimensions of pharmacy practice, managing as a professional pharmacist, and professional inquiry.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5111 - PHARMACIST PATIENT CARE 2: SKILLS AND ENVIRONMENTS

Minimum Credits: 3
Maximum Credits: 3
The second of six courses that support the students' development of competence in clinical skills, the psychosocial dimensions of pharmacy practice, managing as a professional pharmacist, and professional inquiry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5112 - COMMUNITY HEALTH 1: COMMUNICATION AND WELLNESS

Minimum Credits: 1
Maximum Credits: 1
Provides students with field-based experience in which they can examine the role of the pharmacy and pharmacists in a variety of practice settings, develop basic dispensing and counseling skills, collect and interpret data from the practice site.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5114 - ANATOMY AND PHYSIOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
First part of a two course sequence that provides an integrated presentation of human anatomy and physiology. Information about each system is presented to explain the processes involved in homeostasis so that students will develop an understanding of the working of the entire human body. Wherever appropriate, information about mechanisms of action of selected drugs is presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Pharmacy students only.

PHARM 5115 - ANATOMY AND PHYSIOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
Second part of a two course sequence that provides an integrated presentation of human anatomy and physiology. Information about each system is presented to explain the processes involved in homeostasis so that students will develop an understanding of the working of the entire human body. Wherever appropriate, information about mechanisms of action of selected drugs is presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Pharmacy students only.

PHARM 5120 - THE EMERGING PROFESSIONAL

Minimum Credits: 1
Maximum Credits: 1
The emerging professional is designed to stimulate the development of professional attitudes and behaviors and an understanding of the

opportunities within the pharmacy profession. Professionalism, ethics, management of self, and the profession of pharmacy are themes of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5121 - CASE CONFERENCE SERIES 2

Minimum Credits: 1
Maximum Credits: 1
The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis include, but are not limited to, retrieval and critical evaluation of quality health care information, patient assessment, clinical decision making, development of pharmaceutical care plans, verbal and written communication with patients and other health care providers, and professional behaviors. Patient case activities reinforce the knowledge and skills introduced in concurrent courses within the term, as well as reinforcing previously-learned scientific and patient care principles, skills, and knowledge.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5122 - CASE CONFERENCE SERIES 1

Minimum Credits: 1
Maximum Credits: 1
The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis include, but are not limited to, retrieval and critical evaluation of quality health care information, patient assessment, clinical decision making, development of pharmaceutical care plans, verbal and written communication with patients and other health care providers, and professional behaviors. Patient case activities reinforce the knowledge and skills introduced in concurrent courses within the term, as well as reinforcing previously-learned scientific and patient care principles, skills, and knowledge.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5124 - BIOCHEMISTRY 1: FUNDAMENTALS

Minimum Credits: 3
Maximum Credits: 3
First of two course sequence that describes structure, properties, biological functions, kinetics, and metabolic fate of macromolecules including protein and carbohydrates that are essential to life and apply knowledge to the molecular basis of selected diseases and medication use.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5125 - BIOCHEMISTRY 2: DNA, PHARMACOGENOMICS & BIOTECHNOLOGY

Minimum Credits: 3
Maximum Credits: 3
Course builds on principles introduced in Biochemistry 1. Second of two course sequence that describes structure and function of macromolecules such as lipids and nucleic acids while focusing on DNA, gene regulation, pharmacogenomics and applications to

pharmacotherapy and biotechnology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PHARM 5126 - DOSAGE FORM DESIGN AND DELIVERY

Minimum Credits: 3
Maximum Credits: 3
This course provides students with fundamental knowledge of the physical-chemical properties with application in drug dosage formulations, necessary knowledge and skills to perform pharmaceutical calculations in medication dispensing and needed skills to accurately and safely compound dosage forms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5127 - PRINCIPLES OF DRUG ACTION

Minimum Credits: 3
Maximum Credits: 3
This course provides opportunities for students to learn and apply principles of drug-receptor interactions, conceptualize principles of medicinal chemistry to drug design and development, describe relationships between drug action and chemical structure, and utilize basic pharmacokinetic and pharmacodynamic concepts in pharmaceutical calculations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5128 - WHOLE PERSON PHARMACY CARE 1: EXPLORING COMMUNITY, CULTURAL & SOCIAL DETERMINANTS OF HEALTH

Minimum Credits: 1
Maximum Credits: 1
This course provides students with a fundamental understanding of whole person care, while fostering community involvement through participation of on-site activities that assess human and community needs and enhance communication, civic involvement, humanistic and holistic care of patients, and social awareness of unmet medical needs. Students will learn ways to engage communities and assist them in building their own capacity to identify and address health issues through community health needs assessments.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5129 - WHOLE PERSON PHARMACY CARE 2: EXPLORING POPULATION AND STRUCTURAL DETERMINANTS OF HEALTH

Minimum Credits: 1
Maximum Credits: 1
Through in-class activities and pharmacy practice guided immersions in the community, this course focuses on population health, including addressing structural factors that influence health and health care for people and populations. Core concepts include public health essential services, epidemiology, health disparities, health behaviors, access to medicines and safety nets, cultural and structural competency, global health, and health care reform.
Academic Career: Graduate
Course Component: Clinical

Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5133 - PROFESSIONAL AND CAREER DEVELOPMENT 1

Minimum Credits: 0
Maximum Credits: 0
This course, part of a longitudinal sequence, provides a thoughtful, sequential progression of themes of self-development, career development and professional development, incorporating skills for success and documentation of outcome-focused progress.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PHARM 5210 - NONPRESCRIPTION THERAPIES AND SELF-CARE PRACTICE

Minimum Credits: 3
Maximum Credits: 3
The third of a six course sequence that supports students' development of competence in four major areas: clinical skills, social science in pharmacy, managing as a professional pharmacist, and professional inquiry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5211 - DRUG LITERATURE ANALYSIS AND EVALUATION

Minimum Credits: 3
Maximum Credits: 3
The fourth of a six-course sequence that supports students' development of competence in four major areas: clinical skills, psychosocial dimensions of practice, managing as a professional pharmacist, and professional inquiry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5212 - COMMUNITY PHARMACIST PRACTICE 1: PATIENT-CENTERED CARE AND SILVER SCRIPTS

Minimum Credits: 1
Maximum Credits: 1
Provides students with field-based experience in which they can examine the psychosocial dimensions of pharmacy practice as well as principles of organizational management. Students continue to develop proficiency in carrying out the pharmaceutical care process and to practice inquiry skills by generating questions from their practice experiences and using drug information and literature to formulate answers to the questions.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5213 - COMMUNITY PHARMACIST PRACTICE 2: MEDICATION THERAPY MANAGEMENT- IMMERSION IN PRACTICE

Minimum Credits: 1
Maximum Credits: 1

Provides students with field-based experience in which they can examine the psychosocial dimensions of pharmacy practice as well as principles of organizational management. Students continue to develop proficiency in carrying out the pharmaceutical care process and to practice inquiry skills by generating questions from their practice experiences and using drug information and literature to formulate answers to the questions.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5216 - PHARMACOTHERAPY OF CARDIOVASCULAR DISEASE

Minimum Credits: 3
Maximum Credits: 3
Provides a comprehensive evaluation of the pathophysiology and treatment of cardiovascular disease. The pharmacology and therapeutic use of cardiovascular drugs is presented in relation to the management of hypertension, coronary artery disease, heart failure, arrhythmia, thromboembolic disorders, and acute myocardial infarction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5218 - PHARMACOKINETICS AND DRUG RESPONSE

Minimum Credits: 3
Maximum Credits: 3
Course provides students with a fundamental understanding of the mathematical relationships that are available to quantify the rate and extent of drug absorption, distribution, metabolism and excretion.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5220 - CASE CONFERENCE SERIES 3

Minimum Credits: 1
Maximum Credits: 1
The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis within this course series include but are not limited to patient assessment, development of pharmaceutical care plans, verbal and written communicating to patients and providers, and retrieval and critical evaluation of quality health care information with application to individual patient care settings. Patient case activities will be planned to reinforce the knowledge and skills introduced in concurrent courses within the semester, as well as reinforcing previously-learned scientific and patient care principles, skills and knowledge from preceding semesters. During the fall P2 year, each session will use skill building exercises in the context of concurrent courses listed above.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5222 - FUNDAMENTALS OF IMMUNOLOGY

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide students with fundamental knowledge of the immune system and integrate elements of basic and applied immunology with pharmacy practice. Principles in immunology will be reviewed, including mechanisms of inflammation and actions of antibodies, complement, and cytokines. The course will also introduce selected immune-based disorders and principles of

immunization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5223 - GASTROENTEROLOGY/NUTRITION

Minimum Credits: 2
Maximum Credits: 2
Students demonstrate and apply concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of selected gastrointestinal diseases and states of nutritional deficiency. Students develop the ability to design, monitor, and refine safe and cost effective treatment plans and provide appropriate information to patients, caregivers, and health professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5227 - CASE CONFERENCE SERIES 4

Minimum Credits: 1
Maximum Credits: 1
The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis include, but are not limited to, retrieval and critical evaluation of quality health care information, patient assessment, clinical decision making, development of pharmaceutical care plans, verbal and written communication with patients and other health care providers, and professional behaviors. Patient case activities reinforce the knowledge and skills introduced in concurrent courses within the term, as well as reinforcing previously-learned scientific and patient care principles, skills, and knowledge.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5229 - FUNDAMENTALS OF NEPHROLOGY/PULMONOLOGY

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide students with opportunities to apply knowledge of physiology, pathophysiology, pharmacology and therapeutics in provision of pharmaceutical care for patients with selected renal and pulmonary disorders. The course will focus on integration of science and practice to achieve outcomes that enhance patient care and quality of life. Expanding on current knowledge and acquiring new knowledge of disease states and therapies, students will be challenged through team-based learning, using a series of TBL sessions focused in selected aspects of pharmaceutical care to patients with renal and pulmonary diseases. The course will integrate with prior learning (i.e. cardiology, anatomy and physiology) and concurrent learning (case conferences, infectious diseases).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5231 - PHARMACOTHERAPY OF INFECTIOUS DISEASE 1: COMMUNITY-BASED

Minimum Credits: 3
Maximum Credits: 3
The first in a 2-course sequence which uses an integrated approach to the assessment and management of common community-based infectious diseases. Using large group instruction, case-based practica and other instructional methods, students have the opportunity to acquire scientific knowledge and develop patient care decision-making and plan development skills relevant for a pharmacy practitioner in

community practice. Elements of microbiology, immunology, chemistry, pharmacology and therapeutics will be interwoven throughout the course to provide students with structured and organized learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5233 - PROFESSIONAL AND CAREER DEVELOPMENT 2

Minimum Credits: 0
Maximum Credits: 0
This course, part of a longitudinal sequence, provides a thoughtful, sequential progression of themes of self-development, career development and professional development, incorporating skills for success and documentation of outcome-focused progress.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PHARM 5235 - DRUG DISCOVERY AND DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Course examines sources of drugs and the process of drug development and the drug approval process. Since drug metabolites may play an important role in the activity or toxicity of a drug, early phases of the approval process require extensive metabolism studies. Course also covers the biochemistry of drug metabolism and chemical pathways of metabolism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5311 - SAFE MEDICATION USE AND PHARMAECONOMICS

Minimum Credits: 2
Maximum Credits: 2
Provides the knowledge, skills and attitudes necessary to practice pharmacy. Will focus on clinical skills, psychosocial dimensions of practice, pharmacy management and professional inquiry. Topics include principles of pharmacoeconomics, pharmacoeconomic decision making, quality improvement and total quality management, and population-based decision making. Individual and group presentations, case analyses and projects will be used to incorporate pharmacoeconomic principles into therapeutic decision-making and enhance the communication skills of students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5314 - IMMUNOLOGY

Minimum Credits: 2
Maximum Credits: 2
Students will demonstrate and apply core concepts of physiology, pharmacology, chemistry, and therapeutics in the evaluation and treatment of selected diseases of the immune system. Students will develop their abilities to design, monitor and refine cost-effective and safe treatment plans and provide appropriate information to patients, caregivers and health professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5315 - ONCOLOGY/HEMATOLOGY

Minimum Credits: 2
Maximum Credits: 2
Students will demonstrate and apply core concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of various types of cancer and diseases of the blood. Students will develop the abilities required to design, monitor, and refine effective, safe, and cost-effective treatment plans and be able to provide appropriate information to patients, caregivers, and health professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5316 - PULMONOLOGY/RHEUMATOLOGY

Minimum Credits: 2
Maximum Credits: 2
Students will demonstrate and apply core concepts of physiology, pharmacology, chemistry and therapeutics in the evaluation and treatment of selected pulmonary and rheumatic diseases. Students will develop their abilities to design, monitor and refine cost-effective and safe treatment plans and appropriate information to patients, caregivers and health professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5318 - ENDOCRINOLOGY

Minimum Credits: 3
Maximum Credits: 3
Students will demonstrate and apply core concepts of physiology, pharmacology, chemistry and therapeutics in the evaluation and treatment of selected disorders of the endocrine system. Students will develop their abilities to design, monitor and refine cost-effective and safe treatment plans and appropriate information to patients, caregivers and health professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5320 - POPULATION HEALTH AND MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2
The course focuses on the United States health system and its connection to the pharmacist, principles of management and business for the pharmacist, and public health pharmacy. Core concepts addressed will include: health disparities, program development and evaluation, health literacy, health behavior change, access to essential medicines, health care reform, payment structures, business planning, personal and professional management, human resources, advocacy, emergency preparedness, safety nets, cultural competency, and global health.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5321 - CRITICAL CARE AND ADVANCED NEPHROLOGY

Minimum Credits: 2
Maximum Credits: 2

Students integrate knowledge and skills to design, monitor, assess and refine safe and cost effective treatment plans, as well as design appropriate information materials for patients, caregivers, and health professionals. Expanding on knowledge of disease states and therapies reviewed in previous or concurrent courses, students will be challenged in "capstone" experiences to manage pharmaceutical care problems in ambulatory, acute care, and critical care settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5322 - PHARMACY LAW

Minimum Credits: 2
Maximum Credits: 2
This course is focused on pharmacy law, with a focus on general concepts of constitutional law and an overview of the legal process in the United States. Students will learn by analyzing statutes, regulations, and case law examples. The areas covered will include laws and regulations relevant to pharmacy practice, civil liability including malpractice, and some business-related legal material.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5323 - CASE CONFERENCE SERIES 6

Minimum Credits: 1
Maximum Credits: 1
The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis include, but are not limited to, retrieval and critical evaluation of quality health care information, patient assessment, clinical decision making, development of pharmaceutical care plans, verbal and written communication with patients and other health care providers, and professional behaviors. Patient case activities reinforce the knowledge and skills introduced in concurrent courses within the term, as well as reinforcing previously-learned scientific and patient care principles, skills, and knowledge.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5324 - CASE CONFERENCE SERIES 5

Minimum Credits: 1
Maximum Credits: 1
The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis within this course series include but are not limited to patient assessment, development of pharmaceutical care plans, verbal and written communicating to patients and providers, and retrieval and critical evaluation of quality health care information with application to individual patient care settings. Patient case activities will be planned so as to reinforce the foundational knowledge and skills introduced in concurrent courses within the semester, as well as reinforcing previously-learned scientific and patient care principles, skills and knowledge from preceding semesters. During the fall P3 year, each Case Conference session will use skill building exercises in the context of concurrent courses. Additionally, two comprehensive Capstone Cases will challenge students to demonstrate the desired comprehensive skills in patient care through patient assessment, care plan development, ability to communicate with patients and providers, and provide quality patient care recommendations with evidence-based justifications.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5325 - NEUROLOGY/PSYCHIATRY

Minimum Credits: 3
Maximum Credits: 3
Students will demonstrate and apply core concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of selected neurological and psychiatric disorders. Students will develop the abilities required to design, monitor, and refine effective, safe, and cost-effective treatment plans and be able to provide appropriate information to patients, caregivers, and health professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5328 - ADVANCED THERAPEUTICS: IMMUNOLOGY

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to reinforce previously-learned fundamental immunology concepts through application to immune-mediated disease states. Elements of immunology, medicinal chemistry, pharmacology, and therapeutics are illustrated, reinforced, and applied through case-oriented discussion sessions and assignments designed to enhance skills in problem-solving, patient assessment, drug selection, and monitoring.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5330 - HEALTH SYSTEM PHARMACY 1: OPERATIONS AND DISPENSING

Minimum Credits: 1
Maximum Credits: 1
This course, part of a 2-term sequence, provides students with knowledge, skills and attitudes to practice pharmacy as a competent and caring health care professional in the setting of health-system practice. Through dedicated time at quality IPPE sites, and in classes and laboratory exercises, students will develop needed knowledge and skills in practice in the healthcare system.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5331 - HEALTH SYSTEM PHARMACY 2: ADVANCED PRACTICE & MANAGEMENT

Minimum Credits: 1
Maximum Credits: 1
This course, part of a 2-term sequence, provides students with knowledge, skills and attitudes to practice pharmacy as a competent and caring health care professional in the setting of health-system practice. Through dedicated time at quality IPPE sites, and in classes and laboratory exercises, students will develop needed knowledge and skills in practice in the healthcare system.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5332 - PHARMACOTHERAPY OF INFECTIOUS DISEASE 2: HEALTH-SYSTEMS-BASED

Minimum Credits: 2
Maximum Credits: 2

This second in a 2 course sequence uses an integrated approach to the assessment and management of health system-based infectious diseases. Using large group instruction, case-based practica and other instructional methods, students have the opportunity to acquire scientific knowledge and develop patient care decision-making and plan development relevant for a pharmacy practitioner in health systems practice. Elements of microbiology, immunology, chemistry, pharmacology and therapeutics will be interwoven throughout the course to provide students with structured and organized learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5333 - PROFESSIONAL AND CAREER DEVELOPMENT 3

Minimum Credits: 0
Maximum Credits: 0
This course, part of a longitudinal sequence, provides a thoughtful, sequential progression of themes of self-development, career development and professional development, incorporating skills for success and documentation of outcome-focused progress.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PHARM 5401 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 1

Minimum Credits: 5
Maximum Credits: 5
Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5402 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 2

Minimum Credits: 5
Maximum Credits: 5
Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5403 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 3

Minimum Credits: 5
Maximum Credits: 5
Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5404 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 4

Minimum Credits: 5
Maximum Credits: 5
Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5405 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 5

Minimum Credits: 5
Maximum Credits: 5
Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5406 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 6

Minimum Credits: 5
Maximum Credits: 5
Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5407 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 7

Minimum Credits: 5
Maximum Credits: 5
Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5408 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 8

Minimum Credits: 5
Maximum Credits: 5
Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced

institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5409 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 9

Minimum Credits: 5
Maximum Credits: 5
Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5410 - ADVANCED PHARMACY PRACTICE EXPERIENCE 1 - INTERNATIONAL

Minimum Credits: 5
Maximum Credits: 5
Field-based experience that provides students with the opportunity to gain an understanding of how healthcare and pharmaceutical care are delivered in countries other than the United States. Examples of areas that have hosted students include Australia, England, Ghana, Honduras, Ireland, Italy, and Malawi. The school continuously seeks to expand these opportunities. International rotations are considered elective experiences.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5411 - ADVANCED PHARMACY PRACTICE EXPERIENCE 2 - INTERNATIONAL

Minimum Credits: 5
Maximum Credits: 5
Field-based experience that provides students with the opportunity to gain an understanding of how healthcare and pharmaceutical care are delivered in countries other than the United States. Examples of areas that have hosted students include Australia, England, Ghana, Honduras, Ireland, Italy, and Malawi. The school continuously seeks to expand these opportunities. International rotations are considered elective experiences.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5412 - ADVANCED PHARMACY PRACTICE EXPERIENCE 3 - INTERNATIONAL

Minimum Credits: 5
Maximum Credits: 5
Field-based experience that provides students with the opportunity to gain an understanding of how healthcare and pharmaceutical care are delivered in countries other than the United States. Examples of areas that have hosted students include Australia, England, Ghana, Honduras, Ireland, Italy, and Malawi. The school continuously seeks to expand these opportunities. International rotations are considered elective experiences.
Academic Career: Graduate
Course Component: Clinical

Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5413 - ADVANCED PHARMACY PRACTICE EXPERIENCE 4 - INTERNATIONAL

Minimum Credits: 5
Maximum Credits: 5
Field-based experience that provides students with the opportunity to gain an understanding of how healthcare and pharmaceutical care are delivered in countries other than the United States. Examples of areas that have hosted students include Australia, England, Ghana, Honduras, Ireland, Italy, and Malawi. The school continuously seeks to expand these opportunities. International rotations are considered elective experiences.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5801 - PHARMACEUTICAL CARE TO UNDERSERVED POPULATIONS

Minimum Credits: 1
Maximum Credits: 6
A sequence of courses that address issues related to providing pharmaceutical care to underserved populations. Topic areas that will be addressed include: psychosocial factors impacting health, political and economic influences on health care access, community advocacy and resources, patient assessment, clinical problem solving skills, pharmacotherapy management, and patient education. Students will have opportunities for interdisciplinary care and educational sessions.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5806 - PEDIATRIC PHARMACEUTICAL CARE

Minimum Credits: 2
Maximum Credits: 2
Provides students with opportunities to acquire the knowledge and skills necessary to provide pharmaceutical care to pediatric patients of all ages.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5812 - HEALTHCARE INNOVATIONS 1

Minimum Credits: 1
Maximum Credits: 1
Students will be able to effectively participate in a healthcare innovation application team as either a leader or participant that results in the application of an evidence-based healthcare innovation, which leads to improved patient care. Students will be able to develop detailed and effective strategic frameworks from which they can outline and track their progress in implementing a healthcare innovation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5813 - ACUTE CARE PHARMACOTHERAPY SIMULATION

Minimum Credits: 3
Maximum Credits: 3
Course is designed to allow students to apply clinical knowledge, skills and attitudes gained in previous courses to care for patients with advanced cardiovascular diseases and those that are critically ill. Students will expand on the concepts gained throughout the pharmacotherapy of cardiovascular disease course. Course utilizes simulation based learning to enhance clinical decision-making processes. A major component of the course is self-study requiring an adult learning approach to education. The adult learning concept will require students to be responsible for and highly interactive in achieving the objectives of the course. This learning environment will foster clinical decision making and reinforce concepts learned throughout the school's curriculum. Also, it will provide an excellent source for objective assessment of student knowledge and performance.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5814 - GLOBAL HEALTH: DETERMINANTS AND APPLICATION

Minimum Credits: 3
Maximum Credits: 3
This course for third professional year pharmacy students will introduce and discuss important topics in global health, focusing specifically on care of the underserved in a global context. Topics discussed will include health policy and economics, determinants of health, essential medicines, community-oriented primary care, structural violence, malnutrition and tropical medicine. In addition to readings and weekly discussion groups, students will have the opportunity to gain valuable practice-based skills by working in underserved clinics in Pittsburgh.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5815 - CONCEPTS OF MANAGED CARE PHARMACY

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to understand the fundamental concepts in managed care pharmacy and the relation to the healthcare system. This course supports the school's mission by enabling students to better navigate and understand the healthcare system from the perspective of different stakeholders to help optimize pharmaceutical care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5819 - COMMUNITY LEADERSHIP INNOVATION & PRACTICE (CLIP)

Minimum Credits: 3
Maximum Credits: 3
Course is designed especially for students interested in advancing and leading change in community pharmacy practice. The objective is to mentor and support students in effective and meaningful community pharmacy-based patient care research. Students will engage in a combination of on-line lecture content and small group; weekly discussions throughout the summer months. Students will initiate and complete a research project in the community. The purpose of the project is to: 1. Familiarize students with the key components in carrying out a valid research projec from conceptualization to final report (abstract; meeting presentation). 2. Develop research problem solving skills through working group discussions and by working research problem solving skills through working group discusssions and by working closely with project mentor. 3. Enhance verbal and written communication skills through formal and informal presentations and scientific writing. 4. Contribute to the diversity of the students' expertise through meeting and discussing with experts in community practice and research nationally.
Academic Career: Graduate
Course Component: Workshop

Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5820 - PHARMACY INNOVATION 1

Minimum Credits: 1
Maximum Credits: 1
The course provides basic insights into issues that affect the care of patients in the community through discussions of contemporary topics and further develops the student's skills in research by continuing the analysis and reporting of projects from community pharmacy health service research 1. Specifically, students will enhance their critical thinking skills by examining the drivers for specific contemporary issues (e.g. pharmacist role in an accountable-care organization) and by learning to ask testable scientific questions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5821 - PHARMACY INNOVATION 2

Minimum Credits: 1
Maximum Credits: 1
The course provides basic insights into issues that affect the care of patients in the community through discussions of contemporary topics and further develops the student's skills in research by continuing the analysis and reporting of projects from community pharmacy health service research 1. Specifically, students will enhance their critical thinking skills by examining the drivers for specific contemporary issues (e.g. pharmacist role in an accountable-care organization) and by learning to ask testable scientific questions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5825 - HEALTHCARE INNOVATIONS 2

Minimum Credits: 2
Maximum Credits: 2
Course is to provide the students who have successfully completed Healthcare Innovations 1 the opportunity to apply what they have learned by observing successful and unsuccessful innovation applications within the VA health system in Pittsburgh and using the innovation model master in Part 1 of this two-part course to provide evaluative insight as to why the innovations observed may have succeeded or failed to succeed. As part of this course, the students will also learn about the veterans engineering resource center (VERC) program at the VA and how it guides the development and implementation of innovations that aim to improve healthcare quality and outcomes for participating veterans.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5826 - ADVANCED PEDIATRIC PHARMACEUTICAL CARE

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to extend knowledge and skills in intensive and/or advanced pediatric specialties, building on previously developed fundamental knowledge of pediatric physiology, pathophysiology, pharmacology and therapeutics, so as to advance pharmaceutical care for infants and children with selected disorders. The course will focus on integration of science and practice to achieve outcomes that enhance patient care and quality of life.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5830 - DISCOVERING SCIENTIFIC INQUIRY (DSI)

Minimum Credits: 2
Maximum Credits: 2
The primary purpose of the course is to adequately prepare learners to execute an outcomes research-based project during the P4 curriculum. As a required component of the pharmacotherapy scholars program, this course will enable P3 students in the spring semester to design a study, submit the required institutional review board documents, and strengthen their data analysis skills.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5832 - LITERATURE AND FILM TO UNDERSTAND PATIENT-PRACTITIONER EXPERIENCES

Minimum Credits: 1
Maximum Credits: 1
This course is open to students from across the health sciences and will be directed by an interprofessional faculty team. This course emphasizes the importance of understanding the universal human aspects of health and disease to further develop empathetic and holistic skills among health professional students. The importance of interprofessional collaboration as a mechanism to improve patient outcomes will be explored. Students and faculty will read and/or view selected works that focus on the human condition that may impact the physical and/or psychological health of the patient, families, communities, and care providers - and their interaction with the health care system. Guided discussion that helps students to reflect on the humanistic aspects of health care will be conducted.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5834 - PYTHON FOR DATA MANAGEMENT AND ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
This course will provide an introduction to programming, data processing, and data analytics using Python for highly motivated students with little or no prior experience in programming. The course will focus on learning the Python programming language in the context of working with data, planning and organizing programs, commonly-used algorithms, data management, data cleaning, and basic data mining.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5835 - REINVENTING THE INCUMBENT: DESIGNING AN INTRAPRENEURSHIP STRATEGY

Minimum Credits: 1
Maximum Credits: 1
The goal of this course series is to introduce didactic and experiential elements of entrepreneurship for pharmacy students. This course offers students the foundations required to successfully understand, create, and execute entrepreneurial ideas in pharmacy. This includes learning from success in other fields, understanding the components that comprise pharmacy, and identifying current opportunities in pharmacy. Concepts of business models, funding, consumer behavior in healthcare and landscape reviews of technology in healthcare will be reviewed in this course. Career focuses for students would benefit in learning about starting a new company to disrupt incumbents, starting and managing new projects within an existing corporation, and new Management within the field of innovation.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5836 - SIDE PROJECT: BUILDING VALUE WITH YOUR SPARE TIME

Minimum Credits: 1
Maximum Credits: 1
The goal of this course series is to introduce didactic and experiential elements of entrepreneurship for pharmacy students. This course offers students the foundations required to successfully understand, create, and execute entrepreneurial ideas in pharmacy. This includes learning from success in other fields, understanding the components that comprise pharmacy, and identifying current opportunities in pharmacy. Concepts of start-up methodology, management/leadership, and company culture will be reviewed in this course. Career focuses for students would benefit in learning about starting a new company to disrupt incumbents, starting and managing new projects within an existing corporation, and new Management within the field of innovation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5837 - INTRO TO PSYCHOPHARMACOLOGY & PSYCHIATRIC DISORDERS: AN INTERPROFESSIONAL APPROACH

Minimum Credits: 3
Maximum Credits: 3
This course will serve as an introduction to psychopharmacology and the management of common psychiatric disorders including substance use disorders. This course is designed to familiarize students with the fundamentals of pharmacological as well as non-pharmacological treatment from a historical, sociological and practice perspective. This course aims to increase mental health literacy and enhance practitioner competency while elucidating the roles of healthcare providers within an interprofessional team framework. This is an introductory course. No prerequisites are required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Pharmacy students only.

PHARM 5838 - IMPROVISATION FOR CLINICIANS

Minimum Credits: 1
Maximum Credits: 1
Principles of improvisation are surprisingly applicable in clinical settings. The central tenant of improv is acceptance. Using the core philosophy of "Yes, and", improvisers learn to listen, accept, and empathize. Clinicians must also use these same skills to communicate with their patients and empathize with them. Improvisers use teamwork and spontaneity to build scenes. Clinicians must collaborate learn to calmly handle unexpected scenarios. Improvisers use techniques and exercises to hone these skills, which, for clinicians, can lead to better patient interactions, collaboration, presentation skills, and even lower stress. We will learn about the principles of improv, exercises used to develop skills, and how improv training has been applied in clinical settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5839 - COMPREHENSIVE DIABETES MANAGEMENT

Minimum Credits: 2
Maximum Credits: 2

This internet-based course provides students with a multidisciplinary foundation in the principles of diabetes management. Students will develop their knowledge and ability to assess, manage, educate and monitor patients with diabetes. Pathophysiology, monitoring, complications, and treatment including pharmacotherapy, medical nutrition therapy, and exercise therapy will be explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5840 - PALLIATIVE CARE PHARMACOTHERAPY

Minimum Credits: 2
Maximum Credits: 3
This semester long elective course is designed to provide the student with an advanced understanding of palliative and hospice care principles, the pharmacotherapeutic management of pain and non-pain symptoms occurring in patients with advanced illness, and the process of deprescribing. This elective will expand on the concepts gained throughout the first and the second professional years. The purpose of this course is to prepare the student to develop rational, patient-centered, and goal directed drug therapy and monitoring plans for patients with life-limiting illnesses throughout the life continuum. The goal of this elective experience is for the students to develop the attitudes, knowledge and skills necessary to participate in effective and compassionate palliative care.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5842 - PHARMACY IN THE WORLD OF TOMORROW

Minimum Credits: 1
Maximum Credits: 1
This class would be a means of educating students on what to expect in the coming years, the health impacts of climate change, and how they can be greater global citizens moving forward. The structure of the class would be split into two parts. The first half of the class would act as a kind of journal club to give the students the space and opportunity to learn about the socio-political and systemic impact of rising global temperature. The second half of the class will be focused more on discussing what can be done and how pharmacy could look in the future. Topics will range from climate apartheid, disaster preparedness, and the crumbling of infrastructure.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5843 - INTERNSHIP FOR ADVANCING PRACTICE

Minimum Credits: 0
Maximum Credits: 0
Students enrolled in this course will have the opportunity to reflect on the relationship of their outside-the-classroom pharmacy-related internship with their development of PITT Pharmacy curricular outcomes and on their pursuit of a career in pharmacy.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 5844 - QUEERNESS AND HEALTHCARE

Minimum Credits: 1
Maximum Credits: 1
This course will prepare the student to assess and guide comprehensive medical treatment for queer individuals. This includes gender affirmation, healthcare considerations for queer-specific risk factors, and general primary care not associated with gender and sex. Core concepts to be addressed include cultural competency and inclusive language, screening and diagnosis, gender affirming hormone therapy,

gender affirming surgeries, psychotherapy, primary and preventative care, and empathy with the queer experience.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PHARM 5845 - COMMUNITY PHARMACY LEADERSHIP AND MANAGEMENT

Minimum Credits: 1
Maximum Credits: 1
This is an elective course offered to students interested in management and leadership in community pharmacy practice. This course will provide the foundation to manage the responsibilities of pharmacy managers and pharmacy business owners and leaders, with a focus on application of concepts in community pharmacy practice. Content covered will include leadership principles and management concepts such as community pharmacy financials, pharmacy workflow optimization, management and billing for clinical services, and technology in community pharmacy. Throughout this course, students will be challenged to become active self-directed learners, recognizing their personal educational needs, selecting appropriate learning resources, and evaluating their own progress. This course will incorporate a series of guest content experts to complement contributing faculty expertise. The purpose of this course is to provide students with foundational knowledge for entry into leadership and management roles in community pharmacy practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5846 - ACADEMIC TEACHING EXPERIENCE IN PHARMACY SIMULATION

Minimum Credits: 2
Maximum Credits: 2
This is a 2-credit elective offered for third professional year PharmD students to provide opportunities to develop selected knowledge and skills of effective educators in pharmacy and particularly in simulation in the Pharmacotherapy of Cardiovascular Disease course. Students will examine foundational theories of adult learning, evidence-based instructional design, active learning strategies, feedback and debriefing techniques relevant to pharmacy simulation. Emphasis is placed on applying this knowledge during facilitated formative simulation activities at the School of Pharmacy and the WISER Center.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PHARM 5847 - HEALTHCARE SALES & MARKETING

Minimum Credits: 3
Maximum Credits: 3
This course educates students on contemporary healthcare sales and marketing as it directly applies to pharmacy. Concepts to be covered include the evolution of healthcare marketing, crafting effective marketing plans, key marketing channels, pricing strategies, and measuring the return on investment (ROI) for your campaigns.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5848 - GRADUATE EXECUTIVE BOARDROOM

Minimum Credits: 3
Maximum Credits: 3
This interactive elective course incorporates top pharmaceutical and health care executives and builds on the business and management concepts and principles learned in earlier courses. Students are engaged in a structured understanding of the "businesses of medicines in health care" and related fields that impact the profession in an executive boardroom format. This elective course follows the dollar from patient to product/service.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5861 - MENTORED INQUIRY IN PHARMACY PRACTICE 1

Minimum Credits: 1
Maximum Credits: 3
Mentored Inquiry elective courses promote student opportunities to personalize education by engaging in mentored experiences in a particular area of pharmaceutical science, pharmacy practice, or pharmacy education through individual or small group work under the direction of a faculty member. Mentored Inquiry activities take the form of immersion in a project with science, professional or patient care focus as a longitudinal experience co-designed by student and faculty mentor. Mentored Inquiry academic credit hours are determined by time devoted to the activity each week and is dependent upon the nature of the experience, expected commitment of the student, and stated outcomes of the project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PHARM 5862 - MENTORED INQUIRY IN PHARMACY PRACTICE 2

Minimum Credits: 1
Maximum Credits: 3
Mentored Inquiry elective courses promote student opportunities to personalize education by engaging in mentored experiences in a particular area of pharmaceutical science, pharmacy practice, or pharmacy education through individual or small group work under the direction of a faculty member. Mentored Inquiry activities take the form of immersion in a project with science, professional or patient care focus as a longitudinal experience co-designed by student and faculty mentor. Mentored Inquiry academic credit hours are determined by time devoted to the activity each week and is dependent upon the nature of the experience, expected commitment of the student, and stated outcomes of the project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PHARM 5863 - MENTORED INQUIRY IN PHARMACY PRACTICE 3

Minimum Credits: 1
Maximum Credits: 3
Mentored Inquiry elective courses promote student opportunities to personalize education by engaging in mentored experiences in a particular area of pharmaceutical science, pharmacy practice, or pharmacy education through individual or small group work under the direction of a faculty member. Mentored Inquiry activities take the form of immersion in a project with science, professional or patient care focus as a longitudinal experience co-designed by student and faculty mentor. Mentored Inquiry academic credit hours are determined by time devoted to the activity each week and is dependent upon the nature of the experience, expected commitment of the student, and stated outcomes of the project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PHARM 5864 - MENTORED INQUIRY IN PHARMACY PRACTICE 4

Minimum Credits: 1
Maximum Credits: 3
Mentored Inquiry elective courses promote student opportunities to personalize education by engaging in mentored experiences in a particular area of pharmaceutical science, pharmacy practice, or pharmacy education through individual or small group work under the direction of a faculty member. Mentored Inquiry activities take the form of immersion in a project with science, professional or patient care focus as a longitudinal experience co-designed by student and faculty mentor. Mentored Inquiry academic credit hours are determined by

time devoted to the activity each week and is dependent upon the nature of the experience, expected commitment of the student, and stated outcomes of the project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PHARM 5865 - MENTORED INQUIRY IN PHARMACY PRACTICE 5

Minimum Credits: 1
Maximum Credits: 3
Mentored Inquiry elective courses promote student opportunities to personalize education by engaging in mentored experiences in a particular area of pharmaceutical science, pharmacy practice, or pharmacy education through individual or small group work under the direction of a faculty member. Mentored Inquiry activities take the form of immersion in a project with science, professional or patient care focus as a longitudinal experience co-designed by student and faculty mentor. Mentored Inquiry academic credit hours are determined by time devoted to the activity each week and is dependent upon the nature of the experience, expected commitment of the student, and stated outcomes of the project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PHARM 5866 - MENTORED INQUIRY IN PHARMACY PRACTICE 6

Minimum Credits: 1
Maximum Credits: 3
Mentored Inquiry elective courses promote student opportunities to personalize education by engaging in mentored experiences in a particular area of pharmaceutical science, pharmacy practice, or pharmacy education through individual or small group work under the direction of a faculty member. Mentored Inquiry activities take the form of immersion in a project with science, professional or patient care focus as a longitudinal experience co-designed by student and faculty mentor. Mentored Inquiry academic credit hours are determined by time devoted to the activity each week and is dependent upon the nature of the experience, expected commitment of the student, and stated outcomes of the project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PHARM 5867 - MENTORED INQUIRY IN PHARMACY PRACTICE 7

Minimum Credits: 1
Maximum Credits: 3
Mentored Inquiry elective courses promote student opportunities to personalize education by engaging in mentored experiences in a particular area of pharmaceutical science, pharmacy practice, or pharmacy education through individual or small group work under the direction of a faculty member. Mentored Inquiry activities take the form of immersion in a project with science, professional or patient care focus as a longitudinal experience co-designed by student and faculty mentor. Mentored Inquiry academic credit hours are determined by time devoted to the activity each week and is dependent upon the nature of the experience, expected commitment of the student, and stated outcomes of the project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PHARM 5868 - MENTORED INQUIRY IN PHARMACY PRACTICE 8

Minimum Credits: 1
Maximum Credits: 3
Mentored Inquiry elective courses promote student opportunities to personalize education by engaging in mentored experiences in a particular area of pharmaceutical science, pharmacy practice, or pharmacy education through individual or small group work under the direction of a faculty member. Mentored Inquiry activities take the form of immersion in a project with science, professional or patient care

focus as a longitudinal experience co-designed by student and faculty mentor. Mentored Inquiry academic credit hours are determined by time devoted to the activity each week and is dependent upon the nature of the experience, expected commitment of the student, and stated outcomes of the project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PHARM 5892 - GLOBAL HEALTH: INTERNATIONAL PHARMACY EXPERIENCE

Minimum Credits: 1
Maximum Credits: 2
This elective course for student pharmacists will introduce and discuss important topics in global health and pharmacy practice, culminating in a one-week experience over spring break (1 credit) or a two-week experience in the published Summer term (2 credits) to Windhoek, Namibia. The overarching goal of this elective is for students to experience the practice of pharmacy in a global setting and learn ways to strengthen pharmacy systems locally and internationally. The rich multi-cultural patient population in varied settings will expand students' knowledge, skills, and attitudes in working with diverse health beliefs and practices.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5910 - US HEALTHCARE SYSTEM

Minimum Credits: 2
Maximum Credits: 2
The aim of this course is to provide students with an overview of the U.S. Health care delivery system. This course covers the structure of health care delivery systems and delivery of health care services including personnel and facilities; organization, financing, and quality assessment with special attention to medication distribution and management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5911 - HEALTHCARE SALES AND MARKETING

Minimum Credits: 2
Maximum Credits: 2
This course educates students on contemporary healthcare sales and marketing as it directly applies to pharmacy. Sales concepts to be covered include understanding management prospects, developing your sales value proposition, finding management and penetrating the no-talk zone, generating leads: marketing to management, generating leads, cold calling management, meeting the prospect for the first time, presenting to prospects ' the executive briefing, preparing a management proposal that works, negotiating with management, selling to targeted key or major accounts, managing your sales cycle and forecasting, managing sales objections; using storytelling as a business sales tool; managing your competition, following up after the sale, and making a difference with business ethics. Health care marketing is undergoing dramatic reinvention and change because of emerging trends, reform uncertainties, the emergence of social marketing and a renewed focus on quality, outcome and prevention. Executives are demanding higher impact and bigger returns from marketing investments and marketing professionals are more closely aligning their efforts with strategic objectives, customer experience and the integration of communications across multiple platforms and channels. This course offers effective approaches to proactive health care marketing with specific action steps, strategies, techniques and tactics to move markets and increase visibility, awareness, understanding, market share and profitability.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5912 - LEADERSHIP AND ETHICS IN HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
This course provides a foundational introduction to pharmaceutical/health care leadership and ethics. An analysis of dominant methods in leadership theories and healthcare ethics will be discussed and analyzed from historical, systematic, and religious perspectives. Ethical dilemmas of leadership, the foundation and context of moral choice, the moral implication of decision-making within healthcare organization and the impact on employees, morale, personal integrity, and the patients. Practical issues are engaged to illustrate effective leadership and ethical frameworks for sound decision making. Students will be able to understand and analyze health care leadership and ethics theory and methods as well as major applied topics; critically relate health care leadership and ethics with multi-disciplinary fields in health care as a diverse and national enterprise; integrate academic learning with experiential learning in clinical/organizational experiences; and demonstrate knowledge, skills, competencies and character traits to provide ethical leadership.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5914 - GRADUATE EXECUTIVE BOARDROOM

Minimum Credits: 2
Maximum Credits: 2
Following the healthcare dollar: this interactive offering will engage students in a structured understanding of the business side of medicines in the health care industry and other related fields. For instance, students will study different leadership styles and corporate cultures in an organization, follow health spending longitudinally and vertically on medicines from consumer to product and service, discover how market conditions affect operations and profitability and learn about the executive's career development path. Entrepreneurship in healthcare: students will engage in a structured understanding of the business side of medicines in the health care industry and other related fields. This course delves into entrepreneurship in medicines and health. The fundamentals of entrepreneurship medicines and health will be discussed and students will study and contrast the primary entrepreneurship styles including characteristics of those who succeed through discovery, adaptation, and fortitude. Entrepreneurship and intrapreneurship models will be utilized. Students will contrast methods of innovation and supporting business cultures. The impact of market conditions will be analyzed in terms of how they affect success of such endeavors and learn about the executive's career development path. Many past students have used the learning and networking opportunities from this course to shape and propel their careers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5915 - EXECUTIVE HEALTHCARE INNOVATIONS

Minimum Credits: 1
Maximum Credits: 1
This course will give students an understanding of managing change through the lens of complexity theory using the principles of implementation science. They will understand the levers important in change and how to assess an organization for readiness to change. Students will be able to effectively participate in a health care innovation application team as either a leader or participant that results in the application of an evidence-based health care innovation, which leads to improved patient care. They will be able to develop detailed and effective strategic frameworks from which they can outline and track the progress in implementing a health care innovation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5916 - PREDICTIVE ANALYTICS IN PHARMACY AND KNOWLEDGE DISCOVERY FROM BIG DATA

Minimum Credits: 1
Maximum Credits: 1
The overall objective of this course in Predictive Analytics in Pharmacy is to familiarize students with sources of big data, large data

analytic techniques, and their wide-applicability in guiding decisions in the areas of patient care, drug research & development, healthcare policy, and cost effectiveness. For the most common techniques, the objective is to acquire sufficient mastery through hands-on analyses of real world data so that students are prepared to apply these techniques in future career positions. For other, more advanced techniques, the objective will be to develop a familiarity about how these methods are used and what questions they can answer.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5924 - HEALTH SYSTEM PHARMACY MANAGEMENT 1

Minimum Credits: 3
Maximum Credits: 3
This is the first of two courses designed to provide focused learning in health system pharmacy management/leadership. Students will develop a basic understanding of organizational culture and how it affects personnel and performance, human resource management including hiring, training, assessment and development, and compensation strategies. The course will also address corporate pharmacy management functions; multi-site management and control; relevant accreditation standards (JCAHO, CMS, etc.)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5925 - HEALTH SYSTEM PHARMACY MANAGEMENT 2

Minimum Credits: 3
Maximum Credits: 3
This is the second of two courses designed to provide focused learning in health system pharmacy management/leadership. The first course prepares students to plan and manage pharmacy operations in a hospital pharmacy. This course will address health system pharmacy organization quality standards; patient satisfaction; industry specific financial analysis (financial and managerial statements, cash flow, return on investment); health system reimbursement structure, contracting, purchasing and inventory management (supply chain), and finally the impact of health system informatics systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5926 - ADVANCED COMMUNITY PHARMACY MANAGEMENT 1

Minimum Credits: 3
Maximum Credits: 3
This is the first of two courses designed to provide an overview of contemporary management issues in pharmacy with a focus on community pharmacy. Students will develop a basic understanding of organizational culture and how it affects personnel and performance. The course will cover the basics of human resource management including hiring, training, assessment and development as well as compensation strategies. The course will also cover corporate pharmacy functions as well-as multi-site management and control. Students will use the "Pharmacy Management " Essentials for All Practice Settings, textbook, readings from publications, videos, and case studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5927 - ADVANCED COMMUNITY PHARMACY MANAGEMENT 2

Minimum Credits: 3
Maximum Credits: 3
This is the second of two courses designed to provide an overview of contemporary management issues in pharmacy with a focus on

community pharmacy. The first course prepares students to plan and manage pharmacy operations in a community pharmacy. Students will learn to develop a business model and to establish key production and quality metrics. Students will gain an understanding of financial analysis including how to construct and interpret operating statements, key financial measures, cash flow, and return on investment. Special emphasis will be given to understanding various reimbursement models and contracts for services in addition to prescription fulfillment. Students will learn to manage purchasing and inventory. Students will use the "Pharmacy Management - Essentials for All Practice Settings" textbook, readings from publications, videos, and case studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5928 - SPECIALTY PHARMACY MANAGEMENT 1

Minimum Credits: 3
Maximum Credits: 3
This course offers students the first part of a focused learning in specialty pharmacy. The course will address specialty drug and clinical management; specialty pharmacy patient management (intake & outcomes); as well as address relevant accreditation standards (URAC, etc.).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5929 - SPECIALTY PHARMACY MANAGEMENT 2

Minimum Credits: 3
Maximum Credits: 3
This course offers students the second part of a focused learning in specialty pharmacy. The course will address specialty pharmacy organizational quality standards; specialty pharmacy customer service, communications, and disclosure standards; industry specific financial analysis (financial and managerial statements & indices); specialty pharmacy operations; specialty pharmacy contracting, purchasing and inventory management (supply chain), and finally specialty pharmacy informatics management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5930 - PHARMACY BENEFITS MANAGEMENT 1

Minimum Credits: 3
Maximum Credits: 3
This is the first of two courses designed to provide focused learning in the practice of managed care pharmacy. Students will develop a basic understanding of how managed care pharmacy impacts the healthcare system. The course will focus on managed care, pharmacy benefit managers, prescription drug benefit, formulary management, impact of specialty pharmacy, and overall plan design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

PHARM 5931 - PHARMACY BENEFITS MANAGEMENT 2

Minimum Credits: 3
Maximum Credits: 3
This is the second of two courses designed to provide focused learning in the practice of managed care pharmacy. This course will build on the framework from Pharmacy Benefits Management I, allowing students to confidently engage health and benefits decision makers as an informed advisor. Students will be exposed to various guest speakers, helping to broaden their scope of understanding as it relates to

industry dynamics. Additionally, students will be expected to demonstrate their comprehensive knowledge through a plan design and contract exercise.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Pharmacy Business Admin (PBA-ACG) Students Only

Philosophy

PHIL 1040 - ARISTOTLE

Minimum Credits: 3
Maximum Credits: 3
This is an advanced undergraduate course examining the basic concepts of Aristotle's metaphysics, physics, ethics and logic.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: Any Other Philosophy Course

PHIL 2010 - GREEK PHILOSOPHICAL TEXTS

Minimum Credits: 3
Maximum Credits: 3
This is a seminar primarily intended for CPAS students to help them gain expertise in reading philosophy in Greek.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2041 - STUDIES IN ARISTOTLE

Minimum Credits: 3
Maximum Credits: 3
Study of selected Aristotelian texts and topics (readings in Greek). Course may be repeated for credit if the material covered is different.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2050 - TOPICS IN HISTORY OF PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
Study of selected texts and topics in the history of philosophy. Course may be repeated for credit if the material covered is different.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHIL 2070 - ANCIENT PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
This is a beginning to intermediate level graduate seminar in ancient philosophy, with emphasis on Plato and Aristotle, taken almost exclusively by students in the doctoral program, usually during their first or second year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2071 - STUDIES IN ANCIENT PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
Study of selected topics and texts in ancient philosophy (readings in Greek). Course may be repeated for credit if the material is different.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2075 - TOPICS IN ANCIENT PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
Study of selected topics in the area of ancient philosophy. Course may be repeated for credit if the material covered is different.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

PHIL 2079 - FROM PHILO TO PHILOPONUS: AN INTRODUCTION TO THE HISTORY OF PHILOSOPHY IN LATE ANTIQUITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2110 - DESCARTES

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Descartes, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

PHIL 2120 - SPINOZA

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Spinoza, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2130 - LEIBNIZ

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Leibniz, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Medieval & Renaissance Studies, West European Studies

PHIL 2150 - TOPICS IN MODERN PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
Study of selected topics in the area of modern philosophy. Course may be repeated for credit if the material covered is different.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHIL 2160 - HUME

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Hume, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2170 - KANT

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Kant. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

PHIL 2171 - KANTIAN ETHICS

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in Kantian ethics, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

PHIL 2175 - STUDIES IN KANT

Minimum Credits: 3
Maximum Credits: 3
Study of Kantian texts and topics. Course may be repeated for credit if the material covered is different.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2180 - HEGEL

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Hegel, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

PHIL 2183 - MARX

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Marx, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2200 - FREGE

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Frege, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2210 - WITTGENSTEIN

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Wittgenstein. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

PHIL 2220 - HEIDEGGER

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Heidegger, taken almost exclusively by students in the doctoral

program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2300 - ETHICS (CORE)

Minimum Credits: 3
Maximum Credits: 3
This is an advanced introduction to the foundations of ethics. We begin with basic topics from Kant about the nature of morality and the task for moral philosophy, reading defenders and critics of Kant's approach. This will serve as a point of entry into contemporary discussions about the ground of normative reasons for action, and the nature of moral and other forms of normativity. In this way we will work through leading positions in meta-ethics: varieties of constructivism, realism, and naturalism. We will end with an exploration of Plato's question about whether it is good for the just person to be just. There will not be a required text for this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Philosphy (PHD)

PHIL 2305 - TOPICS IN ETHICS

Minimum Credits: 3
Maximum Credits: 3
A study of selected topics in ethics. Course may be repeated for credit if material is different.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHIL 2310 - MORAL THEORY

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in moral theory, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2316 - ETHICS AND PUBLIC LIFE

Minimum Credits: 3
Maximum Credits: 3
This course will aid students in making and evaluating normative arguments and analyzing normative concepts as relevant to the formulation and administration of public policy. It will also present and discuss a number of substantive issues of ethical responsibility, rights and justice that are relevant to government officials, both in the U.S. and other countries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHIL 2320 - SOCIAL PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in social philosophy,. The exact contents of the course vary from one occasion to the

next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2330 - POLITICAL PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in political philosophy, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2335 - TOPICS CONTEMPORARY PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar on various topics in contemporary philosophy. The subject matter will change.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2385 - RATIONALITY

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in philosophical issues related to rationality, taken almost exclusively by students in the doctoral program usually during their second or third year of residence. The exact contents of this course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2390 - PHILOSOPHY OF LAW

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of law, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2400 - METAPHYSICS-EPISTEMOLOGY (CORE)

Minimum Credits: 3
Maximum Credits: 3
This is an introductory to intermediate level graduate seminar in metaphysics and epistemology, required of all students in the doctoral program in philosophy, and taken in the first or second year of residence.
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Philosphy (PHD)

PHIL 2410 - PHILOSOPHY OF WILFRID SELLARS

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of Wilfrid Sellers, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2420 - PHILOSOPHY OF LANGUAGE

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of language, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

PHIL 2421 - TOPICS IN PHILOSOPHY OF LANGUAGE

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in various topics in the philosophy of language taken by students in the doctoral program. The exact content of this course varies from one occasion to another.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2440 - PHILOSOPHY OF MIND

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of mind, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2443 - ARTIFICIAL INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
This is an advanced graduate seminar on philosophical questions about artificial intelligence.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2445 - PHILOSOPHY OF ACTION

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of action taken almost exclusively by students in the doctoral program.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2460 - EPISTEMOLOGY

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in epistemology, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2465 - DECISION THEORY

Minimum Credits: 3
Maximum Credits: 3
A graduate seminar on topics in decision theory
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2480 - METAPHYSICS

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in metaphysics. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2485 - PERSONAL IDENTITY

Minimum Credits: 3
Maximum Credits: 3
This is an advanced seminar on issues in personal identity.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2499 - SYMBOLIC LOGIC

Minimum Credits: 3
Maximum Credits: 3
This graduate course develops skills in formal and informal reasoning in predicate-quantifier logic, and covers formal semantics for sentential logic, informal semantics for predicate-quantifier logic, and elementary syntactic metatheory.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHIL 2500 - ADVANCED LOGIC (CORE)

Minimum Credits: 3
Maximum Credits: 3
This is the first term of an introductory graduate course in mathematical logic. Topics are completeness of proposition al logic and quantification theory and elementary set theory.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Philosphy or History and Philosophy of Science (PHD)

PHIL 2505 - TOPICS IN PHILOSOPHICAL LOGIC

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in various topics in philosophical logic, taken almost exclusively by students in the doctoral program. The exact content of this course varies from one occasion to another.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2533 - DESCARTES

Minimum Credits: 3
Maximum Credits: 3
An examination of some of the major works of Descartes. Also a look at his precursors, his culture and his influences.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Medieval & Renaissance Studies, West European Studies

PHIL 2580 - PHILOSOPHY OF MATHEMATICS

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar in the philosophy of mathematics, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2585 - TOPICS IN PHILOSOPHY OF MATH

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar on topics in the philosophy of mathematics, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHIL 2600 - PHILOSOPHY OF SCIENCE CORE SEM

Minimum Credits: 3
Maximum Credits: 3
This seminar is an intensive and advanced introduction to some of the main themes and problems in philosophy of science including the nature of evidence, theory comparison, the theory-observation distinction, the meaning of theoretical terms, scientific explanation and scientific change.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Philosophy (PHD) or History and Philosophy of Science (PHD)

PHIL 2603 - HISTORY AND PHILOSOPHY OF SCIENCE CORE SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course will consider the nature of integrated history and philosophy of science. Through key exemplars, we will critically explore different strategies for researching and writing history and philosophy of science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2610 - SPECIAL TOPICS IN THE HISTORY OF THE PHILOSOPHY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course deals with selected special topics in the history of the philosophy of science. It is an intermediate to advanced graduate seminar, usually taken by students in the doctoral program. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2615 - SCIENCE AND METAPHYSICS

Minimum Credits: 3
Maximum Credits: 3
The appropriate relationship between science, philosophy of science, and metaphysics has recently been a topic of considerable controversy. This course will selectively examine the changing historical relationship between these fields in the 20th century before turning toward contemporary debates. Our focus will be on both the broad methodological dispute(s) and certain special topics, such as causation, laws of nature, or modality, where one can see this debate play out.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2625 - RECENT TOPICS IN PHIL OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
In this seminar we will read and discuss recent works in the philosophy of science. The choice of authors and topics will depend on who is doing the most interesting new work in the field.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2627 - PHILOSOPHY OF QUANTUM MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the philosophical problems of quantum mechanics. Topics covered may include: the quantum measurement problem; non-locality, ¿EPR, and Bell's inequality; the no-go results of Bell/Kochen/Specker, Gleason, and PBR; alternatives to quantum mechanics (such as dynamical-collapse theories and the de Broglie-Bohm theory); the Everett (many-worlds) interpretation and the role of decoherence; operationalist and psi-epistemic approaches to quantum theory. (Not all topics will be covered in all years.)
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2628 - PHILOSOPHY OF PHYSICS

Minimum Credits: 3
Maximum Credits: 3
This seminar investigates philosophical issues in the foundations of fundamental theories of physics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2631 - TOPICS IN HISTORY AND PHILOSOPHY OF PHYSICS

Minimum Credits: 3
Maximum Credits: 3
This is a survey course for the study of any collection of topics in the history and philosophy of physics, to be determined on the basis of student and faculty interest.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2633 - PHILOSOPHY OF COGNITIVE SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course will survey the main philosophical questions provoked by cognitive science. Students will acquire a comprehensive grasp of the main issues in this field. We will discuss questions such as: is the mind modular? Is the mind embodied and situated? Do we ascribe mental states by simulation or by means of a theory? What is consciousness?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PHIL 2635 - COGNITIVE AND NEURAL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This course will examine the theoretical foundations of neuroscience, with a special focus on systems neuroscience, asking what progress has been made towards a general account of neural processing and discussing obstacles to theoretical unification. Example seminar topics are; the neuron doctrine, information theory and the brain, network science, the Bayesian brain, dynamic representation, understanding intrinsic activity, and cognitive architecture.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2636 - PHILOSOPHY OF MEDICINE

Minimum Credits: 3
Maximum Credits: 3
This seminar course provides a graduate level introduction to the philosophy of medicine. We will explore both classic and recent work. In line with the orientation of the field, we will examine metaphysical/conceptual and epistemic questions in medicine and medical research rather than the kinds of questions traditionally asked in the field of bioethics. Also following the contemporary focus of philosophy of medicine, readings are situated in the philosophy of science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2637 - PHILOSOPHY OF THERMODYNAMICS AND STATISTICAL MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This course covers foundational issues in thermodynamics and statistical mechanics. Topics covered may include: the interpretation of the Laws of Thermodynamics, and of central concepts in thermodynamics like equilibrium and reversibility; the Boltzmannian and Gibbsian approaches to statistical mechanics; the relation between thermodynamics and statistical mechanics; the origin of time-asymmetry and irreversibility; Maxwell's demon. (Not all topics will be covered in all years.)
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2638 - PHILOSOPHY OF GAUGE THEORY

Minimum Credits: 3
Maximum Credits: 3
This course studies conceptual and foundational issues in gauge theories. Topics may include: the geometrization of gauge theory, surplus structure and gauge freedom, the Aharonov-Bohm effect, the holonomy interpretation, locality, gauge symmetries and the interpretation of associated physical quantities.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2653 - REALISM

Minimum Credits: 3
Maximum Credits: 3
What, if anything, makes scientific claims true or false? Is scientific language about anything? If it is, can we know which scientific claims are true, or can we arrange our beliefs to converge towards the truth? If not, what purpose can the enterprise of science serve? This seminar will examine these and related questions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2657 - PHILOSOPHY OF BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This seminar will consider foundational conceptual issues in biology including the nature and structure of biological explanation, the

possibility of laws in biology and the relationship of biology to other sciences, natural kinds and the classification of species, teleology and biological function. In addition we will explore cutting edge topics of robustness in complex biological systems and the challenges raised for causal inference, emergence and multi-level organization as well as the relationship between unity of science and pluralism.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2658 - MORALITY AND THE MIND-BRAIN SCIENCES

Minimum Credits: 3
Maximum Credits: 3
This course will examine the issues that the behavioral, cognitive, and brain sciences raise in relation to morality. The topics to be covered may be tilted towards ethical issues in these sciences (aka "neuroethics"), or the role of these sciences in understanding and explaining human morality ("moral psychology"). Topics in neuroethics may include neurological and brain enhancement, ethical and policy issues related to neuroimaging, mind control and "mindreading", and the neuroscience of free will and responsibility as these relate to criminal culpability. Examples of topics in moral psychology and moral cognition include neurodevelopment and the emergence of personhood, agency and the self, and the neural basis of moral judgements
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2661 - PHILOSOPHY OF SPACETIME AND SYMMETRY

Minimum Credits: 3
Maximum Credits: 3
This course explores the interpretation of spacetime theories (past, present, and perhaps future) and the role of symmetries (spacetime and otherwise) in the development and interpretation of physical theories. Topics covered may include: the debate over the reality of space and spacetime (that is, the debate between relationism and substantivalism); the relation between geometry, coordinate systems and reference frames; the modal, conceptual, and epistemic status of symmetry transformations; the relation between spacetime geometry and gravity. (Not all topics will be covered in all years.)
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2662 - CAUSALITY

Minimum Credits: 3
Maximum Credits: 3
Consideration of various theories of causality and how the theories relate to questions of metaphysics, epistemology and explanation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2663 - MODELS AND MODELING IN SCIENCE

Minimum Credits: 3
Maximum Credits: 3
The use of models and modeling strategies in science is ubiquitous. There is, however, no generally accepted, or received view about the nature and role models play in scientific theorizing. Models are sometimes said to represent scientific targets of interest. How do they do this? Models are sometimes said to be explanatory of behaviors of targets of interest. How do they do this? Is the representative function of models related to their explanatory capabilities? If so, how? This course considers questions of these sorts, examining as well, the fact that models (almost by definition?) appear to involve idealizations of various kinds. What role do idealizations play in modeling contexts? Are they essential? Are they eliminable? . . .
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2664 - PRAGMATISM AND SCIENTIFIC PRACTICE

Minimum Credits: 3
Maximum Credits: 3
Adopting a pragmatist stance is increasingly invoked in critiquing fundamentalism, representationalism, and unificationism in epistemology and metaphysics. Is the new pragmatist stance comprised of a set of basic doctrines, or a set of methods, or a set of problems? What are the varieties of pragmatism on offer? What are the relationships between pragmatism with pluralism, perspectivalism and the social nature of scientific practice? In this seminar we will consider recent work on pragmatism in the philosophy of science by Kitcher (2012 Preludes to pragmatism) Chang (2022 Realism for Realistic People), The Pragmatist Challenge (2023 Andersen and Mitchell eds.) and others.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2666 - EMPIRICISM IN SCIENCE

Minimum Credits: 3
Maximum Credits: 3
In the early twentieth century, influential empiricist philosophies of science were introduced by Carnap and the logical positivists and Reichenbach and logical empiricists. This seminar will survey the earlier history of these philosophies, their early twentieth century expressions, their later developments and consequences.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2669 - FEMINIST PHILOSOPHY OF SCIENCE

Minimum Credits: 3
Maximum Credits: 3
If there is a legitimate role for political values in scientific knowledge production, why should those values be feminist? In this course, we will explore the ways that feminist epistemologists and philosophers of science have characterized a positive role for feminist values in scientific theory and practice. We will ask what this means for traditional accounts of science as objective and value-free, and consider possible consequences of feminist arguments for how science ought to be done, and by whom. In particular, we'll examine feminist critiques of essentialism, biological determinism, and reductionism in science, using examples from sex differences research. We'll then consider how political values might play a role in so-called ``good science,'' focusing on underdetermination and the argument from inductive risk. We will examine arguments about the particular role(s) of feminist values in science by attending to the traditions of feminist empiricism and feminist standpoint theory. We will evaluate the consequences of these arguments for concepts of objectivity, for the structure of scientific communities, and for the authority and trustworthiness of scientific explanation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2670 - SCIENCE AND VALUES

Minimum Credits: 3
Maximum Credits: 3
This course will examine values as they appear in scientific reasoning and practice. It will deal with issues such as the distinction between cognitive and social values, and how values enter into the selection of theories and research projects, and their subsequent applications. It will also take up the ethical assumptions and implications of scientific judgments and policy decisions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2676 - BIOLOGICAL COMPLEXITY

Minimum Credits: 3
Maximum Credits: 3
Biological systems are multi-level, historically contingent, robust and evolved structures. What are the special complexities of biological organization and dynamics? Some have identified biocomplexity as the reasons there are no laws of biology, others have defended reductionist strategies to explain the complexity, and others have founded new disciplines, like systems biology, as a response to bio complexity. This seminar explores topics related to ontological and methodological challenges for scientific approaches to knowledge of biological systems.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2685 - PHILOSOPHY OF MIND AND MEDICINE

Minimum Credits: 3
Maximum Credits: 3
This seminar course will explore problems at the intersection of philosophy of mind and philosophy of medicine. Topics may include: abnormal states of consciousness, death, medical disorders and identity, empathy and the explanatory gap, pain, mental disorder versus neurological disorder, brain imaging, and free will and medical disorders.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2686 - PHILOSOPHY OF QUANTUM FIELD THEORY

Minimum Credits: 3
Maximum Credits: 3
This course covers quantum field theory (QFT) and its applications in particle physics and beyond. Topics covered will vary but may include: algebraic and Lagrangian formulations of QFT; the Interpretation of effective field theories; the relation between particles and fields; spontaneous symmetry breaking; the gauge principle.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2687 - THE EPISTEMOLOGY OF EXPERIMENTAL PRACTICES

Minimum Credits: 3
Maximum Credits: 3
Observation and experimentation have long been taken as central to the legitimacy of scientific claims. This seminar examines the assumptions and inferences involved in reasoning about experimental results.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2690 - THEORIES OF CONFIRMATION

Minimum Credits: 3
Maximum Credits: 3
This is an intermediate to advanced graduate seminar on the topic of induction and confirmation, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2695 - PRAGMATISM

Minimum Credits: 3
Maximum Credits: 3
The course focuses on key pragmatic texts from C. S. Pearce to the present. But it will also give some consideration to the historical background of pragmatism and to later critical responses and reactions. Emphasis will be upon those pragmatic teachings, especially in semantics, epistemology, and philosophy of science, that bear on currently controverted issues.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2801 - TOPICS IN PHILOSOPHY

Minimum Credits: 1
Maximum Credits: 1
A seminar for the discussion of recent work in philosophy. Topics will vary from term to term and the course may be taken multiple times.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

PHIL 2900 - TEACHING PHILOSOPHY

Minimum Credits: 1
Maximum Credits: 1
A practicum approach to train tas an tfs wherein faculty and senior graduate students train the more junior tas on how to teach philosophy. This course has been approved as an alternative to FACDEV 2200 for philosophy graduate students.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Philosophy (PHD)

PHIL 2902 - PRE-MA DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This is a directed study course, taken by one or a few students at a time, on a pre-arranged topic. It involves close supervision by an instructor, including reading, discussion, and written work.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

PHIL 2905 - CAREER DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
A practicum on the professional challenges of starting a career in academic philosophy.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

PHIL 2950 - DISSERTATION SEMINAR

Minimum Credits: 3
Maximum Credits: 3
The purposes of this seminar (which has very successful counterparts at other top graduate programs in philosophy) are multifold. It gives students working on dissertation projects a community of others in the same boat. It provides them with feedback on work in progress, and practice presenting their work to an audience wider than their committee. (This is important for the impression they make on the job market.) Supposing that each student admitted to candidacy makes a seminar presentation each semester, it hastens time to completion by imposing interim deadlines on the road to a completed dissertation. The seminar gives students who have been comprehensively evaluated but not yet defended a prospectus examples of other students who have successfully negotiated the transition.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Philosophy (PHD)

PHIL 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
This is a course through which students can receive graduate degree credit in philosophy for work that they undertake largely or entirely on their own, with little or no faculty supervision.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

PHIL 2999 - PROSPECTUS RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Each doctoral student in philosophy, when he or she is ready to begin working on the doctoral dissertation in earnest, must submit to a prospective dissertation committee a document, called a "prospectus", outlining the proposed dissertation topic, the envisioned treatment of that topic, and a rough plan for how to proceed. This course is a special directed study course for preparing that document.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

PHIL 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9
This course gives academic credit for research toward and writing of the doctoral dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

PHIL 3902 - POST-MA DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This is a directed study course, taken by one or a few students at a time, on a pre-arranged topic. It involves close supervision by an instructor, including reading, discussion, and written work.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Physical Medicine and Rehab

PMDREH 5410 - REHABILITATION SUB-INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
During this four-week elective for fourth year medical students, participants will function at an intern-level the student will be given intern-level responsibilities to manage inpatient rehabilitation patients. Student will be teamed with one attending and one or more PM&R residents and will be responsible for caring for their own patients, which includes rounding, writing notes, admitting and discharging patients, staffing team conferences with therapists, nurses, and other health care providers, and communicating with families under supervision of the team. Students will also be able to participate in therapy sessions and will gain exposure to prescription of orthoses. The student will be assigned to one team for the entire month to gain experience in the longitudinal care of rehab patients. Teaching will be bedside as well as small didactic sessions at the discretion of the attending. There is no exam and students will be evaluated on their participation and meeting the course objectives.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PMDREH 5450 - REHABILITATION MEDICAL CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
This four-week elective will demonstrate to the student the basic problems of patients and basic concepts of care for patients, referred to the division of rehab medicine. The student will be taught physical diagnostic techniques applicable to the disorders of musculoskeletal and neural systems. Students are expected to evaluate inpatients and develop a treatment plan under the supervision of division physicians. Common patient problems include hemiplegia, back pain, cervical spondylosis, arthritis and amputations. Electrodiagnostic studies will also be demonstrated.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PMDREH 5460 - PED PHYSCL MED/REHAB-INPATIENT

Minimum Credits: 0
Maximum Credits: 0
In this four-week elective the student will function in the capacity of an intern and care for hospitalized children with rehabilitation needs. Diagnosis will include cerebral palsy, myelomeningocele and other neuromuscular disorders. Skills in the physical and medical management of pediatric disability and an awareness of the other medical disciplines involved in the care of these children would be stressed.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PMDREH 5461 - PED PHYSCL MED/REHAB-OUTPATIENT

Minimum Credits: 0
Maximum Credits: 0
In this four-week elective the student will be involved in clinical evaluations of pediatric patients with multiple neuromuscular problems. This would include the differential diagnosis and physical exam as well as emphasis on electro diagnosis. In addition, some fundamentals of bracing and prosthesis prescriptions will be covered.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PMDREH 5465 - DISABILITIES CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
Students will participate in the medical care of patients in a variety of inpatient clinical settings and in both adult and pediatric outpatient settings. Teams consist of physiatrists, pediatricians, nurse practitioners, physical therapists, occupational therapists, and social workers. The student's role will include serving as liaison to the medical center, assisting in the daily care of individuals with disabilities, providing clients and staff with education about specific medical topics and advocating for the program and its clients within the medical center.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PMDREH 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PMDREH 5810 - PM&R RESEARCH

Minimum Credits: 0
Maximum Credits: 0
This four-week elective will allow the student to gain valuable experience in cutting edge research in physical medicine and rehabilitation (PM&R). The student will be precepted by faculty affiliated with the department of PM&R by meeting the following objectives: identify different sources of research funding; become familiar with effectively formulating grant proposals and budgets; learn to identify obstacles to performing productive research in an academic setting; assist in formulating effective research methodology; publication of an abstract.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PMDREH 5899 - INDEPENDENT STUDY IN PHYSICAL MEDICINE AND REHABILITATION

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PMDREH 5900 - EXTRAMURAL PHYSICAL MEDICINE AND REHABILITATION

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in Physical Medicine & Rehabilitation may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Physical Therapy

PT 2025 - PHYSIOLOGY OF EXERCISE

Minimum Credits: 2
Maximum Credits: 2
Structures and function of muscle, principles of neuromuscular recruitment for physical work, excitation-contraction coupling, contractile biochemistry, including sources of fuel for muscular work, and shifts in energy demands and fuel sources with physical activity under conditions of steady state, fasting, exercise and stress will also be covered. Examples of the impact of structural and physio logical change with growth, aging disease, drugs, and performance enhancing substances are reviewed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2026 - CARDIOPULMONARY PT 1

Minimum Credits: 2
Maximum Credits: 2
Students gain a basic understanding of structure and function of cardiovascular and pulmonary systems, cardiorespiratory fitness and pulmonary physiology in both healthy and diseased state. Principles of physical training for persons with and without cardiopulmonary dysfunction are addressed through lecture, demonstrations, and student participation in monitoring and interpreting signs and symptoms of physical work in healthy and disease states. Interactions of skeletal muscle and the cardiovascular and respiratory systems are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2027 - CARDIOPULMONARY PT 2

Minimum Credits: 2
Maximum Credits: 2
Evidence-based study of the application of physiological and clinical sciences to the physical therapy management of individuals with cardio-pulmonary system dysfunction. Learning experiences include weekly literature review and directed professional discussions with colleagues (class mates, instructor and lecturers), and a case-based approach to applying knowledge and decision-making to examination, evaluation, prognosis, and intervention in cardiopulmonary pt.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2028 - HEALTH AND WELLNESS

Minimum Credits: 1
Maximum Credits: 1
This course examines health and wellness strategies and interventions across the lifespan, including the role of the physical therapist. Students will be able to identify and assess the health needs of individuals including screening, prevention, and wellness programs that are appropriate to physical therapy. Students will be prepared to promote optimal health within themselves, their patients and their community by providing information on wellness, disease, impairment, functional limitations, disability, and health risks related to age, gender, culture, and lifestyle.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2029 - KINESIOLOGY AND INTRO TO

Minimum Credits: 3
Maximum Credits: 3
Introduction to the principles of the causes and treatment of musculoskeletal movement dysfunction. Basic principles of biomechanics and kinesiology of the musculoskeletal system with applications to the treatment of musculoskeletal dysfunction are also included. This material will be presented in lecture format and will be supplemented by direct laboratory experience.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2030 - HUMAN ANATOMY

Minimum Credits: 6
Maximum Credits: 6
In this course, systems and regional approaches to human anatomy are combined to study anatomical components and principles of function. The material you will cover in this course includes anatomy of the musculoskeletal, neural, and vascular systems of the extremities, head, neck, and trunk. You will participate in a Problem-Based Learning session and laboratory experience involving both prosection study of human cadavers and instructional palpation of living subjects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2036 - CLINICAL BIOMECHANICS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2040 - SURVEY OF HUMAN DISEASE 1

Minimum Credits: 2
Maximum Credits: 2
This course will introduce you to the pathophysiology, epidemiology, and functional implications of diseases that are most relevant to physical therapy practice. You will learn a systematic approach to identify clinical signs and symptoms, gain a basic understanding of medical diagnosis and treatment that are outside the scope of physical therapy practice, and identify conditions for which a medical referral is warranted.¿¿Emphasis will be placed on the relevance of comorbid conditions to the design and progression of a physical therapy plan of care and the anticipated impact of each condition on function, activity, and participation.¿¿¿Key medical terminology will be introduced to enhance interdisciplinary communication and ensure effective collaboration among healthcare professionals. ¿Diseases/conditions that fall under the following categories will be covered in Survey of Human Disease I: Infectious Disease, Cardiopulmonary Disease, and Musculoskeletal Disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2045 - SURVEY OF HUMAN DISEASE 2

Minimum Credits: 2
Maximum Credits: 2
This course will introduce you to the pathophysiology, epidemiology, and functional implications of diseases that are most relevant to physical therapy practice. You will learn a systematic approach to identify clinical signs and symptoms, gain a basic understanding of medical diagnosis and treatment that are outside the scope of physical therapy practice, and identify conditions for which a medical referral is warranted.¿¿Emphasis will be placed on the relevance of comorbid conditions to the design and progression of a physical therapy plan of care and the anticipated impact of each condition on function, activity, and participation.¿¿¿Key medical terminology will be introduced to enhance interdisciplinary communication and ensure effective collaboration among healthcare professionals. Diseases/conditions that fall under the following categories will be covered in Survey of Human disease II: Musculoskeletal Disease, Neurologic Disease,¿and Systemic Disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2052 - PEDIATRIC PHYSICAL THERAPY

Minimum Credits: 3
Maximum Credits: 3
Lecture and laboratory activities focusing on the preparation of the student for a pediatric clinical affiliation and a possible career in physical therapy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2055 - GROWTH AND DEVELOPMENT 1

Minimum Credits: 2
Maximum Credits: 2
Major emphasis is on the evaluation and treatment of children. General principles of growth and development of the major systems will be reviewed, in addition to common dis eases and diagnoses affecting those systems. Students will learn to prioritize appropriate evaluation and treatment strategies for pediatric patients; interpret results of clinical findings; develop and prioritize problem lists; and formulate treatment goals that are functional and age appropriate.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2056 - GROWTH AND DEVELOPMENT 2

Minimum Credits: 2
Maximum Credits: 2
A continuation of PT 2055.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2059 - GERIATRIC PHYSICAL THERAPY

Minimum Credits: 2
Maximum Credits: 2
Ours is an aging population. Nearly all physical therapists will engage in geriatric physical therapy; outside of pediatric-specific settings, older adults present in every setting in which we provide treatment. At this stage of learning, students learned about cardiovascular diseases, neurological complications, musculoskeletal conditions, and more. Older adults often experience limitations in these systems simultaneously. Physical therapists must recognize what is normal in aging, what is common but pathological in aging, and how to modify the assessments and interventions previously learned in the face of multisystem interaction. Furthermore, as the course progresses, we will introduce contextual considerations of aging, such as social support, environmental factors, and the healthcare system. This course provides a holistic coalescence of previously learned information in the new context of aging. It also addresses population-specific information which will influence your future practice, such as elder abuse, aging in place, dementia, and Medicare. The geriatric physical therapy course prepares students for providing evidence-based physical therapy care to a unique and heterogenous population
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2060 - NEUROSCIENCE

Minimum Credits: 4
Maximum Credits: 4
This course takes a systems-level approach to neuroscience, studying the structures and connections of the nervous system, with a focus on how these systems are integrated for the control of movement. Course work involves using research evidence that highlights the neural basis of movement and its application to clinical practice. Physical therapists, across practice settings, play a critical role in helping people function as independently as possible. The content presented in this course provides the foundation for students to make accurate movement system diagnoses, establish appropriate goals, and implement optimal interventions to achieve the best outcomes for all patients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2061 - NEUROMUSCULAR PT 1

Minimum Credits: 3
Maximum Credits: 3
First of a three part series of courses which introduce the student to basic neurological rehabilitation principles. Course intended to provide the student with knowledge and understanding of human movement and function throughout the neuromuscular system. Students will be introduced to a neuromotor evaluation scheme for patients with neurologic impairments. Information presented regarding motor behavior, motor control as it relates to normal/abnormal movement and function. Case studies and problem solving format will be used throughout this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2071 - RESEARCH METHODS IN PT

Minimum Credits: 2
Maximum Credits: 2
Purpose of this course is to instruct students in the basic principles of research in physical therapy. Topics to be covered include research methodology and study design, hypothesis testing, and principles of data collection and outcome assessment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2079 - MANAGEMENT OF THE MEDICALLY COMPLEX PATIENT

Minimum Credits: 1
Maximum Credits: 1
This course will build upon materials presented throughout the curriculum and utilize case studies to examine the management of patient populations with multiple systems involvement across the lifespan, including illness, injury, impairment, functional deficits, and/or disability.¿ A major focus will be placed on the development of students' clinical decision-making skills including the ability to screen, examine and develop and appropriate plan of care utilizing the ICF framework. The format of this course will include a case presentation with subsequent discussion in which students will be able to interact with clinicians and other students for the purpose of identifying evaluation and treatment strategies for managing the medically complex patient.¿ Students' clinical decision-making abilities will be assessed through the use of case analysis, participation activities, and reflection.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2080 - ADVANCED MANUAL THERAPY

Minimum Credits: 1
Maximum Credits: 1
An advanced course that develops proficiency in manual therapy techniques for neuromusculoskeletal physical therapist practice. Emphasis is on evidence-based systems and mobility assessment with interventions that include but are not limited to joint mobilization, soft tissue techniques, and exercises that reinforce the manual techniques . Students integrate clinical reasoning and psychomotor skill development through lectures and mentored laboratory practice, preparing them for advanced orthopedic practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2085 - ADVANCED THERAPEUTIC EXERCISE IN PT PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course is designed to expand on your basic understanding of therapeutic exercise selection and application.¿ The course will integrate asynchronous readings as well as classroom lecture reviewing impairment-based treatment that is evidence-based and lab application on the proper form for each exercise.¿ Each unit will also include a lab component that focuses on psychomotor skills of therapeutic exercise application.¿ Students will analyze case scenarios to identify functional limitations and the impairments that contribute to those limitations.¿ Students will then select interventions to target the impairments and improve limitations with specific focus on justification of exercise selection, exercise technique and modification, potential compensations, and dosing of exercise from the acute phase of injury to return to sport/function testing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2086 - ADVANCED THERAPEUTIC EXERCISE IN PT PRACTICE

Minimum Credits: 1
Maximum Credits: 1
This intermediate level course is designed to expand on the basic understanding of therapeutic exercise selection and application. Students will learn the clinical reasoning behind the selection of exercises to address specific musculoskeletal impairments. There will be an emphasis on the lab component of the course in order to emphasize and practice the proper techniques to ensure quality. There will be a specific focus on justification of exercise, exercise technique and modification, potential compensations, and dosing of exercise from the acute phase of injury to return to sport/function testing.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2092 - CLINICAL EDUCATION 2

Minimum Credits: 1
Maximum Credits: 8
Fourteen-week clinical education experiences conducted under the supervision of qualified physical therapists in a variety of practice settings to provide a wide range of professional learning opportunities in the provision of care and in teaching and where possible, opportunities to participate in the administration of services, quality assurance, clinical research activities, and supervision of physical therapist assistants and other supportive personnel.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2099 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
Provides students an opportunity to explore in depth an area of particular interest to them. It is the student's responsibility to find a faculty member willing to undertake such a tutorial.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2102 - PHARMACOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course covers the principles of drug action for drugs related to: central nervous, respiratory, gastrointestinal, renal/cardiovascular, and endocrine systems. The mechanism of action and use of antibiotics will also be covered. Students are provided with an overview of drug classifications, the physiologic basis for their actions, and an examination of the synergistic and/or adverse effects to patients' rehabilitation goals
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2103 - RADIOLOGY-PHYSICAL THERAPISTS

Minimum Credits: 2
Maximum Credits: 2
This course will introduce the radiologic concepts with an emphasis on musculoskeletal and neurological imaging related to PT practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2107 - EVIDENCE BASED PRACTICE

Minimum Credits: 3
Maximum Credits: 3

This course examines best practice patterns in clinical care and emphasizes basic concepts related to research such as reliability, internal and external validity, and study design. Critical appraisal of studies related to various PT interventions will be reviewed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2108 - EVIDENCE IN PRACTICE 1

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the use of clinical information related to outcome and treatment in a series of patients with a common disorder.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2109 - EVIDENCE IN PRACTICE 2

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the use of clinical information related to outcome and treatment in a series of patients with a common disorder.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2110 - EVIDENCE IN PRACTICE 3

Minimum Credits: 2
Maximum Credits: 2
This course will focus on the use of clinical information related to outcome and treatment in a series of patients with a common disorder.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2111 - DIFFERENTIAL DIAGNOSIS IN PT

Minimum Credits: 3
Maximum Credits: 3
This course will cover basic concepts of physical examination of the patient with neuro-musculoskeletal dysfunction. Fundamental examination skills and knowledge will be covered, including issues related to screening, review of systems, history, physical examination and clinical decision making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2127 - FALLS AND BALANCE DYSFUNCTION: PT MANAGEMENT AND INTERVENTION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2141 - CLINICAL EDUCATION 1

Minimum Credits: 1
Maximum Credits: 8
Students will complete their first full time 6-week clinical education experience under the supervision of a licensed physical therapist. The student will be assigned to an inpatient or outpatient setting. By the end of the experience, students will be expected to reach the following benchmarks: Professional Behaviors: Student will be performing within the range of Supervision to Independent for all Professional Behaviors outlined in the Clinical Internship Evaluation Tool (CIET) while maintaining 25% of a full-time entry-level therapist's caseload. Patient Management: Student will be performing with guidance to supervision all Patient Management Objectives outlined in the Clinical Internship Evaluation Tool (CIET) while maintaining 25% of a full-time entry-level therapist's caseload.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2142 - CLINICAL EDUCATION 2

Minimum Credits: 1
Maximum Credits: 8
Students will complete their second full time 6-week clinical education experience under the supervision of a licensed physical therapist. The student will be assigned to an inpatient or outpatient setting. By the end of the experience, students will be expected to reach the following benchmarks: Professional Behaviors: Student will be performing within the range of Supervision to Independent for all Professional Behaviors outlined in the Clinical Internship Evaluation Tool (CIET) while maintaining 50% of a full-time entry-level therapist's caseload. Patient Management: Student will be performing with supervision for patients with complex presentations and independently for patients with familiar presentation for all Patient Management Objectives outlined in the Clinical Internship Evaluation Tool (CIET) while maintaining 50% of a full-time entry-level therapist's caseload.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PT 2143 - CLINICAL EDUCATION 3

Minimum Credits: 1
Maximum Credits: 8
This first of two 15-week full time clinical experience is under the supervision of a licensed physical therapist. The student will be assigned to an inpatient or outpatient setting. By the end of the experience, students will be expected to reach the following benchmarks: Professional Behaviors: Student will be performing independently for all Professional Behaviors outlined in the Clinical Internship Evaluation Tool (CIET) while maintaining 75% of a full-time entry-level therapist's caseload. Patient Management: Student will be performing with supervision for patients with complex presentations and independently for patients with familiar presentation for all Patient Management Objectives outlined in the Clinical Internship Evaluation Tool (CIET) while maintaining 75% of a full-time entry-level therapist's caseload.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2144 - CLINICAL EDUCATION 4

Minimum Credits: 1
Maximum Credits: 8
This is the second of two 15-week full time clinical experience is under the supervision of a licensed physical therapist. The student will be

assigned to an inpatient or outpatient setting. By the end of the experience, students will be expected to reach the following benchmarks: Professional Behaviors: Student will be performing independently for all Professional Behaviors outlined in the Clinical Internship Evaluation Tool (CIET) while maintaining 100% of a full-time entry-level therapist's caseload. Patient Management: Student will be performing with independence for patients with familiar and complex presentations for all Patient Management Objectives outlined in the Clinical Internship Evaluation Tool (CIET) while maintaining 100% of a full-time entry-level therapist's caseload.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PT 2158 - CUR EVIDENCE INTEGUMENTARY PRA

Minimum Credits: 2
Maximum Credits: 2
Theoretical frameworks underlying the examination, evaluation and treatment of patients with integumentary impairments will be discussed. The use of evidence-based clinical decision making will be emphasized in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2172 - ADVANCED CLINICAL PRACTICE: THE LOWER QUARTER

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2173 - ADVANCED CLINICAL PRACTICE: THE UPPER QUARTER

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2180 - CUR EVIDENCE MUSCULSK PRACT 3

Minimum Credits: 3
Maximum Credits: 3
Theoretical frameworks underlying the examination, evaluation and treatment of patients with musculoskeletal impairments of the C-T spine will be discussed. The use of evidence-based clinical decision making will be emphasized in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2181 - CUR EVIDENCE MUSCULSK PRACT 4

Minimum Credits: 3
Maximum Credits: 3
Theoretical frameworks underlying the examination, evaluation and treatment of patients with musculoskeletal impairments of the UE will

be discussed. The use of evidence based clinical decision making will be emphasized in this course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2196 - EVIDENCE BASED PRACTICE 6

Minimum Credits: 1
Maximum Credits: 1
continuation of EBP series
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PT 2201 - CARDIOPULMONARY PHYSICAL THERAPY 1

Minimum Credits: 4
Maximum Credits: 4
In this course students will focus on examining the pathophysiology and management of individuals with cardiovascular and pulmonary disease with emphasis on the physiologic systems that support to the performance of aerobic exercise and human movement. Specific attention will be given to the implications of cardiovascular and pulmonary disease on physical therapy practice, and how to consider these implications when applying the principles of exercise prescription to healthy individuals and people with comorbid chronic diseases. This course will also include an overview EKG rhythm interpretation, cardiovascular and pulmonary diagnostic testing, lab value analysis, case analyses of cardiovascular and pulmonary assessment data, and instruction in vital sign assessment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2202 - CARDIOPULMONARY PHYSICAL THERAPY 2

Minimum Credits: 2
Maximum Credits: 2
This course is a continuation of PT2201 Cardiopulmonary PT I with primary focus on physical therapy management of the cardiopulmonary patient throughout the continuum of care.¿ The primary goal is to develop competency in the assessment and treatment of cardiopulmonary dysfunction and pulmonary disease and complex medical conditions will be introduced with an emphasis on principles of exercise prescription and patient safety.¿ The material for this course is presented through in-person and asynchronous lectures and laboratories.¿ Out of class work includes study and reflection, completion of the assignments, readings and review of assigned materials.¿ Onsite laboratory sessions will develop requisite skills to apply or further enhance understanding of online materials.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2229 - KINESIOLOGY AND INTRODUCTION TO THERAPEUTIC EXERCISE

Minimum Credits: 4
Maximum Credits: 4
An introduction to the foundations of biomechanics, musculoskeletal tissue mechanics, and therapeutic exercise that will provide the basic principles underlying the analysis of normal and pathological human movement with applications to the musculoskeletal system.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2231 - MUSCULOSKELETAL PHYSICAL THERAPY 1

Minimum Credits: 6
Maximum Credits: 6
PT 2231 provides an overview of the musculoskeletal causes and treatments of movement dysfunction related to the lower extremity. Synchronous, asynchronous and face to face immersions are used to develop competency in knowledge of pathomechanics, patient evaluation, clinical decision-making, treatment planning and implementation, and assessment of treatment outcome for patients with lower extremity musculoskeletal dysfunctions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2232 - MUSCULOSKELETAL PHYSICAL THERAPY 2

Minimum Credits: 5
Maximum Credits: 5
PT 2232 provides an overview of the musculoskeletal causes and treatments of movement dysfunction related to the lumbar spine, cervicothoracic spine, and the shoulder. This coursework is meant to develop competency in knowledge of pathomechanics, patient evaluation, clinical decision-making, treatment planning and implementation, and assessment of treatment outcome for patients with lumbar spine, cervicothoracic spine, and shoulder musculoskeletal dysfunctions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2233 - MUSCULOSKELETAL PHYSICAL THERAPY 3

Minimum Credits: 4
Maximum Credits: 4
This final course in the musculoskeletal series builds upon foundational knowledge of evaluation and treatment of movement dysfunctions across the spine and extremities. In the first part of the course, emphasis is placed on the elbow, wrist, hand, and temporomandibular joint, while reinforcing previously learned concepts. Students will advance their skills in pathomechanics, examination, diagnosis, prognosis, and intervention through lectures, labs, expert case presentations, and clinical reasoning exercises. The course incorporates movement and task analysis, ergonomic considerations, and outcome assessment to enhance evidence-based clinical decision making. Students will be expected to demonstrate knowledge of musculoskeletal physical therapy as it pertains to the spine, the upper extremity, and the lower extremity (all previous and current MSK content). Competency is evaluated through written exams and a comprehensive oral practical.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2241 - PATIENT MANAGEMENT 1

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to physical therapy assessment and intervention using a model of patient/client management as described in the Guide to Physical Therapist Practice. Using this model, common foundational skills of physical therapist practice will be addressed, from preparing for patient/client interaction, to examination and treatment skills. Topics include history and interview skills, body mechanics, and positioning of the patient/client. Students will develop skills in mobility training and activity progression using transfer techniques, gait training and basic manual wheelchair prescription An overarching theme is the concept that empathy for the patient experience, combined with excellent clinical skills, creates expertise in caregiving, an essential quality in the physical therapy profession. At the completion of this course, students will have a solid framework for patient/client management that can be used across a variety of practice settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2242 - PATIENT MANAGEMENT 2

Minimum Credits: 3
Maximum Credits: 3
This course continues to explore the principles of patient /client management that were introduced in Patient Management 1. Several topics will be used to illustrate the patient/client management model with an emphasis on treatment strategies, including modalities; electrotherapy; the integumentary system and wound care; lymphedema and edema management; and finally, an introductory unit on Women's Health. The semester will culminate in a standardized patient experience which will focus on treatment planning using cases based on topics covered in several courses in the curriculum by exploring these concepts through the primary literature, the presentation of management strategies, and various interactive classroom activities, students should be able to integrate all aspects of patient management, from preparation, to examination, diagnosis and treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2243 - PATIENT MANAGEMENT 3

Minimum Credits: 2
Maximum Credits: 2
This course is the last in the Patient Management series. There are two major units: Amputations and Prosthetics and Management of Chronic Disease. Topics which emphasize the role of the physical therapist in successful recovery and long-term management include diabetes management, cancer rehabilitation, arthritis, and autoimmune disorders. Students will continue to practice examination, evaluation and treatment planning skills learned in Patient Management 1 and 2, while considering the self-management needs of patients and clients with these conditions. Using standardized patients, students will also participate in a formative assessment of their ability to guide patients in self-management skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2255 - GROWTH & DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on human growth and development from the prenatal period through adolescence. Theories of growth and development, the movement system and the movement continuum are reviewed. General principles of typical growth and development in the major movement systems are emphasized. Common pediatric diagnoses are used to illustrate atypical growth and development and to illustrate physical therapy management of these diagnoses using the patient client management model and the ICF model frameworks. Identification of appropriate outcome measures and interventions will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2261 - NEUROMUSCULAR PHYSICAL THERAPY 1

Minimum Credits: 4
Maximum Credits: 4
The first unit of this course provides a knowledge foundation for the principles that drive neurological rehabilitation, which will then be applied to the clinical management of specific neurologic diagnoses that are discussed throughout the course series. The students will be introduced to the structure of a PT neurological examination that can be applied when evaluating clients with neurologic diagnoses and disorders. We will focus on the Hypothesis-Oriented Algorithm for Clinicians (HOAC) framework for clinical decision making that will provide a foundation for client management. Information will be presented regarding motor behavior and motor control as it relates to normal and abnormal movement and function. Students will learn strategies to improve motor function and skill acquisition (motor control and motor learning) utilizing knowledge of recovery and neuroplasticity processes following an insult to the CNS. The second unit of this course will apply the foundational knowledge gained in unit 1, to the management of clients with vestibular and balance disorders. The anatomy, physiology and function of the vestibular system will be reviewed. We will provide an overview of etiology, pathophysiology and clinical manifestations of typical vestibular disorders. The students will learn to identify and describe common functional impairments,

activity limitations and participation restrictions, which can be the result of a vestibular diagnosis. Students will learn evidence-based examination procedures used to evaluate clients with vestibular and balance disorders, based on current best practice. Students will use findings from clinical examination skills to establish a patient-centered, individualized plan of care. The role of the physical therapist in the management of patients/clients with vestibular and balance diagnoses and interventions to optimize function, activity and participation will be provided to optimize care. This is the first of a three-part series of courses which introduces the student to the principles of neurological rehabilitation. In this course, students will learn the neurologic PT assessment and motor learning principles that will carry through to Neuromuscular PT 2 and 3. The course series will culminate with a comprehensive practical exam that will prepare students to enter clinical practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2262 - NEUROMUSCULAR PHYISCAL THERAPY 2

Minimum Credits: 4
Maximum Credits: 4
This course will focus on the management of patients/clients with acquired neurologic injuries. The anatomy, physiology and function of CNS that are impacted with the diagnosis of cerebrovascular accidents (CVA), traumatic brain injury (TBI) and spinal cord injury (SCI) will be reviewed. We will provide an overview of the etiology, pathophysiology, and clinical manifestations for each diagnosis. The students will learn to identify and describe the examination procedures used to evaluate the patients/clients with the above diagnoses, as well as establish a patient-centered, individualized plan of care. The students will practice current best practices for assessment and treatment of the above neurologic diagnoses. An emphasis of this course will be describing the role of the physical therapist in the management of patients/clients with the above diagnoses in terms of interventions to optimize function, activity, and participation across different health care settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2263 - NEUROMUSCULAR PHYSICAL THERAPY 3

Minimum Credits: 2
Maximum Credits: 2
This course is a continuation of PT 2261 and PT 2262. The first part of the course will cover assessment and management of cerebellar, neurodegenerative, and other neurological disorders. This course is designed to provide key steps in the patient management process for the above diagnoses. We will provide an overview of the etiology, pathophysiology, and clinical manifestations of each diagnosis. The medical management and framework for rehabilitation will be discussed. Students will learn to identify and describe the examination procedures used to evaluate the patients with the above diagnoses, establish a diagnosis, prognosis, and a plan of care. Symptoms, typical functional limitations, reasons for referral to another practitioner, and treatment interventions will be discussed. An emphasis of this course will be describing the role of the physical therapist in the management of patients with the above diagnosis in terms of interventions to optimize function, activity, and participation. The second part of the course will focus on active reviews regarding the assessment and management of persons with a vestibular disorder, acquired brain injury, and spinal cord injury among other disorders to prepare the student for a comprehensive practical as well as PT board exams and clinical practice. The course will culminate in a comprehensive practical examination to assess student knowledge on the PT evaluation and management of clients with neurological disorders to prepare them as entry-level clinicians.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2270 - ADVANCED MUSCULOSKELETAL DISSECTION ANATOMY

Minimum Credits: 1
Maximum Credits: 1
This course will provide students with the opportunity to study and dissect specified anatomical regions of the human body. Students should dissect all pertinent musculoskeletal, neural and vascular anatomy of their assigned region. Students will be given guidelines and

instruction in the dissection process and will then work both during scheduled laboratory sessions and independently in the dissection laboratory throughout the semester. Cadaver-based instructional videos will be provided for reference. Students will be responsible for exposing required structures of their assigned region by the end of the course. Through this experience, students will gain a mastery of select regions of musculoskeletal anatomy and apply the knowledge in future Physical Therapy practice.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PT 2281 - PROFESSIONAL DEVELOPMENT & LEADERSHIP 1

Minimum Credits: 2
Maximum Credits: 2
This course is the first in a series of three that examines the professional practice of physical therapy. The content focuses on professionalism, core documents (i.e., PT Code of Ethics, APTA Core Values) regulatory agencies governing practice, standards of conduct, and state practice act(s). In addition, it introduces documentation, the health care industry, payers, and the continuum of care and how they relate to the physical therapy profession. Students will participate in a combination of in-class lectures, discussions, and group activities, supplemented by online learning. Learning will include exploration of APTA core documents and resources (e.g., the APTA Guide to Physical Therapist Practice) as well as a training video on the use of the University of Pittsburgh Clinical Internship Evaluation Tool. Physical Therapy Practice Acts for the various states will be discussed; issues that confront physical therapists and other healthcare providers in practice will be analyzed; patient issues related to communication and patient education will be discussed; and students will be introduced to documentation and billing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2282 - PROFESSIONAL DEVELOPMENT & LEADERSHIP 2

Minimum Credits: 3
Maximum Credits: 3
This course is the second in a series of three that examines the environment and the conduct of the professional's PT practice. It will introduce the organization and management of physical therapy practice and healthcare providers consistent with the concepts of leadership, administration, management, and professionalism. The course will explore the role and expectations for management and leadership in care delivery, practice management, consultation, social responsibility, and advocacy. Students will expand their knowledge of practice management principles and essential functions. The internal and external environmental/industry forces which drive the delivery of health care today will be discussed. The course will explore effective teamwork dynamics, communication and conflict management strategies and styles. The course will also focus on advancing physical therapy practice by synthesizing knowledge about health care as an established social institution. The course will discuss the healthcare continuum with emphasis on the evolving healthcare delivery systems, associated issues/trends, and the implications. Students will explore and participate in the legislative process as advocates for comprehensive and efficacious access and delivery of health care services. Students will become familiar with principles and concepts related to global health as well as how to utilize evidence-based practice and professional organizations to advocate for population health and wellness.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2283 - PROFESSIONAL DEVELOPMENT & LEADERSHIP 3

Minimum Credits: 2
Maximum Credits: 2
This course is the third in a series of three (3) in which students will consider concepts learned in previous semesters specifically: rules, regulations, laws, payer requirements, accrediting agencies' quality and safety standards, corporate compliance programs, leadership and management principles, and the 'business' of rehabilitation. The students will apply and integrate the concepts learned into capstone team projects which reflect the spectrum of practice areas: inpatient (tertiary and community-based), outpatient, inpatient rehab, long-term acute, skilled nursing, home health, and specialty practice. It will be important for student teams to integrate the concepts of population health,

community engagement, and social determinants of health in their final project proposals
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2291 - EVIDENCE BASED PRACTICE PHYSICAL THERAPY 1

Minimum Credits: 2
Maximum Credits: 2
This course integrates concepts of evidence-based practice and the necessary working knowledge of research methodology and statistics to thoroughly critique health science research as it relates to physical therapy. The course focuses on the appraisal of studies of intervention, systematic reviews and meta-analysis and clinical practice guidelines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2292 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 2

Minimum Credits: 2
Maximum Credits: 2
This course integrates concepts of evidence-based practice and the necessary working knowledge of research methodology and statistics that is necessary to thoroughly critique health science research as it relates to physical therapy. This course builds on the information from Evidence-based Practice PT 1 and focuses on the appraisal of studies that address problems of diagnosis and prognosis in physical therapy practice. In this course we will review evidence from primary sources (original research) and secondary sources (systematic reviews, meta-analysis, and clinical practice guidelines) related to diagnosis and prognosis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2293 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 3

Minimum Credits: 2
Maximum Credits: 2
This course will focus on aspects of evidence-based practice related to quality and process improvement and its relationship to process of care and outcomes management. There will be a focus on translating and implementing contemporary approaches to quality improvement into the clinical environment. Students will be able to develop mechanisms to gauge (1) compliance with data collection; (2) adherence to standards of care and (3) outcome assessment as the basis for assessment and improvement of clinical performance. Furthermore, students will be able to describe and apply essential quality improvement principles to improve the process of care and clinical outcomes of physical therapy practice.¿ The course will integrate lectures, discussions, and small group breakout sessions to facilitate the successful completion of the course objectives. Asynchronous learning modules will be assigned for each topic and will provide didactic content in support of the module. Each week, synchronous zoom sessions will provide the opportunity for the instructor to assess understanding of the asynchronous content using an audience response system and engage in open discussion and small group activities. Areas of emphasis and/or misunderstanding will be reviewed during the synchronous sessions. In addition, specific synchronous sessions will be allocated for implementing criteria described in the PITT (Practice Intervention Teaching Tool) Manual of Evidence Based Practice to be used for the capstone project during the student's terminal clinical education experience.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2294 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 4

Minimum Credits: 1
Maximum Credits: 1
This course is a continuation of the evidence-based practice series that will run concurrent with the student's terminal clinical education

experience. In this course, students will utilize the PITT Manual of Evidence-Based Practice to collect process of care and clinical outcomes data from patients managed by the student during Clinical Education III.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PT 2295 - EVIDENCE-BASED PRACTICE PHYSICAL THERAPY 5

Minimum Credits: 1
Maximum Credits: 1
This course is a continuation of the evidence-based practice series that runs concurrent with the student's terminal clinical education experience. In this course, the student will analyze, summarize, and interpret the process of care and clinical outcomes data that were collected in PT 2294. Students will utilize this information to critically evaluate their clinical performance in comparison to their peers and/or the literature and to develop an individualized performance improvement plan.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PT 2555 - BIOMECHANICS OF BALANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: PROG: Sch Hlth & Rehabilitation Scs or School of Medicine or Swanson School of Engineering; LEVEL: Graduate

PT 2556 - INTERFACING ENGINEERING TECHNOLOGY AND REHABILITATION

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce the student to the emerging trends in rehabilitation technologies. Students and faculty will participate in active discussion regarding research directions currently taking place to further develop applied rehabilitation technologies as well as discuss methods to modify and measure responses in clinical situations using these technologies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2922 - TEACHING INTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

Physical Therapy Master of Science

PTMS 2001 - ADVANCED NEUROSCIENCE

Minimum Credits: 4
Maximum Credits: 4
This course will provide the student with an in-depth study of neuroanatomical structures and functions. Brain anatomy, function, and interrelationships especially as they relate to movement dysfunction will be reviewed. The clinician will have an opportunity to "revisit" how anatomy and movement are interrelated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2002 - MOTOR LEARNING AND CONTROL OF MOVEMENT/HEALTH PROMOTION

Minimum Credits: 3
Maximum Credits: 3
Principles of motor learning and motor control will be discussed as they relate to persons with disability. Models of disability will be shared with ideas of how to incorporate some of the principles of motor learning/control into interventions. Health promotion and fitness for persons with neuromuscular disorders will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2003 - ADVANCED CLINICAL PRACTICE: THE LOWER QUARTER

Minimum Credits: 3
Maximum Credits: 3
This course will integrate advanced clinical applications of therapeutic technique and rationale for the assessment and treatment of the neuromuscular system. This course will synthesize clinical application of mobilization and manipulation techniques for the lumbopelvic spine and the lower extremities, the assessment and treatment of muscular and soft tissue imbalances, and the application of medical exercise training.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2004 - PRINCIPLES OF EVIDENCE-BASED PHYSICAL THERAPY PRACTICE

Minimum Credits: 2
Maximum Credits: 2
This course will focus on all aspects of clinical investigation, including developing and populating a clinical data base for the purposes of quality improvement, clinical description and clinical research. Interviewing skills, diagnosis, management, outcome and keeping up to date will be covered in depth with a particular focus on evidence-based practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2005 - EVIDENCE BASED PRACTICE: CLINICAL CONSIDERATIONS LOWER EXTREMITY

Minimum Credits: 3
Maximum Credits: 3
Course content will include evaluation and treatment of musculoskeletal conditions involving the foot, ankle, and knee. Emphasis will be placed upon enhancing clinical decision making and integrating manual therapy skills within the overall plan of care for the patient. Classes will include lecture, laboratory, and clinical experiences.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

PTMS 2006 - FALLS AND BALANCE DYSFUNCTION: PHYSICAL THERAPY MANAGEMENT AND INTERVENTION

Minimum Credits: 3
Maximum Credits: 3
This course will provide students with the knowledge and skills to provide advanced assessment and management of persons with balance and vestibular disorders, including those at risk for falls. Students will discuss and practice using assessment tools. Lecture, laboratory practice, case studies, and discussion will be included.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2007 - ANALYSIS OF NEUROMUSCULAR SIGNS AND SYMPTOMS IN CLINICAL DECISION MAKING

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the analysis of the process and knowledge necessary for identifying the neuromuscular tissue or system representing the origin of disorders in patients. Signs and symptoms from history and physical examination will be the focus with appropriate ancillary testing necessary to confirm hypotheses regarding neuromusculoskeletal pathology. The intent is for clinicians to be able to differentiate clusters of signs and symptoms and to make appropriate clinical decisions regarding same.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2008 - CONCEPTS AND PRINCIPLES RELATED TO SENSORY MOTOR CONTROL 1

Minimum Credits: 3
Maximum Credits: 3
Topical areas of the neurological sciences will be presented including introductory neuropathology, neuro-diagnostic techniques, and clinical manifestations of certain diseases of the nervous system. Topics will include: reflexes; the pain experience and pain management; somatosensory changes in peripheral and central nervous system diseases; motor dysfunction associated with peripheral and central nervous system diseases; articular neurology; sensorimotor learning principles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2009 - ADVANCED MUSCULOSKELETAL CLINICAL PRACTICE: THE UPPER QUARTER

Minimum Credits: 3
Maximum Credits: 3
This course will integrate advanced clinical applications of therapeutic technique and rationale for the assessment and treatment of the neuromuscular system. This course will synthesize clinical application of mobilization and manipulation techniques for the cervicothoracic spine and the upper extremities, the assessment and treatment of muscular and soft tissue imbalances, and the application of medical exercise training.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: NEUROPT-MS

PTMS 2010 - PHYSICAL THERAPY SPECIAL TOPICS SEMINAR

Minimum Credits: 2
Maximum Credits: 2
This course is designed to foster discussion of current physical therapy clinical issues, such as prospective payment for medical rehabilitation, healthcare trends, reimbursement regulations, legislative policies, practice environments, strategies for maintaining continued competence, and emerging professional issues.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: NEUROPT-MS

PTMS 2011 - EVIDENCE BASED PRACTICE: CLINICAL CONSIDERATIONS LUMBOPELVIC SPINE

Minimum Credits: 3
Maximum Credits: 3
Course content will include evaluation and treatment of the musculoskeletal conditions involving the lumbopelvic complex including the hip joint utilizing advanced orthopedic physical therapy skills. Emphasis will be placed upon enhancing clinical decision making and integrating manual therapy skills within the overall plan of care for the patient. Classes will include lecture, laboratory, and clinical experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

PTMS 2012 - SEMINAR IN NEUROLOGIC PHYSICAL THERAPY

Minimum Credits: 2
Maximum Credits: 2
A series of papers will be presented with interactive discussion related to novel interventions. Students will be responsible for reviewing the paper and presenting the case to the class. Each student will "teach" the class once and lead the discussion. Topic areas will be assigned by the instructor.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

PTMS 2012 - SEMINAR IN NEUROLOGIC PHYSICAL THERAPY

Minimum Credits: 2
Maximum Credits: 2
A series of papers will be presented with interactive discussion related to novel interventions. Students will be responsible for reviewing the paper and presenting the case to the class. Each student will "teach" the class once and lead the discussion. Topic areas will be assigned by the instructor.
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2013 - EVIDENCE BASED MEDICAL AND PHYSICAL THERAPY INTERVENTIONS FOR PERSONS WITH NEUROMUSCULAR DISEASE

Minimum Credits: 3
Maximum Credits: 3
This course will focus on an evidence based comparison of newer vs. Older `techniques' used in the field of neurologic rehabilitation. Students will be asked to explore the evidence basis that supports or refutes use of these various approaches and techniques currently in use. Newer approaches to neurological rehabilitation will also be discussed-these include: constraint induced movement therapy, virtual reality, robotics, and deweighting. Lab and clinic visits will be incorporated into this course so that students will be able to see some of the techniques `in action'.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

PTMS 2013 - EVIDENCE BASED MEDICAL AND PHYSICAL THERAPY INTERVENTIONS FOR PERSONS WITH NEUROMUSCULAR DISEASE

Minimum Credits: 3
Maximum Credits: 3
This course will focus on an evidence based comparison of newer vs. Older `techniques' used in the field of neurologic rehabilitation. Students will be asked to explore the evidence basis that supports or refutes use of these various approaches and techniques currently in use. Newer approaches to neurological rehabilitation will also be discussed-these include: constraint induced movement therapy, virtual reality, robotics, and deweighting. Lab and clinic visits will be incorporated into this course so that students will be able to see some of the techniques `in action'.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2014 - CASE STUDIES OF PERSONS WITH NEUROMUSCULAR DISORDERS

Minimum Credits: 3
Maximum Credits: 3
A series of cases will be presented with interactive discussion related to interventions that have been shown to demonstrate evidence and efficacy to address the person's functional limitations and impairments. Students will be responsible for preparing for the case prior to each session and will bring 'evidence' to support ideas for intervention. Innovative physical therapy and medical interventions will be discussed. Lecture and interactive discussion are the teaching methods of choice. Advanced clinicians will participate in the course to bring 'real life' cases to the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

PTMS 2014 - CASE STUDIES OF PERSONS WITH NEUROMUSCULAR DISORDERS

Minimum Credits: 3
Maximum Credits: 3
A series of cases will be presented with interactive discussion related to interventions that have been shown to demonstrate evidence and

efficacy to address the person's functional limitations and impairments. Students will be responsible for preparing for the case prior to each session and will bring 'evidence' to support ideas for intervention. Innovative physical therapy and medical interventions will be discussed. Lecture and interactive discussion are the teaching methods of choice. Advanced clinicians will participate in the course to bring 'real life' cases to the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: NEUROPT-MS

PTMS 2015 - CLINICAL ROUNDS AND CASE PRESENTATION

Minimum Credits: 1
Maximum Credits: 1
Weekly rounds will be presented by various speakers/clinicians/researchers in both the fall and spring terms. These presentations will consist of case presentations, relevant clinical and/or research updates pertaining to the clinical practice of physical therapy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

PTMS 2015 - CLINICAL ROUNDS AND CASE PRESENTATION

Minimum Credits: 1
Maximum Credits: 1
Weekly rounds will be presented by various speakers/clinicians/researchers in both the fall and spring terms. These presentations will consist of case presentations, relevant clinical and/or research updates pertaining to the clinical practice of physical therapy
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: NEURORPT-MS

PTMS 2016 - CLINICAL PRACTICE SEMINAR

Minimum Credits: 2
Maximum Credits: 2
This course will cover basic concepts of physical examination of the patient with neuromusculoskeletal dysfunction. Fundamental examination skills and knowledge will be covered, including issues related to screening, review of systems, history, physical examination and clinical decision making. An introduction to radiology and diagnostic imaging will be provided. Concepts related to pain and the inflammatory process, boney healing and remodeling, and how these concepts impact clinical practice will also be covered.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

PTMS 2017 - EVIDENCE BASED PRACTICE: CLINICAL CONSIDERATIONS FOR UPPER EXTREMITY

Minimum Credits: 3
Maximum Credits: 3
This course will include evaluation and treatment of the musculoskeletal conditions involving the shoulder, elbow, wrist and hand. Emphasis will be placed upon enhancing clinical decision making and integrating manual therapy skills within the overall plan of care for the patient. Classes will include lecture, laboratory, and clinical experiences.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

PTMS 2018 - EVIDENCE BASED PRACTICE: CLINICAL CONSIDERATIONS FOR THE CERVICAL AND THORACIC REGIONS

Minimum Credits: 3
Maximum Credits: 3
This course will include evaluation and treatment of musculoskeletal conditions involving the cervical spine, the tempoRomandibular joint, the thoracic spine and rib cage. Emphasis will be placed upon enhancing clinical decision making and integrating manual therapy skills into the plan of care for the patient. Classes will consist of lecture, laboratory, and clinical experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PTMS 2100 - ADVANCED VESTIBULAR PHYSICAL THERAPY 1

Minimum Credits: 3
Maximum Credits: 3
The Advanced Vestibular PT course is a comprehensive didactic experience in vestibular physical therapy that prepares and certifies physical therapists to be frontline providers for patients experiencing balance, dizziness and abnormal proprioception. The AVPT certification course delivers cutting-edge vestibular content from the University of Pittsburgh and international faculty. The course will include coursework and lectures with an interactive weekend workshop to learn and practice advanced practice skills with clinical experts. The content is delivered in four specific modules and arranged by content. Students are expected to participate and pass the laboratory and didactic exam.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PTMS 2101 - ADVANCED VESTIBULAR PHYSICAL THERAPY 2

Minimum Credits: 3
Maximum Credits: 3
The Advanced Vestibular PT course is a comprehensive didactic experience in vestibular physical therapy that prepares and certifies physical therapists to be frontline providers for patients experiencing balance, dizziness and abnormal proprioception. The AVPT certification course delivers cutting-edge vestibular content from the University of Pittsburgh and international faculty. The course will include coursework and lectures with an interactive weekend workshop to learn and practice advanced practice skills with clinical experts. The content is delivered in four specific modules and arranged by content. Students are expected to participate and pass the laboratory and didactic exam.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

Physician Assistant Studies

PAS 2101 - INTRODUCTION TO THE PHYSICIAN ASSISTANT PROFESSION

Minimum Credits: 1
Maximum Credits: 1
This course traces the history, development, and current status of the physician assistant profession. Students will explore the role of the physician assistant as part of the healthcare team. The student will research and investigate the state and national legislation that governs

the profession. Topics will include a historical perspective of the profession, current trends, and issues of the profession; the PA role in health care delivery, competencies integral to the PA profession; political and legal factors that affect PA practice; importance of biomedical ethics, patient confidentiality, and professionalism, in relation to their role as health care providers; content reviewing the professional organizations, program accreditation, graduate certification, certification maintenance, license application, employment issues and professional liability will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2102 - HUMAN ANATOMY

Minimum Credits: 4
Maximum Credits: 4
This course with a lab studies the organization of the human body and the way in which anatomical relationships serve as a basis for function. The medical aspects of the structural and functional organization of the human body are also a focus of attention. The lectures are designed to provide guidance or explain difficult or conceptual material. The major learning experience occurs in the laboratory with cadaveric dissection.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2104 - GENETIC AND MOLECULAR MECHANISMS OF HEALTH AND DISEASE

Minimum Credits: 1
Maximum Credits: 1
This course introduces the student to the understanding of genetic and molecular medicine as it applies to clinical practice. A strong knowledge base of cell structure, genetic variation, inheritance patterns and specific genetic disorders is required. In addition to knowledge, the application of genetic knowledge and molecular medicine involves the development and integration of skills including but not limited to: accurate history taking; creation of precise documentation of and interpretation of the pedigree; integration of genetic understanding into patient assessment; comprehension of the role of genetic testing and counseling; and management and referral of patients with genetic issues. Physician assistant students must be familiar with the most common clinical genetic diseases, as well as the ethical, legal and social issues of genetics. Due to the constantly changing knowledge in this field, pa students must demonstrate the ability to utilize information literacy skills to ensure that as clinicians they are self-directed lifelong learners.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2105 - HEALTH POLICY

Minimum Credits: 2
Maximum Credits: 2
This course introduces the student to how the health care system works. The focus is on basic principles of health policy, system failures. Topics include reimbursement, access to health care, workforce, quality assurance, long-term health care. In addition, topics will include public policy, funding issues, healthcare disparities, managed care and the medically underserved. The course will conclude with an opportunity to review and discuss moral and ethical issues in healthcare from the perspective of a physician assistant.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2106 - INTERPRETING AND EVALUATING THE MEDICAL LITERATURE

Minimum Credits: 1
Maximum Credits: 1
This course introduces the basic concepts, terminology and methodology of quantitative and qualitative research as it applies to medical practice. This course will stress the knowledge and skills necessary for locating, interpreting, evaluating and applying quality medical research to clinical practice and professional development; the ability to appropriately critique medical literature; and the basic comprehension needed for participation in research and the development of research and grant proposals. Assessment of understanding and skills will be conducted during the course as well as throughout the didactic program and clinical rotations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2107 - PATIENT EDUCATION AND COUNSELING

Minimum Credits: 2
Maximum Credits: 2
This course is a practical approach to understanding how patients present, learn and change based on the research on theories, models and techniques of: personality and learning styles; how to assess patient knowledge, attitude and readiness to change; and the effects of literacy, health literacy, individual coping mechanisms, ecological barriers and culture on patient comprehension and adherence. The use of validated interpersonal skills improves the clinician/patient relationship, demonstrates respect for the patient's well-being and individuality, thereby reducing medical errors and lawsuits, and increasing patient adherence. Self-reflection on the student's own barriers, biases, stereotypes, culture and assumptions is required. Assessment of understanding and skills will be conducted during the course as well as throughout the didactic program and clinical rotations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2108 - INTRODUCTION TO CLINICAL MEDICINE WITH LAB

Minimum Credits: 3
Maximum Credits: 3
This course is the first part of an intensive study of human disease processes and disorders in the broad scope of clinical medicine. Students will explore the epidemiology, etiology, pathophysiology, assessment, management and follow up of disease processes and disorders. The course will approach the condition from the perspective of history and physical examination, ordering and interpreting diagnostic studies, generation of a differential diagnoses and the development and implementation of treatment plans and prognosis. Preventative measures to assist in disease prevention will also be discussed. Presented by clinicians from various specialties these lectures provide comprehensive instruction that enables the student to understand the nature and problems experienced by both ambulatory and hospitalized patients. Students will also learn the head to toe physical examination. The laboratory component of this course will focus on patient interviewing, patient communication, and case-based learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2109 - MEDICAL PHYSIOLOGY AND PATHOPHYSIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course integrates the specific characteristics and mechanisms of normal and abnormal functioning of tissues and organs of the human body organized in a systems-based approach. This includes principles of cell and organ physiology, and the disruption of normal homeostatic mechanisms that progresses beyond the compensatory capabilities of the human body.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2201 - HISTORY TAKING AND PHYSICAL EXAMINATION 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces the student to the basic interviewing, history taking and documentation skills which will include the chief complaint, history of present illness, past medical, surgical, social, allergy and family history, review of systems and medications. Students will learn the clinical significance of the physical examination, the components of the complete physical exam and will be able to perform these examination techniques. Topics in this course will include: a general overview of history taking and physical examination; clinical reasoning; documentation; interviewing skills; the general survey; skin; the head and neck; the lungs;and the abdomen.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2202 - CLINICAL MEDICINE 1

Minimum Credits: 3
Maximum Credits: 3
This course is the first part of an intensive study of human disease processes and disorders in the broad scope of clinical medicine. As the course progresses students will explore the epidemiology, etiology, pathophysiology, assessment, management and follow up of disease processes and disorders. The course will approach the condition from the perspective of history and physical examination, ordering and interpreting diagnostic studies, generation of a differential diagnoses and the development and implementation of treatment plans and prognosis. Preventative measures to assist in disease prevention will also be discussed. Content includes infectious diseases, dermatology, disorders of the head, eyes, ears nose and throat, cardiopulmonary disorders, and endocrinopathies. Presented by physicians from various practice specialties these lectures provide comprehensive instruction that enables the student to understand the nature and problems experienced by both ambulatory and hospitalized patients. The laboratory component of this course focuses on case based learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2203 - DIAGNOSTIC & THERAPEUTIC PROCEDURES IN MEDICINE 1

Minimum Credits: 3
Maximum Credits: 3
This course provides a foundation of clinical skills and diagnostic procedures that are commonly performed in patient care. Instruction for selected procedures and diagnostic tools will be presented to the student by various methods including theory discussion, rationale for procedure, identification of necessary equipment, principles of appropriate skill technique, demonstration of skill when applicable, skill practice time, identification of special clinical considerations and precautions, documentation aspects and recommended elements of patient education. Opportunities to observe certain procedures and diagnostic tools will be correlated when possible. Topics include methods of wound care and closure, burns, hyper/hypothermia, assessment of pulmonary function, arterial blood gases, ENT procedures, bioterrorism, radiology. The laboratory component of this course will allow the student to practice the skills and procedures common to PA practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2204 - PHARMACOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
This course presents a study of drugs and their interactions with and within living tissue to build the foundation of safe and effective prescribing. This course introduces the student to general drug classifications and pharmacological principles including mechanism of action, indications, dosing, pharmacodynamics, and therapeutic parameters, and patient education about commonly prescribed drugs. Topic areas covered include endocrinology, dermatology, pulmonology, gastroenterology, ears/eyes/nose/throat, inpatient infectious disease, and immunology. Each of these topics will be explored through lecture, class discussions, patient cases, and prescription writing exercises.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2301 - HISTORY TAKING AND PHYSICAL EXAMINATION 2

Minimum Credits: 3
Maximum Credits: 3
This course introduces the student to the interviewing, history taking and documentation skills which will include the chief complaint, history of present illness, past medical, surgical, social, allergy and family history, review of systems and medications as they pertain to the specific organ systems presented. The students will learn the clinical significance of the physical examination, the components of the physical exam and will be able to perform these examination techniques for the material introduced in this course. Topics in this course will include: a general overview of history taking and physical examination as it pertains to course content; clinical reasoning; documentation; interviewing skills; and the cardiovascular, female/male genitalia, musculoskeletal, neurological, and psychiatric systems; and assessment of the pregnant patient.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2104, 2107, 2201, 2202, 2203, and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2302 - CLINICAL MEDICINE 2

Minimum Credits: 3
Maximum Credits: 3
This course is a continuation of Clinical Medicine I and is an intensive study of human disease processes and disorders in the broad scope of clinical medicine. As the course progresses students will explore the epidemiology, etiology, pathophysiology, assessment, management and follow up of disease processes and disorders. The course will approach the condition from the perspective of history and physical examination, ordering and interpreting diagnostic studies, generation of a differential diagnoses and the development and implementation of treatment plans and prognosis. Preventative measures to assist in disease prevention will also be discussed. Content includes disorders of the GI system, obstetrics and gynecology, nephrology, disorders of the urinary tract, musculoskeletal diseases, neurology, behavioral medicine, and hematology/oncology. Presented by physicians from various practice specialties these lectures provide comprehensive instruction that enables the student to understand the nature and problems experienced by both ambulatory and hospitalized patients. The laboratory component of this course focuses on case based learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2104, 2107, 2201, 2202, 2203, and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2303 - DIAGNOSTIC AND THERAPEUTIC PROCEDURES IN MEDICINE 2

Minimum Credits: 3
Maximum Credits: 3
This course provides a foundation of clinical skills and diagnostic procedures that are commonly performed in patient care. Instruction for selected procedures and diagnostic tools will be presented to the student by various methods including theory discussion, rationale for procedure, identification of necessary equipment, principles of appropriate skill technique, demonstration of skill when applicable, skill practice time, identification of special clinical considerations and precautions, documentation aspects and recommended elements of patient

education. Opportunities to observe certain procedures and diagnostic tools will be correlated when possible. Topics include GI procedures, NG tube placement, intravenous placement, central line monitoring, bladder catheterization, musculoskeletal procedures, immobilization, joint injection, lumbar puncture, electrocardiography, transfusion medicine. The laboratory component of this course will allow the student to practice the skills and procedures common to pa practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2104, 2107, 2201, 2202, 2203, and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2304 - PHARMACOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
This course continues the study of drugs and their interactions with and within living tissue to build the foundation of safe and effective prescribing. This course reinforces general drug classifications and pharmacological principles including mechanism of action, indications, dosing, pharmacodynamics, and therapeutic parameters, and patient education about commonly prescribed drugs. Topic areas covered include cardiology, genitourinary, musculoskeletal, rheumatology, neurology, and psychology. Each of these topics will be explored through lecture, class discussions, patient cases, and prescription writing exercises.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2104, 2107, 2201, 2202, 2203, and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2305 - HEALTH ISSUES ACROSS THE LIFESPAN

Minimum Credits: 2
Maximum Credits: 2
This course introduces the physician assistant student to diseases, exam findings and diagnostic evaluations, and treatments common to the pediatric and geriatric populations. Course content will be introduced using a variety of teaching techniques including both traditional lectures as well as cooperative and collaborative group work. Case studies will be presented to reinforce course content and form the discussion in class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2104,2107,2201,2202,2203,and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2306 - FUNDAMENTALS OF SURGERY

Minimum Credits: 1
Maximum Credits: 1
A series of lectures introduces fundamental principles of peri-operative medicine, procedure oriented patient evaluations, preoperative assessment, prevention of post-operative complications, surgical instrumentation, operative techniques, anesthesia, pre- and post-operative management of patients, post-operative complications, co-morbid states, and documentation. The history of the physician assistant in surgery, including surgical reimbursement issues will be discussed. Selected topics will include the most commonly performed surgical procedures as well as issues relevant to various surgical sub-specialties.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2401 - INTRODUCTION TO THE PA PROFESSION

Minimum Credits: 1
Maximum Credits: 1
This course traces the history, development, and current status of the PA profession. Students will explore the role of the physician assistant

as part of the healthcare team. The student will research and investigate the state and national legislation that governs the profession. Topics will include a historical perspective of the profession, current trends, and issues of the profession; the PA role in health care delivery, competencies integral to the PA profession; political and legal factors that affect PA practice; importance of biomedical ethics, patient confidentiality, and professionalism, in relation to their role as health care providers; content reviewing the professional organizations, program accreditation, graduate certification, certification maintenance, license application, employment issues and professional liability will be discussed. Each of these topics will be explored lectures, class discussions and written assignment. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2402 - HUMAN ANATOMY AND LAB

Minimum Credits: 4
Maximum Credits: 4
This 4-credit course provides a comprehensive study of human anatomy, emphasizing the relationship between structure and function. Students engage in virtual visualization tools to explore anatomical structures throughout the semester, building a strong foundational understanding remotely. The course culminates in a required, week-long in-person immersion, during which students perform hands-on cadaver dissection to apply and deepen their knowledge. Clinical relevance and medical applications of anatomical relationships are emphasized throughout. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2403 - HEALTH POLICY

Minimum Credits: 2
Maximum Credits: 2
This course introduces the student to how the health care system works. The focus is on basic principles of health policy, the health care system and system failures. Topics include reimbursement, access to health care, quality assurance, public health, health care disparities. The course also includes a discussion of ethical principles as they relate to the practicing medical professional. Students will have the opportunity to research and present topics related to the course as well as discuss current health policy topics in a group setting. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2404 - INTERPRETING AND EVALUATING THE MEDICAL LITERATURE

Minimum Credits: 1
Maximum Credits: 1
This course introduces the basic concepts, terminology and methodology of quantitative and qualitative research as it applies to medical practice. This course provides the knowledge and skills necessary for locating, interpreting, critiquing and applying medical research to clinical practice and professional development. This course will highlight methods for identifying quality medical literature, with a focus on the strengths and limitations of various study designs and statistical analysis.This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2405 - INTRODUCTION TO CLINICAL MEDICINE

Minimum Credits: 3
Maximum Credits: 3
This course is the first part of an intensive study of human disease processes and disorders in the broad scope of clinical medicine. Students will explore the epidemiology, etiology, pathophysiology, assessment, management and follow up of disease processes and disorders. The course will approach the condition from the perspective of history and physical examination, ordering and interpreting diagnostic studies, generation of a differential diagnoses and the development and implementation of treatment plans and prognosis. Measures to assist in disease prevention and mitigate healthcare disparities will also be discussed. The course combines asynchronous content with interactive case-based live sessions. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2406 - MEDICAL PHYSIOLOGY AND PATHOPHYSIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This course integrates the specific characteristics and mechanisms of normal and abnormal functioning of tissues and organs of the human body organized in a systems-based approach. This includes principles of cell and organ physiology, and the disruption of normal homeostatic mechanisms that progresses beyond the compensatory capabilities of the human body. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2407 - GENETIC AND MOLECULAR MECHANISMS OF HEALTH AND DISEASE

Minimum Credits: 1
Maximum Credits: 1
The understanding of genetic and molecular medicine as it applies to clinical practice is the focus of this course. A strong knowledge base of cell structure, genetic variation, inheritance patterns and specific genetic disorders is required. In addition to knowledge, the application of genetic and molecular medicine involves the development and integration of skills including but not limited to: accurate history taking; creation of, precise documentation of and interpretation of the pedigree; integration of genetic understanding into patient assessment; comprehension of the role of genetic testing and counseling; and management and referral of patients with genetic issues. Physician Assistant students must be familiar with the ethical, legal and social issues of genetics. Due to the constantly changing knowledge in this field, PA students must demonstrate the ability to utilize information literacy skills to ensure that as clinicians they are self-directed life-long learners. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2401 and PAS 2402 and PAS 2403 and PAS 2404 and PAS 2405 and PAS 2406 (Minimum Grade 'C' for All Listed Courses)

PAS 2408 - PATIENT EDUCATION AND COUNSELING

Minimum Credits: 2
Maximum Credits: 2
Effective communication with patients is a required skill for a successful PA. This course will begin to cultivate the crucial skills of patient communication and health counseling. Students will be exposed to theory regarding patient adherence, health literacy and communication methods for various population groups as well as education on special topics they will encounter as they navigate patient-clinician relationships in the future. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2401 and PAS 2402 and PAS 2403 and PAS 2404 and PAS 2405 and PAS 2406 (Minimum Grade 'C' for All Listed Courses)

PAS 2409 - HISTORY TAKING AND PHYSICAL EXAMINATION 1 AND LAB

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the fundamental skills of patient interviewing, physical examination, and clinical documentation necessary for completing a comprehensive subjective and objective assessment. Topics are organized by body systems to build a structured approach to evaluation. The course also provides a brief overview of billing and coding principles as they relate to documentation. Students will develop key competencies in patient-centered practice, health literacy, and effective communication. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2401 and PAS 2402 and PAS 2403 and PAS 2404 and PAS 2405 and PAS 2406 (Minimum Grade 'C' for All Listed Courses)

PAS 2410 - CLINICAL MEDICINE 1 AND LAB

Minimum Credits: 3
Maximum Credits: 3
This course will include a series of lectures on fundamental principles of disease, diagnosis, intervention and management. The course promotes a working knowledge base for correlating the relationship between signs and symptoms of disease, the etiology of disease, diagnostic work up and the medical rationale for selected management regimes. The lab portion of the course will be largely case based and focus on clinical decision making. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2401 and PAS 2402 and PAS 2403 and PAS 2404 and PAS 2405 and PAS 2406 (Minimum Grade 'C' for All Listed Courses)

PAS 2411 - DIAGNOSTIC & THERAPEUTIC PROCEDURES IN MEDICINE 1 AND LAB

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the fundamental diagnostic and therapeutic procedures commonly performed in clinical practice. Students will learn the principles, indications, contraindications, and potential complications associated with these procedures. Through virtual simulations designed to replicate lab settings, students will engage in hands-on practice to develop foundational skills prior to performing procedures in clinical environments. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2401 and PAS 2402 and PAS 2403 and PAS 2404 and PAS 2405 and PAS 2406 (Minimum Grade 'C' for All Listed Courses)

PAS 2412 - PHARMACOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
This course involves the study of pharmacology therapeutics and designed to provide the students the knowledge necessary to make clinical decisions regarding pharmaceuticals in their practice. This course will include the study of the effects of drugs on the body and their ability to modify disease states. The focus will be on determining the appropriate drug therapy using all available patient information. This course has a required in-person component.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2401 and PAS 2402 and PAS 2403 and PAS 2404 and PAS 2405 and PAS 2406 (Minimum Grade 'C' for All Listed Courses)

PAS 2413 - HISTORY TAKING AND PHYSICAL EXAMINATION 2 AND LAB

Minimum Credits: 3
Maximum Credits: 3
This course builds upon the skills developed in History Taking and Physical Examination I, advancing students' interviewing, physical examination, and documentation abilities necessary for completing thorough patient assessments. Topics are organized by body systems and are integrated with content from concurrent coursework. The course also provides a brief overview of billing and coding principles as they relate to clinical documentation. Students will continue developing essential competencies in patient-centered practice, health literacy, and effective communication. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2407 and PAS 2408 and PAS 2409 and PAS 2410 and PAS 2411 and PAS 2412 (Minimum Grade 'C" for All Listed Courses)

PAS 2414 - CLINICAL MEDICINE 2 AND LAB

Minimum Credits: 3
Maximum Credits: 3
This course will include a series of lectures on fundamental principles of disease, diagnosis, intervention and management. The course promotes a working knowledge base for correlating the relationship between signs and symptoms of disease, the etiology of disease, diagnostic work up and the medical rationale for selected management regimes. The lab portion of the course will be largely case based and focus on clinical decision making. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2407 and PAS 2408 and PAS 2409 and PAS 2410 and PAS 2411 and PAS 2412 (Minimum Grade 'C" for All Listed Courses)

PAS 2415 - DIAGNOSTIC AND THERAPEUTIC PROCEDURES IN MEDICINE 2 AND LAB

Minimum Credits: 3
Maximum Credits: 3
This course builds upon the foundational knowledge from Diagnostic and Therapeutic Procedures in Medicine I, advancing students¿ understanding of commonly performed clinical and diagnostic skills. Students will explore the principles, indications, contraindications, complications, and interpretations associated with a range of procedures. Through virtual simulations designed to replicate lab settings, students will engage in hands-on practice to further develop clinical proficiency. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2407 and PAS 2408 and PAS 2409 and PAS 2410 and PAS 2411 and PAS 2412 (Minimum Grade 'C" for All Listed Courses)

PAS 2416 - PHARMACOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
This course involves the study of pharmacology therapeutics and designed to provide the students the knowledge necessary to make clinical decisions regarding pharmaceuticals in their practice. This course will include the study of the effects of drugs on the body and their ability to modify disease states. The focus will be on determining the appropriate drug therapy using all available patient information.

This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2407 and PAS 2408 and PAS 2409 and PAS 2410 and PAS 2411 and PAS 2412 (Minimum Grade 'C" for All Listed Courses)

PAS 2417 - HEALTH ISSUES ACROSS THE LIFESPAN

Minimum Credits: 2
Maximum Credits: 2
The well-trained physician assistant is able to competently treat patients of all ages based upon a clear understanding of health issues and diseases as they exist within the context of the patient's lifespan. This course introduces the physician assistant student to disease processes, exam findings, diagnostic evaluations, and treatments common to the pediatric and geriatric populations. Course content will be introduced using various teaching techniques including traditional lecture, class discussion and completion of electronic curriculum modules. This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2407 and PAS 2408 and PAS 2409 and PAS 2410 and PAS 2411 and PAS 2412 (Minimum Grade 'C" for All Listed Courses)

PAS 2418 - FUNDAMENTALS OF SURGERY

Minimum Credits: 1
Maximum Credits: 1
This course introduces students to the fundamental principles of perioperative medicine, including how to care for the surgical patient, operative equipment and techniques, anesthesia, common postoperative complications and methods for prevention, and documentation. Selected topics will include the most performed surgical procedures as well as issues relevant to various surgical subspecialties.This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PAS 2407 and PAS 2408 and PAS 2409 and PAS 2410 and PAS 2411 and PAS 2412 (Minimum Grade 'C" for All Listed Courses)

PAS 2421 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 1

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Hybrid Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2422 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 2

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Hybrid Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2423 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 3

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Hybrid Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2424 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 4

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Hybrid Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2425 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 5

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Hybrid Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2426 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 6

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Hybrid Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2427 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 7

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Hybrid Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2428 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 8

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Hybrid Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2429 - TRANSITION TO PROFESSIONAL PRACTICE

Minimum Credits: 5
Maximum Credits: 5
This five-week course prepares students for entry into clinical practice by addressing practical issues relevant to new PAs. Instruction focuses on professional responsibilities, workplace expectations, and the application of health information technology to support effective practice. In addition, students complete the program's summative evaluation, a required component for graduation, which assesses knowledge, clinical reasoning, technical skills, interpersonal abilities, professional behaviors, and problem-solving competencies. Successful completion of this course confirms that students have achieved the program's learning outcomes and are ready to transition into professional practice.This course has a required in-person component.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2430 - CLINICAL YEAR FEE

Minimum Credits: 0
Maximum Credits: 0
Used to assess a clinical year fee for students in the pa studies hybrid program.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: No Grade Required

PAS 2701 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 1

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Residential Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical

Grade Component: Grad HSU Basis
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2702 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 2

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Residential Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2703 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 3

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Residential Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2704 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 4

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Residential Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical

Grade Component: Grad HSU Basis
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2705 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 5

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Residential Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2706 - SUPERVISED CLNICAL PRACTICE EXPERIENCE 6

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Residential Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2707 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 7

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Residential Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical

Grade Component: Grad HSU Basis
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2712 - SUMMATIVE EVALUATION

Minimum Credits: 1
Maximum Credits: 1
The summative evaluation is designed to assure that each student has met ARC-PA and the program's defined cognitive and clinical skills performance objectives prior to graduation. In addition to assessing the student's proficiency by individual competencies we will be assessing student performance through the interaction of the program specific competencies. The summative evaluation includes measurement of the dimensions of cognition, technical skill, integration, rapport, behavior and attitude. The evaluation is comprised of an objective examination of medical knowledge, procedural skill through clinical skills evaluation, and objectively structured clinical examinations to evaluate interactions between the student and patient (history taking, physical examination and clinical reasoning) assessment of critical thinking and professional behavior. Students are required to pass this course in order to graduate from the program.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2713 - SUPERVISED CLINICAL PRACTICE EXPERIENCE 8

Minimum Credits: 4
Maximum Credits: 4
This course is a required rotation for PA students. It focuses on the role of the PA in one or more of the following settings: a) emergency department, b) inpatient, c) outpatient, d) operating room, e) other. In this course, the student is actively engaged in meeting the PA Studies Residential Program's learning outcomes. The instructional faculty for this course includes one or more preceptors who enable students to meet program-defined learning outcomes: a) for preventive, emergent, acute, and chronic patient encounters; b) across the life span, to include infants, children, adolescents, adults, and the elderly; c) for prenatal, obstetrical, and gynecologic health; d) for conditions requiring surgical management, including pre-operative, intra-operative, and post-operative care; e) for behavioral and mental health conditions; f) for the following medical disciplines: family medicine, emergency medicine, internal medicine, surgery, pediatrics, prenatal/obstetrical/gynecologic care, and behavioral and mental health care; and/or g) for a personalized, elective experience that incorporates the above or other learning outcomes designed for the specific rotation.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 2714 - TRANSITION TO PROFESSIONAL PRACTICE

Minimum Credits: 5
Maximum Credits: 5
This course combines instruction on practical issues as they relate to the practicing PA, especially new graduates, with evaluation instruments that measure if and verify that the learner has met the learning outcomes of the program and has the knowledge, interpersonal skills, clinical and technical skills, professional behaviors, clinical reasoning and problem-solving abilities required for PA practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PAS 3001 - CORE CONCEPTS OF SCHOLARLY PRACTICE

Minimum Credits: 4
Maximum Credits: 4
This course provides the theoretical foundations for the emerging scholar-practitioner to conceptualize the doctoral capstone project. The course provides an understanding of becoming a scholar-practitioner and the tools to identify, frame, and consider ways to thoughtfully engage in systematic inquiry focused on important problems of practice.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 3002 - EXAMINING SUPPORTING EVIDENCE

Minimum Credits: 4
Maximum Credits: 4
At the center of practitioner scholarly inquiry is the ability to use data to understand the effects of innovations that seek to improve problems found in practice. This course will prepare learners to engage the literature to help frame their area of inquiry. Learners will use primary and other professionally appropriate sources to support the implementation of quality improvement projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 3003 - DEVELOPING THE HEALTHCARE LEADER: INTERNSHIP EXPERIENCE 1

Minimum Credits: 6
Maximum Credits: 6
Learners will acquire and demonstrate leadership skills as they apply classroom-based concepts in the clinical, academic, or administrative setting with an emphasis on exploring areas for enhanced implementation strategies or improvement and organizational analysis. Alternatively, the requirements for this course may be fulfilled by the completion of a residency or fellowship upon approval of the Program Director.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 3004 - PERSONALIZED ELECTIVE

Minimum Credits: 4
Maximum Credits: 4
This course gives learners the option for an academic, administrative, or digital health focus. Learners will broaden their understanding of program concepts through a combination of didactic instruction and experiential learning. This course will give learners the opportunity to apply knowledge and build professional networks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 3005 - SCHOLARLY PRACTICE CAPSTONE PHASE 1

Minimum Credits: 4
Maximum Credits: 4
Learners will design and initiate a project to implement evidence-based knowledge in partnership with stakeholders and an academic mentor to improve health care practice. This phase of the capstone project includes project development and approval, stakeholder engagement, faculty guidance and feedback, and project implementation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PAS 3006 - DEVELOPING THE HEALTHCARE LEADER: INTERNSHIP EXPERIENCE 2

Minimum Credits: 6
Maximum Credits: 6
Learners will acquire and demonstrate leadership skills as they apply classroom-based concepts in the clinical, academic, or administrative setting with an emphasis on enhancing the focus of their personalized elective. This course will give learners the opportunity to apply knowledge and build professional networks. Alternatively, the requirements for this course may be fulfilled by the completion of a residency or fellowship upon approval of the Program Director.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

PAS 3007 - SCHOLARLY PRACTICE CAPSTONE PHASE 2

Minimum Credits: 8
Maximum Credits: 8
Learners will complete and analyze the results of their project implementation to demonstrate the synthesis of integrated learnings. This phase of the capstone project includes the delivery of findings through both an oral presentation to and collegial discussion with an audience of academic peers, faculty and/or professional colleagues, as well as a written defense.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PAS 3008 - DEVELOPING THE HEALTHCARE LEADER: INTERNSHIP EXPERIENCE 3

Minimum Credits: 6
Maximum Credits: 6
Learners will acquire and demonstrate leadership skills as they apply classroom-based concepts in the clinical, academic, or administrative setting that emphasizes reflection on the implementation of change processes and their iterations. Alternatively, the requirements for this course may be fulfilled by the completion of a residency or fellowship upon approval of the Program Director.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

Physics

PHYS 0174 - BASIC PHYSICS FOR SCIENCE AND ENGINEERING 1

Minimum Credits: 4
Maximum Credits: 4
This is the first part of a two-term sequence (Physics 0174, 0175) that introduces students to the basic principles of physics. The course covers mechanics and waves. Students planning to major in physics are encouraged to take the equivalent honors course (Physics 0475).
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: CREQ: MATH 0220 or 0235

PHYS 0175 - BASIC PHYSICS FOR SCIENCE AND ENGINEERING 2

Minimum Credits: 4
Maximum Credits: 4
This is the second part of a two-term sequence (Physics 0174, 0175) that introduces students to the basic principles of physics. This course

covers electricity, magnetism, circuits, electromagnetic theory, and optics. Students planning to major in physics are encouraged to take the equivalent honors course (Physics 0476).
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: ((PHYS 0174 or 0475 Min Grade 'C') and (MATH 0235 Min Grade 'C' or CREQ: MATH 0230)) or (PHYS 0110 Min Grade 'A-' and (MATH 0235 Min Grade 'A-" or MATH 0220 and CREQ: MATH 0230))

PHYS 1378 - INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS

Minimum Credits: 3
Maximum Credits: 3
This is a self-contained introductory course that provides an experimental and theoretical introduction to nuclear and particle physics. The interactions of particles with matter will be reviewed along with experimental techniques used for particle production, detection, and measurement. Theoretical frameworks underlying particle and nuclear physics -- including kinematics, special relativity, quantum mechanics, symmetries, and conservation laws -- will be reviewed. These concepts and techniques are applied to examine a range of properties of elementary particles and nuclei and the phenomena associated with them. Applications of nuclear and particle physics and open questions requiring physics beyond the Standard Model will also be briefly discussed.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: PHYS 1370 or PHYS 0477

PHYS 1626 - PHYSICS OR ASTRONOMY WRITING PRACTICUM 2

Minimum Credits: 1
Maximum Credits: 1
This is a writing practicum to accompany PHYS 1426 or ASTRON 1263.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis
Course Requirements: PH 1426 or ASTRON 1263;PLAN: Physics(BS) or Ph and Astr (BA) or Astronomy(BA) or PHYS-Quan(BS);PREQ:ENG 0102 or ENGCMP(0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212)or ENGCMP 0213orENGCMP 0214orENGFLM 0210orFP(0003 or 0006)

PHYS 1661 - PHYSICS OR ASTRONOMY WRITING PRACTICUM 1

Minimum Credits: 1
Maximum Credits: 1
This is a writing practicum to accompany physics 1361.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: LG/SNC Elective Basis
Course Requirements: CREQ:PHYS 0520 or 1361;PLAN:Physics(BS)or Physics and Astronomy(BS) or PHYS-Quant(BS); PREQ:ENG 0102 or ENGCMP(0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212)orENGCMP 0213orENGCMP 0214orENGFLM 0210orFP(0003 or 0006)

PHYS 1900 - INTERNSHIP

Minimum Credits: 1
Maximum Credits: 9
This course places the student in an "on-the-job" setting in which they receive practical experience in a supervised training environment.
Academic Career: Undergraduate
Course Component: Internship
Grade Component: LG/SNC Elective Basis

PHYS 1904 - EXPERIENCE IN UNDERGRADUATE TEACHING

Minimum Credits: 1
Maximum Credits: 2
A program to allow qualified students to assist in the teaching of introductory physics courses.
Academic Career: Undergraduate
Course Component: Directed Studies
Grade Component: LG/SNC Elective Basis

PHYS 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

PHYS 2101 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHYS 2341 - THERMODYNAMICS AND STATISTICAL MECHANICS

Minimum Credits: 3
Maximum Credits: 3
The properties of matter as described by thermodynamics, in which atomic structure is irrelevant, and by statistical mechanics, which is based on the atomic point of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2370 - INTRODUCTION TO QUANTUM MECHANICS 1

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to quantum mechanics for first-year graduate students who have not taken such a course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2371 - INTRODUCTION TO QUANTUM MECHANICS 2

Minimum Credits: 3
Maximum Credits: 3
Physics 2371 will be a continuation of the material covered in Physics 2370 with special emphasis on applications of quantum mechanics. Topics to be covered are: multi-particle systems, time-independent perturbation theory and its application to the fine-structure and hyperfine structure of atoms, time-dependent perturbation theory and its application to the absorption and emission of light, and other approximation methods.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2372 - ELECTROMAGNETIC THEORY

Minimum Credits: 3
Maximum Credits: 3
Advanced topics, including boundary-value problems and radiation theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2373 - MATHEMATICAL METHODS IN PHYSICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2513 - DYNAMICAL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
The Lagrangian and Hamiltonian formulations of classical mechanics will be emphasized. Some of the topics that will be treated are conservation, theorem, small oscillations, rigid-body motion, canonical transformation, and an introduction to the theory of chaotic motions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2541 - THERMODYNAMICS AND STATISTICAL MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This is the first term of a 2-term course with emphasis on statistical mechanics. Discussion of microcanonical, canonical, and grand canonical ensembles, the passage to quantum mechanics, and the use of density matrix. The Gibbs approach to the second law. Fermi-Dirac and Bose-Einstein statistics, in both weak and strong degeneracy approximations. Transport phenomena including the fluctuation dissipation theorem and the master equation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2555 - ADVANCED CLASSICAL ELECTRICITY AND MAGNETISM

Minimum Credits: 4
Maximum Credits: 4
This is the first term of a two-term study of Maxwellian electromagnetism. Both the physical concepts involved and the mathematical formulation of the theory will be explored. The theory will be applied to a variety of physical systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2565 - NON-RELATIVISTIC QUNTM MECHANC 1

Minimum Credits: 3
Maximum Credits: 3
This is the first term of a two-term course. Subjects covered include the general principles of wave mechanics and matrix mechanics, Dirac notation, the solution of bound state problems, especially the central force problem.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2566 - NON-RELATIVISTIC QUNTM MECHANC 2

Minimum Credits: 3
Maximum Credits: 3
The second term of this course applies the previously developed abstract form of quantum mechanics to more complicated systems. Angular momentum and permutation symmetries are discussed. Approximation methods for multiparticle and scattering problems are developed. Finally the theory of electromagnetic radiation by atoms is presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2687 - RESEARCH WRITING IN PHYSICS AND ASTRONOMY

Minimum Credits: 3
Maximum Credits: 3
Research writing in physics and astronomy will facilitate students' development as practicing physicists and astronomers through writing. The primary goal of this class is to practice writing and speaking in a variety of contexts that might be encouraged in astronomy/physics careers and thereby help the student further develop some of the skills central to life as a scientist.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2900 - GRADUATE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
This course places the student in an "on-the-job" setting in which they receive practical experience in a supervised training environment.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

PHYS 2903 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

PHYS 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

PHYS 2997 - TEACHING OF PHYSICS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2998 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 2
Hands-on teaching practicum course for graduate students to learn about university-level teaching.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

PHYS 2999 - PHYSICS AND ASTRONOMY COLLOQUIUM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad SN Basis

PHYS 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

PHYS 3101 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 9
Special Topics
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHYS 3102 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

PHYS 3274 - COMPUTATIONAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3542 - ADVANCED STATISTICAL PHYSICS

Minimum Credits: 3
Maximum Credits: 3
Statistical physics typically deals with the thermal properties of systems with large numbers of interacting dynamical variables, i.e., With many degrees of freedom, and the special techniques used to determine those properties. As such, the ideas, methodologies and results from the study of statistical physics inform virtually all fields of physics, from condensed matter and solid state to astrophysics and cosmology. This course is aimed at a wide audience of primarily second year (and more senior) graduate students with interests in experimental or theoretical physics and astrophysics/cosmology. The aim is to provide a broad perspective of the concepts and techniques of statistical physics, which, as noted, cut across many areas of active research. Depending on the composition of the class, an attempt will be made to include some examples from different disciplines. Topics to be covered (depending somewhat on the background and interests of individuals in the class) include: a review of ideal quantum gases (Sommerfeld model of a metal; Bose-Einstein condensation; magnetism in Fermi systems (landau levels, hall effect); white dwarf stars); fluctuations and response; phase transitions and critical phenomena (experimental survey; criticality = a new state of matter?); Phenomenology (mean field theories, landau theory, classification); order parameters, scaling, fluctuations, response, universality, broken symmetry; renormalization group overview as a mechanism; interacting systems (brief introduction to second quantization; weakly interacting bose gas (broken symmetry, excitation spectrum, superfluidity); bcs as a mean field theory; nonequilibrium, stochastic processes (brownian motion and diffusion; fluctuation/dissipation; markov processes, master equation; boltzmann equation and fluid mechanics).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3704 - STATISTICS AND DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This class will expose students to the basics of astronomical data analysis, with an emphasis on statistical techniques and the development of practical programming skills. Topics may include the nature of random and systematic errors, fitting and likelihood techniques, hypothesis testing, astronomical instrumentation and data reduction, and the use of large survey data sets.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3707 - INTRODUCTION TO MANY-BODY PHYSICS

Minimum Credits: 3
Maximum Credits: 3
It is difficult to find a current topic in physics that doesn't deal with many interacting degrees of freedom. The universe of such problems is conveniently divided into ones in which quantum descriptions are essential and others in which a classical description will suffice. Despite this seeming division, the ideas and concepts cross over; an example is the idea of a field description. Very similar effective field theories describe a superconductor at low temperatures, a quantum system, and a classical system like a quantity of liquid argon coexisting with its vapor. Concepts, for example, of broken symmetry and gauge invariance are portable. Many of the same general concepts and techniques carry over from one subfield to another; a number of examples can be cited and will be mentioned at appropriate points during the course. This is a one-term nuts-and-bolts introduction to the quantum physics of interacting, many-particle systems. The course includes second quantization, many body physics and a brief introduction to relativistic quantum mechanics. The approach will generally be intuitive and hands-on. The course typically will begin with second quantization for fermionic and bosonic systems, with examples typically involving electrons, phonons and photons, arising from the quantization of the electromagnetic field. Applications will typically include (i) the interacting electron gas and plasmons (ii) the interaction of the radiation field and matter, (iii) electron phonon interaction, dressed electrons and the polaron problem. There will typically be some discussion of condensation phenomena and superfluidity (typically

Bogoliubov theory, broken symmetry and goldstone bosons); superconductivity (pairing, BCS and Landau-Ginzburg theories). There will generally be some exposure to greens functions and Feynman diagrams. In addition the course will include a brief introduction to relativistic quantum mechanics and the Dirac equation. Throughout there will be discussion of applications of the techniques and concepts in various subfields of physics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3715 - SOLID STATE PHYSICS

Minimum Credits: 3
Maximum Credits: 3
This is a one-term course on the ideas of solid-state physics, emphasizing the special ways one must think about crystalline materials. This is a mature subject, but continuously, over more than seven decades, new ideas and phenomena have emerged. In one term we can only consider the basic ideas along with a few more recent developments to enable students working in solid state physics, condensed matter, nanoscience and related fields to approach the voluminous literature and enhance their own research efforts, and also to allow other students to have an appreciation for an extremely large part of current research activity in physics. Roughly speaking, there will be three parts to the course: some variation on emphasis can be expected depending on the instructor and on the interests of the class. (I) phonons: crystal lattices; diffraction and scattering; reciprocal lattice; lattice vibrations, quantization; thermal properties. (Ii) electrons: free electron model; density of states; thermal properties; Bloch's theorem, electron states and energy bands; semiconductor statistics; quasi-classical electron dynamics; Boltzmann equation and transport. (Iii) additional topics: electron-electron and electron-phonon interactions; hall effect; landau levels; superconductivity; electromagnetic response.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3716 - ADVANCED SOLID STATE PHYSICS

Minimum Credits: 3
Maximum Credits: 3
This is a second, graduate level solid state course. The topics could be adjustable given the cross section of the department and topical developments in the field. Depending on the makeup of the department, the scope (and title) could be broadened. Topics suitable for this course include: a brief exposure to 'practical' group theory (1-2 weeks maximum); optics and spectroscopy relevant to the solid state (including linear and non-linear response and complex dielectric constant); coherence and correlation (including the density matrix, Bloch equations, optics); introduction to NMR (e.g. Two-level system, rotating reference frame, characteristic times); superconductivity ii (e.g. Type ii, magnetic effects) beyond the Ginsburgh-Landau theory (done in statistical physics ii); magnetism ii (more advanced topics: using model and phase transitions done in statistical physics ii, spin waves and landau levels in solid state physics i); transport theory ii (i.e. Beyond the basic Boltzmann equation examples in solid state physics i).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3717 - PARTICLE PHYSICS

Minimum Credits: 3
Maximum Credits: 3
This is the first term of a two term sequence exposing the student to basic methods and recent developments in high energy physics. Particle physics involves completely relativistic phenomena and requires the generalization of non-relativistic quantum concepts to the relativistic regime in order to develop the phenomenological and calculational methods suitable for relativistic processes in which the number and type of particles can change. The student will be taken out of the realm of the Schroedinger equation and into relativistic quantum fields. The first term is suitable as a one semester course for students not specializing in high energy physics. The course examines experimental and phenomenological foundations of particle physics. The known particles and fundamental interactions are investigated. Modern experimental techniques of particle physics are discussed (including basic properties of particle interactions with matter). General features of electromagnetic, weak, and strong interactions, and their associated symmetries, are explored.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3718 - ADVANCED PARTICLE PHYSICS

Minimum Credits: 3
Maximum Credits: 3
This is the conclusion of the 2-term sequence PHYS 3717/3718. This course covers the standard model in detail and includes: the phenomenology of weak interactions; group theory and the quark model; the parton model for deep inelastic scattering and other high energy processes; an introduction to gauge theories of electroweak and strong interactions. Various topics of current interest in particle physics beyond the standard model will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3725 - GENERAL RELATIVITY 1

Minimum Credits: 3
Maximum Credits: 3
This course will cover the basic conceptual foundations of general relativity, calculational techniques, and current observational probes. Topics include the equivalence principle, geodesic deviation, tidal forces, the description of gravitation as spacetime curvature, and Einstein's equations. These ideas will be applied to current observations, including post-Newtonian parameters and solar system probes, the Schwarzschild metric and black holes, gravitational wave generation and detection, gravitational lensing, and gravitational explanations for dark energy phenomenology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3726 - GENERAL RELATIVITY 2

Minimum Credits: 3
Maximum Credits: 3
This is the second term of a two-term survey of general relativity. Subjects to be treated during the year include conservation laws, equations of motion, gravitational radiation, gravitation collapse, and cosmology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3730 - INTRODUCTION TO BIOPHYSICS

Minimum Credits: 3
Maximum Credits: 3
The post genomic age presents many new challenges and opportunities to physicists. This course will prepare the students to face those challenges and to work in this exciting multidisciplinary area of science. In this course we will review useful physical ideas and techniques that have contributed significantly to the recent development in biophysical research. This includes the use of statistical approaches for understanding gene regulation and signal transduction in biological and chemical networks; nonlinear dynamics for understanding biological pattern formation, ecology, and population dynamics; hydrodynamics for understanding cell motility and taxis; and information theory for signal processing in neuronal networks. The study of biophysics thus requires a broad range of physics knowledge and techniques. The course will also introduce basic concepts in biology that range from molecular to cellular biology. Topics to be covered include: introduction to biology; microscopy techniques; basics of cell biology; genetics (the genetic code, gene replication, gene expression, genetic networks); molecular biology techniques; energy in biological systems and the statistical view of biological dynamics; entropy and free energy in biology; two-state models in biology and neurobiology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3765 - FIELD THEORY 1

Minimum Credits: 3
Maximum Credits: 3
This is the first semester of a graduate course in quantum field theory. The assumed prerequisites are a basic graduate course in quantum mechanics, and familiarity with the rudiments of special relativity. The course develops the perturbative approach to relativistic field theory. It begins with a study of the Lorentz group and the method of second quantization. Scalar and spin-1/2 field theories are discussed, including an elementary introduction to renormalization (at the one-loop level). The theory of interacting electrons and photons (qed) is constructed, with applications to a number of physical processes. In more detail, the topics covered will be: Lorentz and poincare groups; free scalar field theory; free spin-1/2 field theory; field quantization; symmetries and conservation laws; interacting scalar field theories, Yukawa theory; perturbation theory and Fynman rules; elementary renormalization theory; quantum electrodynamics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3766 - FIELD THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This is the second semester of a graduate course in quantum field theory. It builds on the material covered in phys 3765 (field theory 1). The course further develops the techniques of relativistic quantum field theory, covering the path integral approach to field theory, additional topics in quantum electrodynamics, symmetry breaking, non-abelian gauge theories, and the standard model. In more detail, the topics covered will be: green's functions, asymptotic scattering theory, and the lsz formalism; functional integration and the path integral; quantization of abelian (qed) and non-abelian (yang-mills) fields; the renomalization group; spontaneous symmetry breaking of global and local symmetries; the standard model.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3770 - TOPICS IN QUANTUM PHYSICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3790 - PARTICLE ASTROPHYSICS

Minimum Credits: 3
Maximum Credits: 3
Particle physics plays an increasingly important role in astrophysics. This class will cover areas of common interest between these fields. Topics may include dark matter (particle abundances, particle candidates, direct and indirect detection), neutrino masses and oscillations, high energy cosmic rays and detection schemes, high density matter in neutron stars, models for inflation, baryogenesis, cosmological phase transitions, and models for dark energy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

PHYS 3903 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

PHYS 3904 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

PHYS 3907 - DIRECTED RESEARCH

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Plastic Surgery

PLSSURG 5450 - PLASTIC RECONSTRUCTIVE SURGERY

Minimum Credits: 0
Maximum Credits: 0
Four-week elective. Student participates in clinical care of patient on plastic surgical service, in acute management of facial and hand injuries in ER or OR. Also involved in pre- and post-operative care. Act as assistant in elective plastic surgery operations in wide variety of conditions. Instruction given in biology of wound healing and fundamental techniques of plastic surgery. Emphasis on scope and interaction of plastic surgery with other specialties and various methods of reconstruction available for various deformities.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PLSSURG 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PLSSURG 5883 - SURGICAL RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Student will be given the opportunity to learn research techniques and to participate in research in progress in surgical laboratory or in special circumstances, to carry on an independent project. Attendance at seminars and discussion groups is encouraged.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PLSSURG 5899 - INDEPENDENT STUDY PLASTIC SURGERY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

PLSSURG 5901 - EXTRAMURAL PLASTIC SURGERY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in plastic surgery may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PLSSURG 5904 - PLASTIC/RECONSTRUCTIVE/MAXILLOFACIAL INTERNATIONAL STUDENTS

Minimum Credits: 0
Maximum Credits: 0
This four-week elective will provide the student with an opportunity to participate in the clinical care of patients on the plastic surgery service at Presbyterian University Hospital, Children's Hospital, Magee Women's Hospital and UPMC Shadyside Hospital. Students will be involved in all levels of care: from office preoperative evaluations through the operative procedure and including postoperative care. the students can mold their own experience depending upon their areas of interest. In addition to the direct attending and resident education, at least five teaching conferences are held weekly. Emphasis will be placed on the scope and interaction of plastic surgery with other specialties and the various methods of reconstruction available for each type of deformity. Plastic surgery allows for an excellent experience in problem based thinking on a very clinical level. The student will assist in the evaluation and surgery in various fields including: acute trauma of the face and hand, congenital deformities, breast surgery, aesthetic surgery, microsurgery, cancer reconstruction and care of non-healing wounds.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

Political Science

PS 1555 - GLOBAL STUDIES MINI COURSE

Minimum Credits: 1
Maximum Credits: 1

This mini course will be offered in Fall and Spring terms. The basic descriptions differ in each term and can be found below. Additionally, specific information will be added to the Notes section as it becomes available and edited by individual events and instructors each term. Fall Terms: Global Health: This course engages the interdisciplinary nature of global health by approaching the issue through the lens of the Sustainable Development Goals (SDG) developed by the United Nations. With an applied focus, the course will assist students in engaging and advocating for a community on a global health issue through a policy memo. For more information see the Global Studies web site or contact global@pitt.edu. Spring Terms: Cities in Transformation: This course views cities as hubs where patterns, connections, discussions, and the processes shape such issues as social justice, economic development, technology, migration, the environment among others. By examining cities as a lens, this course encourages students to examine cities as a system for discussing social processes being built and rebuilt. For more information see the Global Studies web site or contact global@pitt.edu.
Academic Career: Undergraduate
Course Component: Workshop
Grade Component: LG/SNC Elective Basis

PS 1561 - CYBERCONFLICT

Minimum Credits: 3
Maximum Credits: 3
Cyberconflict is an in-depth course on the current state of research on the intersection between politics and digital communications technologies. We will focus primarily on the role of cyberspace in political conflict within and between countries. We will situate cyber technologies within existing theories of war and peace and then evaluate empirical findings about the changing nature of conflict vis-a-vis digital communications technologies.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

PS 1581 - CAPSTONE SEMINAR IN INTERNATIONAL RELATIONS

Minimum Credits: 3
Maximum Credits: 3
Capstones are writing intensive courses for senior, PS majors. Subject matter will vary from term to term depending on the interests, area of expertise, and inclinations of the particular instructor.
Academic Career: Undergraduate
Course Component: Seminar
Grade Component: Letter Grade
Course Requirements: PREQ: PS 0500; PLAN: Political Science (BA or BS or BPH); LVL: Sr; PREQ: ENG 0102 or ENGCMP (0002 or 0006 or 0020 or 0200 or 0203 or 0205 or 0207 or 0208 or 0210 or 0212 or 0213 or 0214) or ENGFLM 0210 or FP (0003 or 0006)

PS 2000 - THE PROFESSION OF POLITICAL SCIENCE

Minimum Credits: 1
Maximum Credits: 1
This course is a professionalization seminar in which first-year graduate students meet weekly with various faculty members to discuss various issues surrounding political science as a profession. Topics will include writing a dissertation, the publication process, teaching, work-life balance, and other issues.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2010 - FOUNDATIONS OF QUANTITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce the beginning graduate student to the major conceptual and theoretical issues of contemporary political science. During the term, focus will be in three basic areas of inquiry; a) political science as a science; b) paradigms, frameworks,

approaches; and c) examination of contemporary examples of applications of the above in various substantive fields of political science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2020 - EMPIRICAL METHODS OF RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This seminar is the second in a three-course methodological sequence required for graduate students in political science. It introduces students to techniques of research design and analysis, and is designed to enable students to read and understand empirical social science research. Problems of scientific method, concept formation, measurement, and statistical inference are explored; students learn to use some of the statistical techniques common in political research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2030 - POLITICAL RESEARCH AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course aims to provide the student with (1) the ability to read, interpret, and criticize virtually any piece of political science research using quantitative methods and (2) the ability to design and carry out original research applying quantitative methods to relevant data.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2040 - CORE POLITICAL THEORY

Minimum Credits: 3
Maximum Credits: 3
This seminar in political thought forms one of the core requirements of the graduate program in political science. Its aim is to introduce graduate students to the traditional concerns of the subfield of political theory and to explore the relevance of this subject matter even to political scientists who do not choose to specialize in it.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Global Studies, West European Studies

PS 2116 - COMPARATIVE PUBLIC ADMINSTRTN

Minimum Credits: 3
Maximum Credits: 3
The public bureaucracy is a political institution and must be understood as a key factor in the policymaking process. At the same time it is a formal structure charged with the legal implementation of policy. These two competing understandings of administration will be examined from a variety of theoretical and analytical perspectives. The principal geographical focus will be on Europe, but there will also be discussions of administration in other areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2200 - AMERICAN GOVERNMENT AND POLITICS

Minimum Credits: 3
Maximum Credits: 3
This seminar provides an opportunity to analyze selected aspects of government and politics in the United States through a program of intensive reading, seminar discussions, and written essays. Some prominent interpretations of American government and politics are identified and examined. Readings on and discussion of topics such as political leadership and mass behavior provide a basis for consideration of the seminar's major theme, leader-follower interaction.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2201 - SEPARATION OF POWERS

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the relationships among the branches in a separation of powers system, particularly the interplay between the legislature and the president. Most specifically, the course will consider the implications of a separation of powers system on representation: can a system specifically created to check the government's ability to act meet the demands for representation of a diverse constituency? How should we think about representation in a separation of powers system? The course will focus on the US political system, but will have implications for the comparative study of these systems.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2204 - WOMEN & POLITICS

Minimum Credits: 3
Maximum Credits: 3
Women have participated in politics as citizens, voters, activists, and elites. However, the extent to which women can and do serve in these roles varies substantially within the U.S. and cross-nationally. This course will examine core works and current developments in the field of women in politics from both a behavioral and institutional approach. We will discuss the role of women in social movements, public opinion, voting behavior, electoral politics, legislative studies, and public policy. While this is a substantive course, there will be a strong focus on the methodical approaches used to study women in politics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2205 - POLITICS, GROUPS AND IDENTITIES

Minimum Credits: 3
Maximum Credits: 3
This course will provide an overview of social identities and how they influence politics. First, we will discuss what is a group and the theoretical underpinnings of social identity. We will discuss how social identities work, whether they are socially constructed, if identity is optional, and how social identities intersect with one another. We will cover identities such as race, ethnicity, gender, class, religion, and national identity, and how these shape political behavior. While much of this course will focus on the American context, we will also discuss how these themes apply to comparative politics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2210 - MINORITY POLITICAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
Course description: This course is designed to introduce students to the state of the discipline on the behavior of racial-ethnic minority groups in the United States. We will cover several theories that are relevant to minority political behaviors including modes of political participation, means of involvement, and bases for political engagement. Underlying these aspects of political behavior are concepts of group membership, identification and consciousness, political incorporation, integration, assimilation, and marginalization. Our discussion and analyses will be both in terms of the manifestations of individual and collective behavior, incorporation and acculturation/ assimilation, as well as the contributing factors in the political system. In addition to race and ethnicity, attention will be given to other intersecting "social" categories (i.e. religion, gender, citizenship status, etc.).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PS 2212 - US EXECUTIVE BRANCH POLITICS

Minimum Credits: 3
Maximum Credits: 3
This Ph.D. seminar course examines both the theoretical and empirical literature on the U.S. Executive branch. The focus of this course is strictly centered on the study of political institutions and organizations ' political behavior related topics (e.g. presidential popularity; presidential elections; presidential nominations) will be covered in other courses. Although the primary focus of this course will be at the U.S. federal level, some attention will be given to the U.S. subnational level (i.e. American states). The course is broken down into three sections. The first section provides an overview of interdisciplinary research on institutions and organizations from both economics and sociological theoretical traditions. The second section of this course focuses on the internal functioning of the executive branch, including, but not limited to, president-agency relations. The final section focuses on analyzing executive branch actors' external relations with other institutional actors (i.e. legislative, judiciary, organized interests) within a separation of powers constitutional framework. The aim of the final section is to integrate insights from both institutional and organizational perspectives.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2230 - POLITICAL PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the political beliefs, attitudes, values, and behaviors of citizens in modern democracies. Because most of the theories and models were initially designed to analyze U.S. citizens, we will primarily examine the literature in American political behavior, though we will also discuss the degree to which such theories and models 'travel' to other contexts, leading us to some of the comparative behavior literature, as well. Much attention will be paid to the structure and content of citizen belief systems; additionally, we will examine the sources of such beliefs, including the media, political elites, and other citizens.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2236 - POLARIZATION

Minimum Credits: 3
Maximum Credits: 3
This PhD-level seminar examines political polarization from a political behavior perspective, with primary emphasis on mass publics. The course focuses on American polarization, analyzing both affective and ideological divisions and their evolution over time. It also extends beyond the U.S. to study polarization in European multiparty systems, highlighting how institutional contexts shape its expression and consequences. Substantively, the seminar investigates how polarization structures downstream attitudes, including partisan identity salience, social conflict, and political cognition. The course emphasizes theoretical debates, cutting-edge empirical research, and the behavioral implications of polarization for democratic politics.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2301 - THEORY & CONCEPTS COMP POLITICS

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to a broad cross-section of research in comparative politics. It provides students with a foundation for taking advanced classes in comparative politics and an understanding of the intersection of comparative politics with other sub-fields.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Global Studies

PS 2312 - COMPARATIVE PARTIES AND ELECTIONS

Minimum Credits: 3
Maximum Credits: 3
In this seminar, graduate students will be introduced to a wide variety of readings in the history of Western Europe.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2313 - COMPARATIVE POLITICAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the study of comparative mass political behavior. It is designed to emphasize cross-national similarities and differences in public opinion, voting behavior and political participation, and thus will complement the U.S.-dominated material presented in PS 2701 'American Electoral Behavior' and PS 2230 'Mass Political Behavior.' The course will first cover the comparative perspective on traditional subjects in the behavior field, such as turnout, the structure and sophistication of mass opinion, media impact, partisanship and models of voting behavior. It will then turn to more specialized areas such as political protest, the development and impact of democratic values, trust and "social capital" in new democracies, and the analysis of public opinion and participation in ethnically, religiously and linguistically divided societies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2320 - HUMAN SECURITY

Minimum Credits: 3
Maximum Credits: 3
Because of Civil Wars in several parts of the world, especially in sub-Saharan Africa, the international organizations have reshaped their development agenda by emphasizing the importance of security and peace as preconditions for development. This approach has been explicitly mentioned among the aims of the United Nations by Secretary General Kofi-Annan in his roadmap for the implementation of the U.N. Millennium summit. In parallel, the concept of human security has been promoted by several Western governments, N.G.O.S and independent commissions in order to take into account the need to address not only state security needs but also human individuals' vulnerability in crisis situations. Aid policies have taken into account these evolutions, though the concept of human security itself has been discussed in a controversial way. The European union is progressively integrating it into its security agenda and has started `securitizing' its development agenda and African policy, including instruments like the Cotonou convention with African, Caribbean and pacific states. The course explores the reasons for the merging of security and development policies in the European union and its member states and the

emergence of a European human security agenda, within the wider context of the united nations, world bank and OECD. The focus will be European policies towards crisis areas in Africa and Asia potential case to be discussed are: regulations about antipersonnel landmines, small arms and light weapons, conflict timber and conflict diamonds; policies of conditionality and sanctions; assistance to transitional justice; peace building, security governance, security sector reform in fragile states.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Global Studies, Russian & East European Studies, West European Studies

PS 2321 - LATIN AMERICAN POLITICS

Minimum Credits: 3
Maximum Credits: 3
The course is a readings seminar designed to introduce graduate students to the basic international literature on political questions and problems in the Latin American context. The course will focus primarily on the topic of "regime transition" in Latin America.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Latin American Studies

PS 2323 - EXPERIMENTAL RESEARCH IN POLITICAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
This course is an advanced seminar focusing on how experimental methods can inform research in political behavior. The first part of the course will focus on experimental design. Students will learn how to design and implement lab experiments, survey experiments, and field experiments. We will cover various aspects of experimental design - including where to get funding, how to get IRB approval, subject recruitment, subject compensation, randomization, identifying an appropriate control group, internal and external validity, ethical considerations, deception, and methods for analyzing experimental results. Students will also learn how to program surveys and experiments in Z-tree, MTURK, and qualtrics. The second part of the course will focus on applied topics. We will study how experimental methods are useful for investigating special topics in political behavior, including voter mobilization, public opinion, racial attitudes, ethnic identity, group identity, gender issues, asking about sensitive topics, and methods for estimating both attitudinal and behavioral responses to experimental treatments. Students will propose and design their own experiments throughout the course, and will fully develop one experimental design as a final project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2326 - AUTOCRACY AND DEMOCRACY

Minimum Credits: 3
Maximum Credits: 3
This course surveys important questions driving past and current research in the fields of regimes, regime change, and authoritarian governance. Students will be able to identify important research questions based on existing scholarship and execute sound research designs.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2328 - EUROPEAN POLITICS

Minimum Credits: 3
Maximum Credits: 3

This course will address many of the key areas related to study of modern Europe, including: institutions, political parties and party competition, populism, democratic backsliding, European integration, and immigration.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2329 - POLITICAL CULTURE

Minimum Credits: 3
Maximum Credits: 3
Today, political behavior is increasingly shaped by norms, identity-based expectations, and social enforcement rather than institutional rules or policy preferences. Academic scholarship on culture has had a resurgence, with researchers investigating how norms shape political behavior, sustain conflict, and undermine institutions. This course assesses the role of culture in politics. It begins with an examination of culture, focusing on its sources, its persistence, its transmission, its enforcement, and its measurement. Then, we evaluate the implications of culture on various outcomes of political import.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2330 - IDENTITY POLITICS

Minimum Credits: 3
Maximum Credits: 3
This course will cover topics on Identity Politics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2331 - RACIAL AND ETHNIC POLITICS

Minimum Credits: 3
Maximum Credits: 3
This graduate level course is an overview of the historical and political experiences of the four major racial and ethnic minority groups in the United States (Blacks Americans, American Indians (Indigenous), Latina/o Americans, and Asian Americans or Pacific Islanders) and their paths to political incorporation. Major topics include (pan)ethnic identity, citizenship, suffrage, inequality in political participation and representation, policing, and critical race theory. Current politics and policy debates affecting racial/ethnic minorities such as voting rights, affirmative action, Black Lives Matter and immigration reform will also be covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PS 2351 - GENDER & DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course introduces graduate students to the study of gender and politics. Students will be exposed to theories and empirical research in the field. The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Gender, Sexuality & Women's St

PS 2370 - RESEARCH TOPICS ON THE POLITICAL ECONOMY OF DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This is a PH.D level course that explores the causes and effects of poverty, under-provision of public goods, bad governance, and conflict in low-income countries. We will look at the role of institutions, historical legacies, state capacity, regime type, corruption and clientelism, natural resources, ethnic divisions, and international aid in explaining under-development. While this is primarily a substantive course, it will also expose students to cutting-edge methods at the forefront of research on the political economy of development, including experimental and quasi-experimental methods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2379 - ECONOMICS OF DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Focuses on development theories; classical, neo-classical, Marxian, dualistic (economic and non-economic) as well as models of agricultural development and administration, productivity enhancement, saving and investment and the foreign sector. Students are expected to apply development models to current problems, analyze and construct policy approaches to issues of current importance in less developed countries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Asian Studies, Global Studies

PS 2381 - SEMINAR POLITICAL INSTITUTIONS

Minimum Credits: 3
Maximum Credits: 3
The basic question of this seminar is "what difference do institutions make"? The first part of the seminar attempts to focus on that question, while defining it more precisely, through comparative, formal, and evolutionary analyses of institutions. The second part of the seminar examines proposals for reform of institutions, particularly in the American context. Seminar participants will be asked to analyze particular proposals for institutional reform and evaluate them.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Global Studies

PS 2385 - COMPARATIVE LEGISLATURES

Minimum Credits: 3
Maximum Credits: 3
This course focuses on theories that relate to legislative organization, executive-legislative relations, and legislator behavior, and party politics from a comparative perspective. We frequently use literature on the US congress to frame the discussions, but read and analyze literature on Western and eastern Europe, Latin America, Asia, and other parts of the world.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (PHD or MA)

PS 2387 - POLITICS OF WATER

Minimum Credits: 3
Maximum Credits: 3
Given the need to highlight the contributions political science offers to our study of the Anthropocene, this interdisciplinary course investigates the role of water in the political development of contemporary Central Eurasia. As a landlocked world region, Central Eurasia provides a compelling case for the study of the political, social, and technological innovations that has yielded sites of ecological disaster and environmental frontiers of opportunity. This course guides students through the key stages of Soviet political change and its impact on the issues of Central Eurasian water culture: the collapse of tsarist governance and the withdrawal of its engineerspecialists, ending its "civilizing mission"; the arrival of US experts whose modern irrigation methods inadvertently contributed to environmental degradation and economic dependence; the "shock" construction sites of the Stalin era; the misguided dam-building projects of the late Soviet period; and finally the issues relating to the international cooperation to manage the river basins connecting Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan, and Kazakhstan. Primarily, this course is a political science course, providing students with analytical frameworks to consider the institutions of power and how they are utilized concerning water management, whether for development purposes or national security. Yet this course also presents students with an interdisciplinary understanding of water politics by integrating skills from engineering sciences. This provides the opportunity for students to better understand the technological innovations that have exacerbated poor water management and also provided solutions to mitigate the ramifications of human activity. Through course assignments and a research project, students are not only introduced to a critical world region, but also familiarized with major crises of water management in the United States and beyond. Thus, at the course's conclusion, students are prepared to critically think about solutions to water management across environmental science, political science, and engineering.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: MCSI - Sustainability Related

PS 2401 - BEHAVIOR THEORY & EXPERIMENTS

Minimum Credits: 3
Maximum Credits: 3
This is a doctoral course that surveys theoretical models and corresponding experimental methods relevant to the study of political behavior. Topics will include voting, accountability, information processing, risk and social preferences, trust, cooperation, and leadership, drawing from rational choice, cognitive psychology, and behavioral economics. Class sessions will include seminar discussions, lectures, and workshops. Familiarity with formal models is helpful, but not required, we will review the basics as needed for the class.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies, West European Studies

PS 2501 - THEORY OF INTERNATIONAL RELATION

Minimum Credits: 3
Maximum Credits: 3
This course will survey a broad range of literature dealing with international relations theory. The course will view the literature in terms of the critical question areas in international relations and will be designed to describe each approach and to evaluate the utility of the approach in terms of bringing understanding to some of these question areas.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Global Studies

PS 2502 - INTERNATIONAL INSTITUTIONS AND COOPERATION

Minimum Credits: 3
Maximum Credits: 3
This course examines the contemporary structures of governance within international policies as they are found at national, regional and international level, and the challenges and stresses to which such structures are vulnerable. It also considers major traditions and theorizing

about sources of conflict, order and integration in international politics and reviews current evaluations of major international organizations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Global Studies, West European Studies

PS 2515 - DOMESTIC POLITICS AND INERNATIONAL CONFLICT IN THE INFORMATION AGE

Minimum Credits: 3
Maximum Credits: 3
This class will explore the interaction between domestic and international conflict. While these domains have traditionally been treated separately, the processes of domestic mobilization for international initiatives (including minds, money, material and martyrs) and maintaining resilience to the domestic consequence of international interaction (including analog and cyber cooperation and conflict) are increasingly important in today's globalized and digitally connected world. We will read both canonical research as well as more recent works that attempt to integrate contemporary changes in technology and cyber-capabilities into our understanding of the connections between these nested spheres of politics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2518 - SECURITY & INTELLIGENCE STUDIES

Minimum Credits: 3
Maximum Credits: 3
Many argue that the 21st century security environment is fundamentally different from and more dangerous than that which existed in previous eras. There is some evidence to suggest that this claim might be true; the security challenges absorbing the majority of states' time, money, and military efforts since the end of the cold war ' and especially since 9/11 ' are notably different from those of the past and, at times, they seem more pervasive. However, it does not necessarily follow that such proximate differences are symptomatic of a deeper shift in the nature of the inherently dangerous international arena. This course explores the nature of the international security environment ' past and present ' and considers whether and to what degree the logics for coping with security challenges have changed over time. In doing so, students will be introduced to the arguments and debates in the academic literature on security and intelligence issues and learn to apply them to contemporary challenges. We will spend the first third of the semester examining traditional security studies concepts and issues like war, coercion, effectiveness in nuclear and conventional warfighting, and the effects of regime type on security policies and achievements. The second third will then be dedicated to considering the utility of traditional concepts in understanding the nature of and strategically-preferable responses to security challenges pervasive in the current international arena like asymmetric warfare, nuclear proliferation and missile defense, terrorism, and space and cyber warfare. The last third of the course examines the nuts and bolts of the United States national security apparatus to better understand how theory is (or should be) transformed into policy. We conclude by considering the costs and benefits of different American grand strategies moving forward.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Asian Studies, Global Studies, Russian & East European Studies

PS 2522 - CHOOSING NUCLEAR WEAPONS

Minimum Credits: 3
Maximum Credits: 3
Why do some states choose to develop nuclear weapons and others do not? Have the reasons for nuclear weapons acquisition changed over time? Are more states likely to acquire nuclear weapons in the future? Once they have nuclear weapons, how do states choose their strategies for using them to advance foreign and security policy objectives? Why do states choose to give up nuclear weapons? Is a world without nuclear weapons possible? Is a world without nuclear weapons desirable? The answers to these questions are crucial to ensuring stability, peace, and security in the international realm. Problematically, they are also fundamentally contested by academics, policymakers,

military officers, and the general public. This course will provide students with the tools to understand, partake in, and shape these debates about nuclear weapons. It will provide students with a foundational understanding of what nuclear weapons are and how they work. Then, drawing on both academic scholarship and primary source material like declassified documents, it will introduce students to: the myriad decisions confronting policymakers considering the acquisition, use, and elimination of nuclear weapons; how such decisions are made; and how such decisions can be improved. Academic scholarship from the disciplines of political science, history, public administration, and psychology will be used to develop theoretical frameworks and analytical toolkits necessary to think critically about elements of the nuclear weapons lifecycle. Primary sources and declassified documents concerning not only the United States' experience with nuclear weapons, but also that of countries like the USSR, China, the United Kingdom, France, Israel, South Africa, India, and Pakistan will be used to test and refine those frameworks and toolkits.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PS 2534 - CIVIL WARS

Minimum Credits: 3
Maximum Credits: 3
This course will introduce graduate students to the Civil Wars literature. In the first part of the course, we will examine theoretical debates about why groups sometimes resort to violence against the state or other domestic groups. We will consider grievances, opportunities, informational asymmetries, and commitment problems as plausible mechanisms explaining the onset of Civil Wars. We will also discuss terrorism as one of the strategies of political violence. In the second part of the course, we will discuss possible solutions to Civil Wars and evaluate the relative merits of these solutions. Mechanisms such as intervention, peacekeeping and power sharing will be emphasized.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2540 - INTERNATIONAL POLITICAL ECONOMY

Minimum Credits: 3
Maximum Credits: 3
This seminar explores in eclectic fashion a number of major conceptual thrusts and policy problems in the international political economy. Some of the work deals with system level properties of international political economy, while other work compares how various advanced industrial states deal with similar foreign and domestic economic challenges.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2543 - POLITICAL ECONOMY OF GROWTH

Minimum Credits: 3
Maximum Credits: 3
This graduate course is devoted to the study of international and comparative political economy in developing and emerging countries. These countries tend to face very different sets of constraints than their wealthier counterparts. The aim of this course is to analyze the determinants of welfare in poorer countries. Its main focus is to study the political economy of income and examine how domestic and international incentives shape crucial economic policies (e.g. trade, monetary, or education policies). In the last part of the semester, we broaden our horizon to examine other important components of welfare, such as environmental quality. This course is resolutely focused on the macro level and limited to developing countries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Asian Studies, Global Studies, Latin American Studies

PS 2563 - PEACEMAKING AND PEACEKEEPING

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce graduate students to the literature on conflict resolution and post-conflict recovery. In the first part of the course, we will examine the process by which belligerents in Civil Wars reach cease-fires and negotiate peace, why peace sometimes lasts and sometimes falls apart and what can be done to make peace more stable. Next, we will explore the longer-term prospects for economic and democratic rebuilding as well as reconciliation after Civil Wars. We will end the course by considering the consequences of Civil Wars for the regional and international peace and focus on terrorism, refugees, and weak states as destabilizing factors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2607 - DEMOCRTC THRY & DEMOCRATIZATION

Minimum Credits: 3
Maximum Credits: 3
The course has three objectives for students: 1) to develop a broad knowledge of the main currents in modern and con temporary democratic theory and a familiarity with their main problems; 2) to study how normative theories of democracy inform or might inform processes of democratization; 3) to apply this knowledge in solving some puzzle or problem by comparing cases, assessing claims, developing arguments, etc.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Global Studies

PS 2675 - HUMAN RIGHTS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2701 - ADVANCED METHODOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course aims to provide students with an overview of statistical methods appropriate for the analysis of longitudinal data, or data collected on multiple units (individuals, states, dyads, countries) at more than one point in time. The course will focus on models for the analysis of 'panel data,' which (by convention) is used to describe data with relatively large number of units and relatively few time points. We will cover different approaches to the analysis of panel data, including structural equation models, fixed and random effects models, dynamic econometric models, and longitudinal hierarchical growth ("multi-level") models.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2702 - ADVANCED METHODS: CAUSAL INFERENCE

Minimum Credits: 3
Maximum Credits: 3

This course focuses on the challenge of causal inference in the social sciences. We will begin by approaching causal inference from the standpoint of experimental analysis. We will then study several non-experimental methods that aim to recover causality using observational data, including matching, instrumental variables, difference-in-differences, and regression discontinuity. The class will combine methodological training with exposure to important recent research in the social sciences that employ these methods. The goal of the class is not only to convey the concepts central to causal inference but there is also a heavy emphasis on helping students develop their capacity for research design.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2703 - FORMAL POLITICAL THEORY

Minimum Credits: 3
Maximum Credits: 3
This seminar introduces students to formal modeling of political and economic phenomena. It has a social choice and a game-theory component. The former explores issues involved in the aggregation of individual preferences through majority and other voting rules. The latter-larger of the two components-surveys non-cooperative game theory and explores its applications to various questions of interest to political scientists.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2704 - FORMAL POLITICAL THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This is the second course in the department's graduate formal theory sequence. We will survey game theoretic models in political science with two goals in mind: (1) students will become critical and competent consumers of formal theory and (2) they will be prepared to begin using formal theory in their research. Topics include bargaining, coalition formation, lobbying delegation, reputation, and signaling. We will also discuss the connection between formal models and empirical tests (both observational and experimental) as well as survey alternatives to rational choice (behavioral and experimental) as well as survey alternatives to rational choice (behavioral, computational, and evolutionary models). Students must be familiar with basic game theoretic concepts and analysis (at the level of PS 2701).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2705 - SCIENTIFIC COMPUTATION FOR SOCIAL SCIENTISTS

Minimum Credits: 3
Maximum Credits: 3
This course covers scientific computation for social scientists.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2707 - MEASUREMENT IN SOCIAL SCIENCE

Minimum Credits: 3
Maximum Credits: 3
A key part of social scientific research is measurement, i.e. creating independent or dependent variables from raw data to capture substantive concepts. This course provides an applied overview of a variety of popular techniques in social science and machine learning to perform measurement on large and complex datasets. It will cover a variety of "unsupervised" methods (e.g. dimensionality reduction, ideal point estimation, and latent variable methods) that are used to create interpretable and low-dimensional summaries of complex data. It will

also cover "supervised measurement", i.e. using a small collection of training data to create measures that can be extrapolated reliably. Specific focus will be paid to methods used in cutting-edge social science including multilevel regression with post-stratification (MRP) and machine learning techniques including random forests, sparse methods, and ensembles. A key goal of this course is to give students the skills to use these methods in their own research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2720 - BAYESIAN STATISTICS

Minimum Credits: 3
Maximum Credits: 3
This is a course on the theory and methodology of applying Bayesian computation and inference in social science research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2730 - ADVANCED METHODOLOGY: MAXIMUM LIKELIHOOD ESTIMATION

Minimum Credits: 3
Maximum Credits: 3
This is a course in advanced methodology in political science. The class will focus on topics related to maximum likelihood estimation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2740 - TIME SERIES ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This is a course in advanced methodology in political science. The class will focus on topics related to time series.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2751 - ADVANCED METHODOLOGY: TEXT AS DATA

Minimum Credits: 3
Maximum Credits: 3
The amount of social science relevant information stored in text presses against the boundaries of human comprehension. From corpora of international and national speeches and documents, through repositories of human rights reports, news archives and blog posts, to streaming social media feeds, a font of knowledge awaits those that have the creativity and ability to model and learn from text as data. This class is a lower case, but more than cursory, introduction to the use of natural language processing, machine learning and Bayesian inference frameworks and tools to accelerate innovations in key social science research. The workload is significant but should not give anyone a stroke. We will cover lexical methods such as dictionary-based sentiment analysis, topic modeling and more general supervised learning techniques, as well as research designs that leverage syntactic information. Theoretical lectures will be punctuated with hands-on coding assignments. The point of the class is to increase student's confidence in utilizing text in their applied work.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2883 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
PS Graduate Level Special Topics course. The course topic will/could change with each semester
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2900 - COMPREHENSIVE EXAM PREPARATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: Political Science (MA or PhD)

PS 2902 - DIRECTED READING

Minimum Credits: 1
Maximum Credits: 6
Individual reading programs are provided in those areas in which no course or seminar is scheduled during an academic year of three trimesters. They also may be taken by those students who have elected the courses and seminars dealing with a particular subject matter and who wish to do additional work in these areas.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PhD)

PS 2903 - DIRECTED RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course allows a student to develop a research topic and a plan of analysis over the course of a term.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PhD)

PS 2904 - DISSERTATION OVERVIEW PREP

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: Political Science (MA or PhD)

PS 2905 - TEACHING AND RESEARCH IN POLITICAL SCIENCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: Political Science (MA or PhD)

PS 2906 - QUALIFYING PAPER PREPARATION

Minimum Credits: 1
Maximum Credits: 4
This course evaluates the academic progress of graduate students on their MA qualifying papers under the supervision of faculty advisor.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: Political Science (MA or PhD)

PS 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
This course is for students who are preparing for comprehensive examinations or who are undertaking other forms of study not requiring the direct supervision of a faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: Political Science (MA or PhD)

PS 2991 - INDEPENDENT STUDY RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course is for students who are preparing for their research paper and comprehensive examinations or who are undertaking other forms of study not requiring the direct supervision of a faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PhD)

PS 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 12
This course is for students who have passed their dissertation overview and are currently working on their Ph.D. dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Prosthetics and Orthotics

PO 2101 - FUNCTIONAL ANATOMY AND KINESIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is the study of the structure and function of the human body, with special emphasis on the musculoskeletal and peripheral nervous systems. Cadavers and anatomical models will be utilized. Palpation of anatomical landmarks, actions of individual muscles and

muscle groups, and normal joint motions will be studied using the students' own surface anatomy. The concepts of measuring muscle strength and length, measurement of joint range of motion, and identification of postural or structural deviations will be introduced. The roles of muscles and types of muscle contraction during movement and exercise will be discussed. The basics of normal gait will be studied, and some common pathological gaits will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

PO 2102 - PATHOLOGY IN ORTHOTICS AND PROSTHETICS

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide a general overview of the pre-disposing factors and direct causes of disease, as well as their effects on the human body. It will also include a systemic approach to the basic disease processes, in terms of etiology, symptomatology, general pathological changes, diagnostic procedures, and types of treatment. Universal precautions to be used in patient care will also be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

PO 2103 - INTRODUCTION TO MATERIALS, EQUIPMENT, AND FABRICATION

Minimum Credits: 2
Maximum Credits: 2
This course will introduce the student to the concepts of general material properties, the common materials used in orthotics and prosthetics, and the specific properties of these materials. The student will be introduced to equipment and fabrication techniques as well as safety precautions for handling and using materials and equipment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

PO 2104 - REHABILITATION BIOMECHANICS FOR THE HEALTH CARE PROFESSIONS

Minimum Credits: 3
Maximum Credits: 3
This course is a basic introduction to biomechanics of human motion for individuals in the health and rehabilitation fields. It is designed for individuals with a non-technical background, but a basic knowledge of mathematics, physics, and kinesiology is expected and will be utilized. Topics covered include statics, dynamics, anthropometry, motion analysis, electromyography, and soft-tissue biomechanics. Applications to rehabilitation will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN:Prosthetics and Orthotics (MS) or Health and Rehabilitation Scs (MS) or SBPLAN: Rehabilitation Sci & Tech (Health and Rehabilitation Scs-MS)

PO 2105 - PROFESSIONAL ISSUES IN PROSTHETICS AND ORTHOTICS

Minimum Credits: 1
Maximum Credits: 1
Issues and organizations relevant to the practice of orthotics and prosthetics will be presented and discussed.
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad Letter Grade
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

PO 2106 - PATIENT MANAGEMENT IN ORTHOTICS AND PROSTHETICS

Minimum Credits: 1
Maximum Credits: 1
Study of new concepts, devices, and manufacturing techniques in orthotics and prosthetics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

PO 2201 - ORTHOTICS 1

Minimum Credits: 5
Maximum Credits: 5
Review of conditions and symptoms indicating treatment with lower extremity orthotics. Review of evidence for effectiveness of treatment. Patient evaluation for prescription and design of lower extremity orthoses. Fabrication of lower extremity orthoses, including techniques for taking measurements and impressions. Fitting, evaluation of effectiveness, and modification of lower extremity orthoses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

PO 2202 - PROSTHETICS 1

Minimum Credits: 5
Maximum Credits: 5
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

PO 2203 - CAPSTONE FOR PROSTHETICS AND ORTHOTICS

Minimum Credits: 1
Maximum Credits: 1
The capstone for P&O course is completed as part of the research requirement for the MSPO program. This course is taken in two different semesters as students work to formulate ideas and further conceptualize that idea into a cohesive research project under the guidance of faculty. The capstone is then presented to peers and faculty prior to graduation.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PO 2204 - INTRODUCTION TO EVIDENCE - BASED PRACTICE IN ORTHOTICS AND PROSTHETICS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad Letter Grade
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

PO 2301 - ORTHOTICS 2

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PO 2302 - PROSTHETICS 2

Minimum Credits: 3
Maximum Credits: 3
Covered topics (in lecture and laboratory) include: Review of conditions and symptoms indicating treatment with trans-femoral prostheses, Review of evidence for effectiveness of treatment, Patient evaluation for prescription and design of trans-femoral prostheses, Fabrication of prostheses, including techniques for taking measurements and impressions, Fitting, evaluation of effectiveness, and modification of prostheses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PO 2303 - SPINAL ORTHOTICS

Minimum Credits: 3
Maximum Credits: 3
Topics to be covered include: conditions and symptoms indicating treatment with spinal orthotics; evidence for effectiveness of treatment; patient evaluation for prescription and design of spinal orthoses; fabrication of spinal orthoses, including techniques for taking measurements and impressions; filling, evaluation of effectiveness, and modification of spinal orthoses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Sch Hlth & Rehabilitation Scs

PO 2401 - ORTHOTICS 3

Minimum Credits: 3
Maximum Credits: 3
The third course in this series, Orthotics 3 builds on the knowledge basis established in PO 2301, Orthotics 3, and will review concepts in lower extremity orthotic design and will introduce students to upper extremity orthotic design and their components including, but not limited to: Review of anatomy and biomechanics of the upper and lower extremity, review of conditions and symptoms that can be treated with orthoses with a focus on conditions affecting the upper extremity, including upper and lower motor neuron conditions; review of the evidence basis for upper extremity orthotic devices; patient evaluation for prescription and design of upper extremity orthoses; fabrication of upper extremity orthoses, including techniques for taking measurements and impressions; fitting, evaluation of effectiveness, and modification of upper extremity orthoses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PO 2402 - PROSTHETICS 3

Minimum Credits: 3
Maximum Credits: 3
This course will be an overview of all aspects related to upper extremity prostheses, including components, socket design, and harnessing. The course will also include the fabrication of upper extremity prostheses, including techniques for taking measurements and impressions, model modification, fabrication of check sockets, lamination, fitting, and evaluation of effectiveness.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PO 2403 - ISSUES IN THE HEALTH SYSTEM

Minimum Credits: 2
Maximum Credits: 2
This course will present current and predicted future issues faced by America in the maintenance of the good health of its citizens. Options for resolution of the issues will be identified and pros and cons investigated and discussed both from the standpoint of the lay public and from that of the health professional. The course is required for all advanced degrees, and the enrollment will be composed of students from all professions represented in SHRS.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: School of Health and Rehabilitation Sciences

PO 2501 - MASTER OF PROSTHETICS AND ORTHOTICS CLINICAL INTERNSHIP

Minimum Credits: 8
Maximum Credits: 8
This course is reserved for second year MSPO students needing to earn their clinical internship hours prior to graduation.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

PO 2502 - SCHOLARLY PAPER

Minimum Credits: 2
Maximum Credits: 2
A research oriented paper based on work the student has done in his or her area of study. Students will be encouraged to submit honors papers for publication or presentation at a national or state professional meeting. The adviser and an appropriate faculty reader will supervise the student's work on the scholarly paper.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

PO 2503 - PRACTICE MANAGEMENT IN PROSTHETICS AND ORTHOTICS

Minimum Credits: 2
Maximum Credits: 2
This course will provide knowledge of all the facets of running or managing the business end of an orthotics and prosthetics department or company.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Prosthetics and Orthotics (MS)

PO 2504 - PROFESSIONAL ISSUES 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to help students successfully meet key professional milestones in the field of prosthetics and orthotics. It includes focused content review, exam preparation strategies, and special topics to support academic and professional success. By the end of the course, students will complete the programs' Comprehensive exam and begin to take the next steps toward certification and professional practice.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PO 2601 - PRECERTIFICATION ORTHOTIC FITTER

Minimum Credits: 2
Maximum Credits: 2
Course will provide an introduction into certain prefabricated and custom fit orthoses. Review of conditions and symptoms indicating treatment in the provision of certain orthoses. It will provide an introduction to patient assessment, formulation of treatment plan, implementation of treatment plan, follow up and practice management, effectiveness and adjustment within the scope of practice of an orthotic fitter.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PO 2602 - PRECERTIFICATION ORTHOTIC FITTER INTERNSHIP

Minimum Credits: 1
Maximum Credits: 5
Course will provide an introduction into certain prefabricated and custom fit orthoses in a clinical setting. It will provide a clinical experience for an introductory level of patient assessment, formulation of treatment plan, implementation of treatment plan, follow up and practice management, effectiveness and adjustment within the scope of practice of an orthotic fitter. The Orthotic Fitter course is a prerequisite or corequisite for this course. This course is open only to those students who have successfully completed PO 2601. Some individuals may be eligible for co-enrollment in PO 2601 with faculty permission.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade

PO 2924 - GRADUATE RESEARCH PROPOSAL

Minimum Credits: 2
Maximum Credits: 2
Graduate student writes thesis proposal, receives committee approval and institutional review board (IRB) approval for thesis study.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

PO 2925 - GRADUATE RESEARCH

Minimum Credits: 1
Maximum Credits: 6
An original in-depth investigative study of a selected area of professional interest. A research report suitable in format and content for publication is required.
Academic Career: Graduate

Course Component: Thesis Research
Grade Component: Grad SN Basis

Prosthodontics

PROSTH 2020 - GRADUT REMOVABLE PROSTHODONTICS

Minimum Credits: 2
Maximum Credits: 2
This course examines in detail the mechanics of RPD function and its application to design. Complex RPD situations and their relationship to a complicated occlusion, with or without fixed partial dentures, is explored.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2030 - GRADUATE FIXED PROSTHODONTICS

Minimum Credits: 2
Maximum Credits: 2
This course exposes the student to concepts of tooth preparation and their relationship to total rehabilitation of the patient. Emphasis is placed on diagnostic preparation, dental materials knowledge, esthetics and the total relationship to occlusion. Modification of design for integration with RPD, is stressed. Laboratory skills are emphasized.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2040 - DENTAL MATERIAL PROSTHODONTICS 1

Minimum Credits: 1
Maximum Credits: 1
This course presents an introduction to biomaterials. Application of biomaterials in removable and fixed prosthodontics will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2050 - DENTAL MATERIAL PROSTHODONTICS 2

Minimum Credits: 1
Maximum Credits: 1
Demonstrations of different clinical applications of BIO materials, as well as laboratory fabrication of appliances for active cases currently being treated in the prosthodontic department will be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2110 - ADVANCED MAXILLOFACIAL PROSTHODONTICS 1

Minimum Credits: 1
Maximum Credits: 1
This course exposes the graduate resident to the principles of radiation oncology and the management of the cancer patient. Emphasis is placed on the oral biological changes that occur with treatment.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2117 - IMPLANT PROSTHODONTICS SEM 1

Minimum Credits: 2
Maximum Credits: 2
This is a didactic course designed to review all aspects of implant dentistry at the in depth level. Diagnostic and treatment planning procedures, selection of implants to include biomechanical and biomaterials considerations, surgical procedures for implant placement, prosthodontic procedures to include provisional and definitive implant restorations, and maintenance procedures will be presented and illustrated.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PROSTH 2147 - IMPLANT PROSTHODONTICS SEMINAR 2

Minimum Credits: 2
Maximum Credits: 2
This is a multidisciplinary didactic course planned to address advanced topics in oral and maxillofacial implant procedures; guided tissue regeneration in implant dentistry, management of failing implants, and advanced implant reconstructive procedures.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PROSTH 2150 - PROSTHODONTICS SEMINAR 1

Minimum Credits: 2
Maximum Credits: 2
This course is an introductory review of basic prosthodontic principles and their application to advanced prosthodontic procedures. Thorough understanding of this course is essential to comprehensive treatment planning
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2160 - PROSTHODONTICS SEMINAR 2

Minimum Credits: 1
Maximum Credits: 1
This course is a description of the factors necessary for detailed and comprehensive treatment planning of the fixed and removable partial denture patient. The dental material and psycho-social aspects of treatment planning is discussed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2170 - PROSTHODONTICS SEMINAR 3

Minimum Credits: 2
Maximum Credits: 2
This course discusses the special considerations given to the geriatric and the handicapped prosthodontic patient. Maxillofacial patients and those undergoing immune suppression and cancer therapy are discussed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2180 - PROSTHODONTICS SEMINAR 4

Minimum Credits: 2
Maximum Credits: 2
his course is the final in a series that entails the review of advanced graduate procedures, including TMJ and implant ology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2181 - PROSTHODONTIC SEMINAR 6

Minimum Credits: 2
Maximum Credits: 2
This course is another part of a series that entails the review of advanced graduate procedures, including TMJ and implantology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2182 - PROSTHODONTICS SEMINAR 5

Minimum Credits: 1
Maximum Credits: 1
Continuation course for the factors necessary for detailed and comprehensive treatment planning of the fixed and removable partial denture patient. The dental material and psycho-social aspects of treatment planning is discussed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2201 - OCCLUSION SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
The Graduate Occlusion Seminar is intended for Graduate Prosthodontic Residents in the School of Dental Medicine. This ongoing seminar offers higher learning in all aspects of occlusion related to the human dentition. The seminar incorporates a review of pertinent articles, a review of relevant textbook chapters, case presentations, clinical demonstrations, and open discussion regarding the details of occlusion as it relates to the field of Prosthodontics. The Resident's knowledge of Occlusion is expected to increase dramatically as they proceed through these seminars.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2202 - OCCLUSION SEMINAR 2

Minimum Credits: 1
Maximum Credits: 1
The Graduate Occlusion Seminar is intended for Graduate Prosthodontic Residents in the School of Dental Medicine. This ongoing seminar offers higher learning in all aspects of occlusion related to the human dentition. The seminar incorporates a review of pertinent articles, a review of relevant textbook chapters, case presentations, clinical demonstrations, and open discussion regarding the details of occlusion as it relates to the field of Prosthodontics. The Resident's knowledge of Occlusion is expected to increase dramatically as they proceed through these seminars.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2203 - OCCLUSION SEMINAR 3

Minimum Credits: 1
Maximum Credits: 1
The Graduate Occlusion Seminar is intended for Graduate Prosthodontic Residents in the School of Dental Medicine. This ongoing seminar offers higher learning in all aspects of occlusion related to the human dentition. The seminar incorporates a review of pertinent articles, a review of relevant textbook chapters, case presentations, clinical demonstrations, and open discussion regarding the details of occlusion as it relates to the field of Prosthodontics. The Resident's knowledge of Occlusion is expected to increase dramatically as they proceed through these seminars.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2204 - OCCLUSION SEMINAR 4

Minimum Credits: 1
Maximum Credits: 1
The Graduate Occlusion Seminar is intended for Graduate Prosthodontic Residents in the School of Dental Medicine. This ongoing seminar offers higher learning in all aspects of occlusion related to the human dentition. The seminar incorporates a review of pertinent articles, a review of relevant textbook chapters, case presentations, clinical demonstrations, and open discussion regarding the details of occlusion as it relates to the field of Prosthodontics. The Resident's knowledge of Occlusion is expected to increase dramatically as they proceed through these seminars.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2205 - OCCLUSION SEMINAR 5

Minimum Credits: 1
Maximum Credits: 1
The Graduate Occlusion Seminar is intended for Graduate Prosthodontic Residents in the School of Dental Medicine. This ongoing seminar offers higher learning in all aspects of occlusion related to the human dentition. The seminar incorporates a review of pertinent articles, a review of relevant textbook chapters, case presentations, clinical demonstrations, and open discussion regarding the details of occlusion as it relates to the field of Prosthodontics. The Resident's knowledge of Occlusion is expected to increase dramatically as they proceed through these seminars.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2206 - OCCLUSION SEMINAR 6

Minimum Credits: 1
Maximum Credits: 1
The Graduate Occlusion Seminar is intended for Graduate Prosthodontic Residents in the School of Dental Medicine. This ongoing seminar offers higher learning in all aspects of occlusion related to the human dentition. The seminar incorporates a review of pertinent articles, a review of relevant textbook chapters, case presentations, clinical demonstrations, and open discussion regarding the details of occlusion as it relates to the field of Prosthodontics. The Resident's knowledge of Occlusion is expected to increase dramatically as they proceed through these seminars.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2210 - SPECIAL PROSTHODONTICS CLINIC

Minimum Credits: 1
Maximum Credits: 9
This course provides the resident with experience providing special clinical care of multi-disciplinary cases involving dental and medical treatment under direct faculty supervision.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2211 - COMPREHENSIVE INTERDISCIPLINARY CLINICAL DISCUSSION AND PLANNING

Minimum Credits: 2
Maximum Credits: 2
This is a multidisciplinary course in comprehensive/diagnosis and treatment planning for graduate students/residents in endodontics, orthodontics, periodontics, prosthodontics, oral and maxillofacial surgery, maxillofacial prosthetics and advanced education in general dentistry.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

PROSTH 2240 - LITERATURE REVIEW 1

Minimum Credits: 2
Maximum Credits: 2
This course covers classic and current literature review in the following areas: bone resorption, articulators, face-bow, hinge axis, and immediate dentures.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2250 - LITERATURE REVIEW 2

Minimum Credits: 1
Maximum Credits: 1
This course covers classic and current literature review in the following areas: color, splinting, porcelain, crown preparation, impression materials, dies and pontics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2260 - LITERATURE REVIEW 3

Minimum Credits: 2
Maximum Credits: 2
This course covers classic and current literature review in the following areas: occlusion, vertical dimension, centric relation, temporomandibular joint dysfunction, and occlusal equilibration.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2270 - LITERATURE REVIEW 4

Minimum Credits: 2
Maximum Credits: 2

This course covers classic and current literature review in the following areas: maxillofacial prosthodontics, removable partial dentures, complete dentures, diagnosis and treatment planning of the partially edentulous mouth.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2272 - LITERATURE REVIEW 6

Minimum Credits: 2
Maximum Credits: 2
This course covers classic and current literature review in the following areas. Maxillofacial prosthodontics, removable partial dentures, complete dentures, diagnosis and treatment planning of the partially edentulous mouth.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2273 - LITERATURE REVIEW 5

Minimum Credits: 1
Maximum Credits: 1
Continuation course that covers classic and current literature review in the following areas: occlusion, vertical dimension, centric relation, temporomandibular joint dysfunction, and occlusal equilibration.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 2278 - DIGITAL DENTISTRY IN PROSTHODONTICS 1

Minimum Credits: 3
Maximum Credits: 3
This graduate level Prosthodontics course will explore all aspects of modern digital dentistry as it relates to the field of Prosthodontics. It will include intraoral, extraoral and lab scanning techniques. It will encompass designing prosthetic appliances with the use of digital software such as Meshmixer, Exocad, Exoplan , Blue Sky, 3 Shape Unite, 3 Shape Lab and Blender. Prosthetic appliances will be milled with the in-house Sprint Ray printers and used in the treatment of our clinical patients
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2279 - BOARD PREPARATION AND LITERATURE REVIEW 2

Minimum Credits: 1
Maximum Credits: 1
Prosthodontic Board Review and Current Prosthodontic Literature Review
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2280 - BOARD PREPARATION AND LITERATURE REVIEW

Minimum Credits: 1
Maximum Credits: 1
Prosthodontic Board Review and Current Prosthodontic Literature Review
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2282 - BOARD PREPARATION AND LITERATURE REVIEW 3

Minimum Credits: 1
Maximum Credits: 1
Prosthodontic Board Review and Current Prosthodontic Literature Review
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2284 - DIGITAL DENTISTRY IN PROSTHODONTICS 5

Minimum Credits: 3
Maximum Credits: 3
This graduate level Prosthodontics course will explore all aspects of modern digital dentistry as it relates to the field of Prosthodontics. It will include intraoral, extraoral and lab scanning techniques. It will encompass designing prosthetic appliances with the use of digital software such as Meshmixer, Exocad, Exoplan , Blue Sky, 3 Shape Unite, 3 Shape Lab and Blender. Prosthetic appliances will be milled with the in-house Sprint Ray printers and used in the treatment of our clinical patients
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2285 - BOARD PREPARATION AND LITERATURE REVIEW 6

Minimum Credits: 1
Maximum Credits: 1
Prosthodontic Board Review and Current Prosthodontic Literature Review
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2286 - DIGITAL DENTISTRY IN PROSTHODONTICS 6

Minimum Credits: 3
Maximum Credits: 3
This graduate level Prosthodontics course will explore all aspects of modern digital dentistry as it relates to the field of Prosthodontics. It will include intraoral, extraoral and lab scanning techniques. It will encompass designing prosthetic appliances with the use of digital software such as Meshmixer, Exocad, Exoplan , Blue Sky, 3 Shape Unite, 3 Shape Lab and Blender. Prosthetic appliances will be milled with the in-house Sprint Ray printers and used in the treatment of our clinical patients
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2287 - DIGITAL DENTISTRY IN PROSTHODONTICS 7

Minimum Credits: 3
Maximum Credits: 3
This graduate level Prosthodontics course will explore all aspects of modern digital dentistry as it relates to the field of Prosthodontics. It will include intraoral, extraoral and lab scanning techniques. It will encompass designing prosthetic appliances with the use of digital software such as Meshmixer, Exocad, Exoplan , Blue Sky, 3 Shape Unite, 3 Shape Lab and Blender. Prosthetic appliances will be milled with the in-house Sprint Ray printers and used in the treatment of our clinical patients
Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2288 - BOARD PREPARATION AND LITERATURE REVIEW 9

Minimum Credits: 1
Maximum Credits: 1
Prosthodontic Board Review and Current Prosthodontic Literature Review
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2289 - DIGITAL DENTISTRY IN PROSTHODONTICS 9

Minimum Credits: 3
Maximum Credits: 3
This graduate level Prosthodontics course will explore all aspects of modern digital dentistry as it relates to the field of Prosthodontics. It will include intraoral, extraoral and lab scanning techniques. It will encompass designing prosthetic appliances with the use of digital software such as Meshmixer, Exocad, Exoplan , Blue Sky, 3 Shape Unite, 3 Shape Lab and Blender. Prosthetic appliances will be milled with the in-house Sprint Ray printers and used in the treatment of our clinical patients
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2301 - DIGITAL DENTISTRY IN PROSTHODONTICS 2

Minimum Credits: 3
Maximum Credits: 3
This graduate level Prosthodontics course will explore all aspects of modern digital dentistry as it relates to the field of Prosthodontics. It will include intraoral, extraoral and lab scanning techniques. It will encompass designing prosthetic appliances with the use of digital software such as Meshmixer, Exocad, Exoplan , Blue Sky, 3 Shape Unite, 3 Shape Lab and Blender. Prosthetic appliances will be milled with the in-house Sprint Ray printers and used in the treatment of our clinical patients
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2302 - DIGITAL DENTISTRY IN PROSTHODONTICS 3

Minimum Credits: 3
Maximum Credits: 3
This graduate level Prosthodontics course will explore all aspects of modern digital dentistry as it relates to the field of Prosthodontics. It will include intraoral, extraoral and lab scanning techniques. It will encompass designing prosthetic appliances with the use of digital software such as Meshmixer, Exocad, Exoplan , Blue Sky, 3 Shape Unite, 3 Shape Lab and Blender. Prosthetic appliances will be milled with the in-house Sprint Ray printers and used in the treatment of our clinical patients
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2303 - DIGITAL DENTISTRY IN PROSTHODONTICS 4

Minimum Credits: 3
Maximum Credits: 3
This graduate level Prosthodontics course will explore all aspects of modern digital dentistry as it relates to the field of Prosthodontics. It will include intraoral, extraoral and lab scanning techniques. It will encompass designing prosthetic appliances with the use of digital

software such as Meshmixer, Exocad, Exoplan , Blue Sky, 3 Shape Unite, 3 Shape Lab and Blender. Prosthetic appliances will be milled with the in-house Sprint Ray printers and used in the treatment of our clinical patients
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2304 - DIGITAL DENTISTRY IN PROSTHODONTICS 8

Minimum Credits: 3
Maximum Credits: 3
This graduate level Prosthodontics course will explore all aspects of modern digital dentistry as it relates to the field of Prosthodontics. It will include intraoral, extraoral and lab scanning techniques. It will encompass designing prosthetic appliances with the use of digital software such as Meshmixer, Exocad, Exoplan , Blue Sky, 3 Shape Unite, 3 Shape Lab and Blender. Prosthetic appliances will be milled with the in-house Sprint Ray printers and used in the treatment of our clinical patients
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2400 - REMOVABLE PARTIAL DENTURES

Minimum Credits: 1
Maximum Credits: 1
A seminar/case based course where advanced students (prosthodontic residents) will gain experience in surveying and designing a variety of clinical removable partial dentures. The majority of cases will involve clinical cases which will include the various Kennedy classes and modification while some simulated models may be used. The assessment of partial edentulism encompasses everything from the loss of a single tooth to the loss of all teeth but one. All disciplines of dentistry may be involved. The integration of all considerations is where the specialty of prosthodontics has the most to offer a patient. The management of the many variables in partially edentulous conditions is the essence of specialty-level prosthodontic therapy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2510 - ADVANCED PROSTHODONTIC CLINIC 1

Minimum Credits: 9
Maximum Credits: 9
Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation. Knowledge of porcelain and its handling qualities are stressed.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2520 - ADVANCED PROSTHODONTIC CLINIC 2

Minimum Credits: 9
Maximum Credits: 9
Emphasis is placed on the clinical, laboratory, and technical skills necessary to treat the partially edentulous patient using a removable appliance. Coordination with fixed appliances is mandatory.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2540 - ADVANCED PROSTHODONTIC CLINIC 4

Minimum Credits: 13
Maximum Credits: 13
This course emphasizes the total treatment of the geriatric patient. Considerations are given to prosthodontic rehabilitation with implants, orthognathic treatment planning and the difficult prosthodontic patient.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2550 - ADVANCED PROSTHODONTIC CLINIC 5

Minimum Credits: 13
Maximum Credits: 13
Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation. Knowledge of porcelain and its handling qualities are stressed.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2570 - ADVANCED PROSTHODONTIC CLINIC 7

Minimum Credits: 13
Maximum Credits: 13
Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation.A Knowledge of porcelain and its handling qualities are stressed.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2580 - ADVANCED PROSTHODONTIC CLINIC 8

Minimum Credits: 13
Maximum Credits: 13
Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation. Knowledge of porcelain and its handling qualities are stressed.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 2590 - ADV PROSTHODONTIC CLINIC 9

Minimum Credits: 9
Maximum Credits: 9
Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation.A Knowledge of porcelain and its handling qualities are stressed.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 5142 - DENTAL MATERIALS

Minimum Credits: 2
Maximum Credits: 2
Dental Materials is an introductory course designed to teach predoctoral students how to identify, analyze, evaluate, and manipulate basic restorative dental materials. The importance of understanding the basic chemistry, rates of reactions, and slight differences in the chemistry

of materials will be emphasized to prepare students for later clinical applications. This course includes lectures, class discussions, and small group laboratory sessions where students will use essential restorative materials in dentistry to fabricate products used in the clinical environment. The course also includes introductory content in digital dentistry that will be further developed in subsequent courses.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5144 - INTRODUCTION TO DENTAL MATERIALS LAB

Minimum Credits: 1
Maximum Credits: 1
Introduction to Dental Materials Lab is a laboratory course designed to expose predoctoral students to basic materials in restorative dentistry. Students will be assigned to small group laboratory sessions where they will use essential materials in dentistry to fabricate products used in the clinical environment. The emphasis of this course focuses on the manipulation and effects of variables on these basic dental materials. The ultimate products fabricated at each session will be important for use in laboratory sessions in subsequent courses which will further display application of the materials.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PROSTH 5171 - PRINCIPLES OF DENTAL OCCLUSION

Minimum Credits: 3
Maximum Credits: 3
This course is clinically-oriented and employs preclinical laboratory exercises to teach the students the basic principles of occlusion. The importance of the relationship between the temporomandibular joint, occlusion and incisal guidance is emphasized. The students use semi-adjustable - class III - articulators and face bows. Students will learn how to perform an anatomic diagnostic mounting, occlusal analysis, diagnostic equilibration, bite splint fabrication, and functional occlusal waxing.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5211 - FIXED PARTIAL DENTURES 1

Minimum Credits: 1
Maximum Credits: 1
In this course, students will develop an understanding of the process involved in successfully treating a patient indicated for the placement of crowns. Topics include: 1) the preliminary work up, including diagnostic waxing on prepared casts; 2) template fabrication for provisionalization; and 3) the sequencing involved in the development of the art and skill of proper tooth preparation for single crowns, including a full cast crown preparation (FCC), a porcelain fused to metal crown (PFM), and an all ceramic crown (ACC). Provisionalization of the crown preparations will be discussed. Students will develop an understanding of the principles of final impression making for a fixed partial denture (FPD), pouring and pindexing of the impression casts, face-bow transfer registration, jaw relation records and mounting of the case on a semi-adjustable articulator. In the accompanying lab course, PROSTH 5215, students will have an opportunity to develop and practice skills in a small group laboratory setting. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5214 - DENTAL MATERIALS

Minimum Credits: 1
Maximum Credits: 1
Dental Materials is an introductory course designed to teach predoctoral students how to identify, analyze, and evaluate basic restorative dental materials. The importance of understanding the basic chemistry, rates of reactions, and differences in the chemistry of materials cannot be overemphasized for specific clinical uses. This course includes weekly lectures with class discussions and will build on the

principles from the first-year course, Introduction to Dental Materials Lab.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5215 - FIXED PARTIAL DENTURES 1 LAB

Minimum Credits: 3
Maximum Credits: 3
In this course, students will apply concepts learned in PROSTH 5211 and will develop the skills necessary to treat a fixed prosthodontic patient. An emphasis will be placed on the preliminary work up as well as the art of proper tooth preparation for single crowns. Students will complete crown preparations for a full cast crown (FCC), porcelain fused to metal crown (PFM), and all ceramic crowns (ACC). Provisionalization of the crown preps will also be required. Students will also develop skills in making final impressions for a fixed partial denture (FPD) and in the laboratory techniques required to produce acceptable results. Laboratory procedures such as pouring and pindexing of casts, facebow transfer registration, jaw relation records, and mounting of the case on a semi-adjustable articulator will be accomplished by the student. This course includes small group laboratory sessions.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: ABCF

PROSTH 5218 - COMPLETE DENTURES

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be prepared for the complex task of complete denture fabrication for the edentulous patient. They will receive instruction on the materials and techniques required to treat patients in a clinical setting, along with detailed guidance on each step of the denture fabrication process. Additionally, students will learn the fundamental principles of the edentulism classification system and gain knowledge of dental procedures related to denture repair, relines, and rebases of existing removable dentures. In the accompanying lab course, students will have the opportunity to apply concepts learned in this course in a small group laboratory setting. The course consists of lectures and demonstrations of clinical and laboratory procedures.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5219 - COMPLETE DENTURES LAB

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be prepared for the complex task of complete denture fabrication for the edentulous patient. Students will apply concepts learned in the Complete Dentures didactic course in order to fabricate complete dentures in a simulated clinical environment. The student will also participate in the fabrication of complete dentures in the continuing education clinic for a selected patient. This course includes small group laboratory sessions.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PROSTH 5241 - REMOVABLE PARTIAL DENTURES

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be prepared for the complex task of understanding, diagnosing, and treating partially edentulous patients. Upon completion of this course, and the accompanying laboratory course, the student will be able to recognize, manage, and/or restore partial edentulism to proper form, function, and esthetics with a removable prosthesis. This course includes lectures and class discussions.
Academic Career: Dental Medicine

Course Component: Lecture
Grade Component: ABCF

PROSTH 5245 - REMOVABLE PARTIAL DENTURES LABORATORY

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be prepared for the complex task of understanding, diagnosing, and treating partially edentulous patients. Upon completion of this course, and the accompanying didactic course, the student will be able to recognize, manage, and/or restore partial edentulism to proper form, function, and esthetics with a removable prosthesis. This course includes small group lab sessions.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: ABCF

PROSTH 5251 - FIXED PARTIAL DENTURES 2

Minimum Credits: 1
Maximum Credits: 1
In this course, students will prepare for the complex task of performing indirect prosthodontic procedures on a clinical level. Students will learn the process of fabricating a 3-unit fixed partial denture including treatment planning, laboratory prescriptions, pontic and framework designs, diagnostic waxing techniques, soldering principles, indirect inlay and onlay preparations, dental cements, and retraction cord techniques for making impressions. Students will have an opportunity to apply principles learned in this course in the accompanying laboratory course, PROSTH 5256 (Fixed Partial Dentures 2 Lab).
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5256 - FIXED PARTIAL DENTURES 2 LAB

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to prepare the student for the complex task of performing indirect restorative procedures on a clinical level. Students will apply theoretical concepts learned in PROSTH 5251 (Fixed Partial Dentures 2) in order to prepare multiple abutment teeth and fabricate 3 or 4 or 6 -unit provisional restorations. Preparation of adjacent teeth with a splinted provisional. Students will also have exposure to the preparation and provisionalzation of typodont teeth for survey crowns and indirect metal and tooth colored onlays. Composite or acrylic provisional material will be utilized . This course includes small group laboratory sessions.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: ABCF

PROSTH 5258 - IMPLANTOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course introduces students to the fundamentals of implant dentistry, emphasizing the interdisciplinary integration of surgical, prosthodontic, and digital principles essential for predictable implant therapy. Students will learn to evaluate patients for implant treatment, interpret cone beam CT scans, and plan implant placement using digital workflows and surgical guides. The curriculum also covers surgical instrumentation and techniques for implant placement, provisionalization strategies, and prosthodontic restoration principles for single and multiple units (overdentures). In addition, students will gain an understanding of post-surgical maintenance protocols, management of implant-related complications, and contemporary digital technologies used in implant dentistry. Learning activities include lectures, case-based discussions, and hands-on laboratory sessions designed to build the knowledge and skills required for comprehensive implant care.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5271 - DIGITAL DENTISTRY 1

Minimum Credits: 1
Maximum Credits: 1
In this course, students will be introduced to CAD/CAM (CEREC) technology and will be properly trained in its use. This course blends theoretical foundations with practical applications. Students will learn how to prepare teeth for all-ceramic, CEREC crowns and will make digital impressions using the CEREC 4.24 machines. Students will also learn how to design and edit these crowns prior to milling them. Proper block selection and finishing/inserting these final restorations will also be addressed. This course includes lecture and small group laboratory/simulation sessions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5311 - IMPLANTOLOGY 1

Minimum Credits: 1.5
Maximum Credits: 1.5
In this course, students will be introduced to implantology as a progressive field that requires a comprehensive knowledge of dentistry. This course prepares students for introductory level treatment of implant dentistry, including examination of implant-bone interface, preoperative patient evaluation, use of cone beam CT scanning to image bone, construct surgical guides and virtually treatment plan cases. Other topics covered include: treatment planning involving surgical techniques and prosthetic therapies; surgical instrumentation and procedures for effective implant placement; temporization of the patient during the implant therapy; and implant impression making techniques. This course also serves as preparation for Implantology 2, where the student will begin with the reconstructive phase of implantology. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5346 - IMPLANTOLOGY 2

Minimum Credits: 1
Maximum Credits: 1
The success of any implant treatment is determined by proper prosthodontic diagnosis, treatment planning, successful execution of prosthodontic implant techniques and post-delivery maintenance. In this course, students will focus on the techniques indicated for successful prosthodontic restoration of dental implants. The foundational knowledge presented in Implantology I will be used to prepare the student for proper treatment planning and prosthodontic care of all edentulous patients desiring dental implant reconstruction. Advanced procedures will also be presented to familiarize the student with treatment modalities that are available for specialty care. Post insertion therapies as well as implant practice management considerations will also be discussed. This course includes lectures and class discussions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5348 - DIGITAL DENTISTRY 2

Minimum Credits: 1
Maximum Credits: 1
This course will serve as a continuation of Digital Dentistry 1 and will complete the student's introduction to CAD/CAM technology. In this course, students will learn:* How to prepare teeth for a 3-unit fixed partial denture and a porcelain crown restoration over an implant.* How to make digital impressions using the CEREC Bluecam machines.* How to design and edit these restorations prior to milling them.* Proper block selection and how to finish and insert these final restorations. This course includes small group rotations in the CEREC lab and simulation clinic.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PROSTH 5375 - CLINICAL PROSTHODONTICS 1

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide clinical experiences in the area of fixed and removable prosthodontics for predoctoral dental students. Students will provide care to dental patients with fixed and removable prosthodontic needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with fixed and removable prosthodontic needs. During this third-year course, students will start to fulfill their clinical prosthodontics requirements in the Prosthodontic Module of the Comprehensive Care Clinics. Any unmet clinical requirements will need to be completed during the fourth-year Clinical Prosthodontics 2 course (PROSTH 5448). Competence in clinical prosthodontics will be formally assessed in the fourth-year course Clinical Prosthodontics 2 (PROSTH 5448).
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 5377 - SIMULATED PATIENT TREATMENT

Minimum Credits: 1
Maximum Credits: 1
In a simulated treatment setting, students will focus on the preparation of a single-unit porcelain crown and a three-unit porcelain-fused-to-metal fixed partial denture (FPD), utilizing several preparation designs and restorative materials. The student will complete a 3-unit fixed bridge clinical simulation competency examination by the end of this course.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PROSTH 5448 - CLINICAL PROSTHODONTICS 2

Minimum Credits: 4
Maximum Credits: 4
This course is designed to provide clinical experiences in the areas of fixed and removable prosthodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with fixed and removable prosthodontic needs at the level of a general dentist and will participate in a variety of additional experiences to increase 2 skills in caring for the patient with fixed and removable prosthodontic needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 5469 - CLINICAL IMPLANT DENTISTRY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide clinical experiences in the areas of fixed and removable prosthodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with fixed and removable prosthodontic needs at the level of a general dentist and will participate in a variety of additional experiences to increase 2 skills in caring for the patient with fixed and removable prosthodontic needs.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 5910 - ADVANCED PROSTHODONTIC TREATMENT PLANNING

Minimum Credits: 1
Maximum Credits: 1

This course is structured to develop the student's ability to plan and implement treatment for patients with complex prosthodontic problems, including but not limited to fixed, implant, and removable prosthodontics, geriatric prosthodontics, TMJ problems, re-establishment of vertical dimension, surgical prosthodontics and other prosthetic procedures.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 5915 - DENTAL IMPLANT SELECTIVE

Minimum Credits: 1
Maximum Credits: 1
A hands-on approach is offered for the surgical and restorative phases of implant dentistry. Students will surgically place implants and assist with cases. Each student will re store one Prosthetic case. Advanced seminars will be given on implant dentistry.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 5916 - COMPLETE DENTURE FABRICATION - VA

Minimum Credits: 1
Maximum Credits: 1
This externship permits the fourth year dental student working one-on-one with a hospital staff dentist to complete one full denture in a hospital setting on medically compromised geriatric patients. In addition the student will understand the operation of a dental clinic within a hospital setting.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

Psychiatry

PSYC 5345 - CLINICAL NEUROSCIENCE REPEAT

Minimum Credits: 0
Maximum Credits: 0
This course is registered when the clinical neuroscience clerkship is failed and all or part of it must be repeated. If less than the full clerkship is taken, the transcript should reflect the specific number of weeks repeated.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 3

PSYC 5365 - CLINICAL NEUROSCIENCES

Minimum Credits: 0
Maximum Credits: 0
The neurosciences clerkship integrates psychiatry and neurology. NSURG, neuropath and neurorad experiences are also provided. The block is five weeks psych and three weeks neurology. Clinical teaching includes INPT and OPT settings. Field trips, NSURG or neuropath brain cutting, emergency room, and one aa meeting are required. Integrated teaching on two afternoons utilizes interactive lectures, case conferences, neurorad rounds, and critical reviews of literature. Performance-based evaluations and NBME shelf exams are main modes of student evaluation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

PSYC 5366 - PSYCHIATRY CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
The psychiatry clerkship is five weeks of clinical psychiatry. Focus in on common psychiatric conditions: presentation, diagnosis, treatment and prognosis. Clinical teaching includes INPT and emergency room settings. Field trips, and one aa meeting are required. Didactic teaching on two afternoons include interactive lectures, case conferences and critical reviews of literature. Performance-based evaluations and NBME shelf exams are main modes of student evaluation.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PSYC 5368 - PSYCHIATRY CLERKSHIP 3RC

Minimum Credits: 0
Maximum Credits: 0
The Psychiatry Clerkship is a four-week experience centered on inpatient and partial hospital behavioral health care. Students take responsibility for the care of individual patients, under supervision, learning both assessment and management skills for common and important behavioral health conditions. Students participate in classroom-based didactics, reflective writing, and group therapy. Students also participate in formative standardized patient encounters.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PSYC 5410 - ADULT PSYCHOLOGY ADVANCED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
Students may participate in a number of acting internships available in Psychiatry. The student will be assigned to an inpatient unit at Western Psychiatric Institute and Clinic. This experience will enhance your skills in dealing with diagnostic and management of psychiatric patients. Inpatient units available for acting internships include: Geriatrics, Schizophrenia, Dual Diagnosis (drug and alcohol), General Adult, and Eating Disorders.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5411 - CHILD/ADOLESCENT PSYCHIATRY ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
Students may participate in an elective in Child and Adolescent Psychiatry available through Western Psychiatric Institute and Clinic's Child and Adolescent Inpatient Service. The student will be a member of a multidisciplinary team consisting of attending psychiatrist, social worker, teacher and nursing staff. The student will manage assigned patients directly under the guidance of attending physician. Acting interns will interact with families and the patient's outpatient treatment team to gain collateral information, updates case progress, and provides psycho education.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5412 - TRIPLE BOARD ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
The Triple Board (TB) Acting Internship at the University of Pittsburgh Medical Center (UPMC) has been designed to provide the interested medical student with an exposure to the interface of Pediatrics and Child and Adolescent Psychiatry. This four-week internship will focus primarily on the Pediatric Behavioral Health Consult-Liaison Service at Children's Hospital of Pittsburgh (CHP) of UPMC. This Consult-Liaison Service provides inpatient consultation to a wide variety of general and subspecialty pediatric services within a large pediatric hospital. Acting interns will see patients and present them to one of a team of child psychiatrists who work in this setting. In addition to this primary focus, acting interns will also participate in clinical and educational activities specific to pediatrics and psychiatry. They will attend the Tuesday afternoon pediatric outpatient continuity clinic, Thursday morning Triple Board Clinic - a medication management clinic designated for Triple Board residents - and the Thursday afternoon Psychiatry Didactic sessions. Medical students will also participate in one day of rounding with the Pediatric Hospital Medicine service at the Children's Hospital of Pittsburgh, and one day of rounding with the inpatient Child & Adolescent Psychiatry unit at Western Psychiatric Hospital. We hope this broad exposure will pique one's interest in Triple Board training at the University of Pittsburgh as an exciting and diverse training program.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PSYC 5415 - INTRODUCTION TO CLINICAL PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
This four-week elective is for those students interested in getting experience in clinical psychiatry outside of the core clinical neurosciences clerkship. Students will develop basic skills in the interviewing and assessment, diagnosis and management of psychiatric patients in the inpatient units. Course objectives include: conduct comprehensive psychiatric interview and mental status examinations; gather clinical data, generate differential diagnoses, formulate working diagnosis and management treatment; plan and implement a biopsychosocial treatment plan for patients with psychiatric illnesses; and utilize the resources and skills of related mental health professionals.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5420 - PSYCHIATRIC EMERGENCY SERVICES

Minimum Credits: 0
Maximum Credits: 0
Twenty-four hour psychiatric assessment center and emergency room where students may participate for one to 3 months in the assessment, diagnosis and disposition planning of patients. Students also participate in a comprehensive course covering diagnostic interviewing, lethal assessment and specific methods for interviewing efficiently under time constraints. This course consists of didactic presentations, role playing, interviewing of patients in class and a bibliography of required and suggested readings.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5422 - TELEPSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
Telepsychiatry visits across the region, independent reading, and a QI project.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PSYC 5425 - MANAGEMENT OF PSYCHIATRIC ILLNESSES

Minimum Credits: 0
Maximum Credits: 0
Four week elective designed to allow students to learn in a service-learning model. Students will participate at non hospital sites interacting with social workers, nurse practitioners, primary care physicians, and psychiatrists. Primary goal of this elective is to learn to identify and manage psychiatric illness in the primary care setting.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5430 - PEDIATRIC PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
Assessment of children and families referred to behavioral science program, children's hospital and consult liaison. Help consult in abuse and neglect problems at hospitals and special settings. Acquainted with community resources. Skills in behavioral syndromes assessment principles of consultation and liaison activity.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5441 - OUTPATIENT ADOLESCENT PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
Four week elective in which the student will observe and participate in complete evaluations of children, adolescents, and their families. Expected to rotate in a general clinic and through some of the specialty child psychiatry clinics as well. There will be an opportunity to observe group therapy sessions. Teaching will be in individual, group and conference settings.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5442 - ADV OUTPATIENT CHILD & ADOLSCNT

Minimum Credits: 0
Maximum Credits: 0
Four/eight week for those individuals who are considering a career in behavioral pediatrics, or general or child psychiatry. Active role demanded of student. Those interested will serve as a co-clinician with shared and supervised responsibility for assessment and treatment of children and adolescents. Literature-intensive, assigned texts and articles. Students will learn clinical skills as part of a multi-disciplinary approach to outpatient treatment, working with other mental health professionals. Student will spend time in general clinic and varied specialty clinics.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5443 - SEX ABUSE OF CHILDREN & ADOLSCNT

Minimum Credits: 0
Maximum Credits: 0
Four week elective, clinical and research aspects of child sexual abuse will be examined from a variety of perspectives. Discussions with instructors and selected readings. Clinical aspects of child sexual abuse including how to identify and gather information from children, methods of reporting abuse to the proper authorities. Legal and child protective aspects. Psychiatric and physical problems will be

addressed.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5448 - INTRODUCTION TO GERIATRIC PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
This course will provide an introduction to psychiatric care of the geriatric patient. Experiences will include new assessments, interviewing, psychotherapy and pharmacotherapy, collaboration with geriatricians and other related issues. Experiences will be in both inpatient units and in-home visits. Course objectives: conduct comprehensive psychiatric interviews and mental status examinations; gather clinical data, generate differential diagnoses, formulate working diagnosis and manage treatment; plan and implement biopsychosocial treatment plan for patients with elders with psychiatric illnesses; utilize the resources and skills of related mental health professionals, learning how to collaborate with other providers and agencies; understand how family and community contents affect mental health of the elderly; summarize the assessment and treatment of a patient with dementia; employ a cognitive screening evaluation to assess and follow patients with cognitive impairment and state the limitations of these instruments; summarize the special considerations in prescribing psychotropic medications of the elderly, especially toxicity risks; appreciate the role of loss in the etiology of psychiatric disorders in the elderly.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5450 - GERIATRIC PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
Four/eight week elective provides the students the opportunity of being involved in all aspects of care of elderly inpatients and outpatients. Involvement in individual, couple, family and group programs. Function as members of the multi-disciplinary team. Assume increasing responsibility for individual patients as their rotations proceed. Attend a weekly case conference. Supervised by a resident and faculty member of the team to which they are assigned.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5455 - EMERGENCY PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
Student will learn clinical interviewing, the mental status examination, basic psychiatric diagnosis, basics of evaluation of suicidal and homicidal potential, emergency therapeutics, and basic aspects of psychiatry and the law.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5458 - PSYCHIATRIC ASSESSMENT

Minimum Credits: 0
Maximum Credits: 0
This elective experience will develop skills at psychiatric interviewing as well as assessment of new patients. Forty (40%) percent time will be spent in the psychiatric emergency room doing evaluations with faculty and resident preceptors, 40% rotating at other sites (child, adult, geriatric) doing assessments of new ambulatory patients, plus a full day of didactics and supervision. Course objectives: conduct

comprehensive psychiatric interviews and mental status examinations; gather clinical data, generate differential diagnoses, and formulate working diagnosis using the dsm-iv multi axial system; elicit, describe and record the key components of a mental status examination; make a clear and concise psychiatric case presentation; learn different approaches to assessment across the lifespan; understand the indications and procedures for involuntary mental health commitment; develop a collaborative, multi-disciplinary and biopsychosocial approach to patient care; demonstrate empathy, facilitative approaches and sensitivity to diversity.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5459 - NEUROSCIENCE A T THE BEDSIDE: EXPLORING PERONALIZED MEDICINE IN PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
Personalized medicine is the new catchphrase for the role of cutting edge translational science on routine clinical care. Can we use an imaging result to predict treatment response? How will a person's genetic make-up inform choice of medication? How does awareness of risk affect management? In psychiatry, personalized medicine remains somewhat of a 'holy grail' ' elusive but hotly pursued by neuroscientists and clinicians. In this elective experience, students will get a taste of that pursuit through a mixture of scientific and clinical activities that will be individualized by students in particular areas ranging from neuroimaging, pharmacotherapy, genomics, ethics and service research. Students will investigate a particular area of interest through a literature review and specific directed experiences, presenting a capstone project to a scientific audience at the end. Overall supervision will be conducted by the course director.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PSYC 5460 - CONSULTATION & LIAISON PSYCH

Minimum Credits: 0
Maximum Credits: 0
Four/eight week elective focuses on psychiatric problems in medical and surgical patients. Under the supervision of full-time faculty and chief resident. Respond to requests for psychiatric evaluation of patients on inpatient units. Conducts the clinical evaluation, investigates any ward management difficulties, assesses the role of the patient's family in the clinical problem, makes treatment recommendations and provides appropriate follow-up during the patient's hospital stay. Multi-disciplinary team integrates the biological with psychosocial perspective to achieve view.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5462 - PSYCHIATRY AND FAMILY MEDICINE COMBINED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
The four-week elective focuses on psychiatric and general medical problems in a variety of patients and settings. The rotation incorporates many aspects of the UPMC Psychiatry-Family Medicine combined residency program and is shaped to give students a sense of what life will be like as a combined resident/attending. It introduces students to many of the faculty, residents, and clinical sites involved in the combined Psychiatry/Family Medicine residency at UPMC. Sites include the family health centers associated with UPMC McKeesport and St. Margaret Family Medicine Residency Programs, outpatient psychiatry mood/psychosis clinics, and the family medicine inpatient service at UPMC Western Psychiatric Hospital. The student will conduct family medicine and psychiatry clinical evaluations, including obtaining a history and performing physical exams, and make treatment recommendations. They will also participate in integrated care including in-person and chart consultations. The student will participate in family medicine and psychiatry resident didactics and present their own journal club topic at the end of the rotation.
Academic Career: Medical School
Course Component: Clinical

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5465 - COMMUNITY PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
This four-week elective intends to teach students how to care for seriously and persistently mentally ill adults and adolescents who are in community-based psychiatric treatment programs. Students will precept with team psychiatrists, get exposure to group and individual therapy, and follow one or two patients for continuing care over the month. Home visits and other community outreach will be an integral part, along with collaboration with a variety of team members and other providers. Students will be involved in case management, treatment teams, and systems liaising (e.g., Assisting patients leave state hospitals and return to the community). The course objectives are: to build basic skills in psychiatric interviewing, assessment, and patient management; to learn how to work with "challenging" clients, situations, and systems; to plan and implement biopsychosocial treatment plans for patients with psychiatric illnesses; to utilize the resources and skills of related mental health professionals, working collaboratively with multiple disciplines and agencies; to understand how continuity of care can be achieved and how it can help improve patient outcomes; and to learn how the funding of mental health care affects service delivery and patient outcomes.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5468 - INTEGRATED CARE ACROSS THE LIFESPAN

Minimum Credits: 0
Maximum Credits: 0
This elective will provide medical students with clinical experiences at the interface of psychiatric and medical care, focusing on different models of integrating ambulatory behavioral services with primary and specialty medical care. Students will work with interdisciplinary teams that help improve access to care, often at the level of the medical home.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PSYC 5471 - MAYVIEW STATE HOSPITAL

Minimum Credits: 0
Maximum Credits: 0
Eight week elective at Mayview State Hospital. Become aware of the social and community programs of the chronic mentally ill and participate in the supervised group therapy experience. Participate in ongoing research at Mayview depending on the student's ability and interest. Interview and assessment techniques for psychiatric inpatients. Prescription practice for psychotropic medications. Treatment of non-responsive schizophrenic patient. Drug metabolism, conduct a neurological evaluation of psychotic and depressed individuals.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5481 - ADDICTIONS TREATMENT PROGRAM

Minimum Credits: 0
Maximum Credits: 0
Four/eight week placement providing the opportunity of being included in all aspects of care both in and outpatient, for chemical dependency. Participation and involvement in all medical-psychological aspects; detoxification and rehabilitation, individual, family and group counseling; evaluation/ assessment, treatment planning; working with adult, adolescent, elderly and pregnant patients in various modalities. Function as an integral part of the clinical multi-disciplinary team. Recognize how to avoid prescribing inappropriately for chemically-dependent patients.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5482 - DUAL DIAGNOSIS: MENTAL AND SUBSTANCE ABUSE

Minimum Credits: 0
Maximum Credits: 0
Experience treatment of patients with both mental illness problems and substance abuse problems at the Western psychiatric institute and clinic. Full member of interdisciplinary treatment team as primary therapist for two patients. Some time will be spent at off-site locations within the community.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5483 - OUTPATIENT ADDICTION PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
This elective focuses on the assessment and treatment of co-occurring substance use and psychiatric disorders. Students will gain experience in diagnosing and treating psychiatric and substance use disorders, substance withdrawal management, intensive outpatient treatment, and specialty group therapies tailored to patient needs, such as trauma-focused treatment, dialectical behavior therapy (DBT) skills, and grief and loss groups. The rotation emphasizes evidence-based approaches to addiction treatment and provides supervision from physicians and clinicians across multiple levels of care. Students will have opportunities to evaluate and treat patients in withdrawal management settings, learn about medications for opioid, alcohol, and other addictions, participate in individual medication management visits, observe and contribute to group therapy sessions, and engage with family members as part of comprehensive treatment planning when appropriate.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PSYC 5485 - ADULT INTENSIVE OUTPATIENT PROGRAM

Minimum Credits: 0
Maximum Credits: 0
Elective introduces student to acutely ill psychiatric patients. Partial serves as a step-down for hospitalized patients with a mix of mood and psychotic disorders, frequently with significant comorbidities. Treatment occurs in group, individual and family sessions by multidisciplinary treatment team. Student participates in variety of clinical experiences: running group psychotherapy sessions; carrying small case load of individual patients for individual psychotherapy and pharmacotherapy; conduct family sessions; perform assessments and intakes on new patients; participate in treatment team meetings.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5500 - NEUROBEHAVIORAL PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
Four week elective to learn different diagnosis of neuropsychiatric disorders in developmentally disabled population; neurology principles and treatment pertaining to developmental disabilities; behavioral neurology principles and treatment pertaining to developmental disabilities; to work on a treatment team and learn inpatient case formulation and therapeutic management skills. John Merck multiple disabilities program for children/adolescents/adults and their families in and outpatient clinic and community liaison program. Reasons for

admission is acute psychiatric symptomatology.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5510 - SLEEP AND ITS DISORDERS

Minimum Credits: 0
Maximum Credits: 0
Eight week elective to provide a basic knowledge of sleep, regulation of a relationship of sleep stages to other physiobiological process; to develop basic skills and apply them to comprehensive assessment of patients with complaints of disturbed sleep. Assist in the evaluation of patients with disorders. Participate in history taking and in the administration of structured interview to patients and their bed partners. Learn principles and procedures of polysomnography and will participate in the processes of data interpretation, treatment recommendation and formulate a treatment plan.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5520 - BIOLOGICAL RHYTHMS

Minimum Credits: 0
Maximum Credits: 0
Eight week elective in understanding more the interrelationships between the sleep-wake cycle and the circadian rhythms of core body temperature and different neuroendocrine axes; to participate in the evaluation of subjects and patients including history taking and recruitment. Provide as opportunity to learn about polysomnography and clinical neuroendocrinology including hormone assay procedures; participate in data collection and subsequent analysis. Material will be provided; expected to critically review relevant literature. Design a research study.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5531 - WOMEN'S BEHAVIORAL HEALTH

Minimum Credits: 0
Maximum Credits: 0
This elective will focus on Women's Mental Health across the life cycle. The elective will explore multiple influences that shape women's health and well being, including hormonal, environmental, and social influences, as well as role changes throughout the life cycle. A special focus will be placed on the perinatal period, a challenging time in a woman's life. Women with psychiatric and addiction issues require counseling in regards to the safest way to maintain their own mental health and the health of their fetus. This includes discussions on whether to take a medication during pregnancy and its associated safety profile during pregnancy and while breastfeeding. Several psychiatric disorders can occur in the post-partum period, from post-partum depression to post-partum psychosis. Each bears its own challenges with the impact it has on the mother, her infant, and family. Mental health during midlife and the menopausal transition will also be discussed. Mood and anxiety disorders common during the menopausal transition, a time of pronounced reproductive hormone changes, menopausal symptoms (e.g. hot flashes, sleep disturbance, urogenital symptoms), and role transitions that can impact mental health during this time. Medical students will attend a general outpatient perinatal psychiatry clinic, outpatient perinatal addictions clinic, and spend time on the consult and liaison service at Magee Women's Hospital. Students will have the chance to learn more about current research in Women's Mental Health by meeting with faculty involved in this field of study.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5540 - WOMEN'S BEHAVIORAL HEALTH 2-WEEK ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This two-week elective will focus on Women's Mental Health across the life cycle. The elective will explore multiple influences that shape women's health and well-being, including hormonal, environmental, and social influences, as well as role changes throughout the life cycle. A special focus will be placed on the perinatal period, a challenging time in a woman's life.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

PSYC 5650 - INDIVIDUALIZED CLINICAL COURSE IN PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the Department of Psychiatry to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5655 - INDIVIDUALIZED CLINICAL COURSE 2-WEEK ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This two-week elective is tailored to fit the student's education needs/interest. The students would meet with the course director to design the experience based on their area(s) of interest in psychiatry. The student would spend time at a clinical location (inpatient or outpatient for example). Students would become part of a clinical team, seeing patients and participating in their care.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

PSYC 5890 - CHILD & ADOLESCENT MOOD AND ANXIETY DISORDERS

Minimum Credits: 0
Maximum Credits: 0
The Child and Adolescent Bipolar Spectrum Services (CABS) and Services for Teens at Risk (STAR) offer a four-week elective that provides outpatient experience with problems related to depression, anxiety, and bipolar disorder in children and adolescents. Students participating in this elective will learn to: 1) understand the manifestations of affective disorder in childhood and adolescence; 2) conduct structured assessments for childhood psychiatric disorders; and 3) understand several different research methodologies used in this population, including pharmacological treatment studies. Students interested in this elective area are asked to contact the Director of Medical Student Education at least two months prior to the start date to discuss their interests and develop a set of activities that will enable them to achieve their goals.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5892 - PSYCHOPHYSIOLOGY

Minimum Credits: 0
Maximum Credits: 0
Eight week elective provides an introduction to basic noninvasive electrophysiobiological techniques and psychophysiobiological responses used to study autonomic nervous system responsitivity to psychological influences on physiology and pathophysiology will be taught and basic research. Readings will supplement lab work. Students will successfully collect at least one type of electrophysiobiological data; effectively critique a published article in psychophysiology; design a feasible psychophysiobiological experiment.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5893 - NEUROPHARMACOLOGY

Minimum Credits: 0
Maximum Credits: 0
Four week elective on various central neurotransmitter systems will be described and their possible role processes will be analyzed in relation to pharmacological effects. Catecholamines, serotonin, GABA, acetylcholine and receptors will be discussed and existing experimental evidence regarding their role. Independently conduct a thorough library search; effectively critique and evaluate published research papers and write a comprehensive document based on a critical literature review.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5894 - PSYCHOPHARMACOLOGY OF MOOD DISORDERS

Minimum Credits: 0
Maximum Credits: 0
Eight week elective that offers the opportunity to conduct lab studies of cell membrane function in patients with mood disorders. Blood components are used to study ion transport phenomena and other aspects of membrane function, and membrane structural components such as phospholipids. Orientation is to ward off the biological foundations of major mood disorders, and the mechanisms underlying the therapeutic actions of psychopharmacological agents; to design an experiment that employs basic lab methods to investigate clinical phenomena; to analyze and interpret data from experiments.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5895 - PSYCHIATRY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
This course provides students an opportunity to pursue independent research in a chosen area of interest within the field of psychiatry. Students are encouraged to design their independent study electives around their individual interests. Examples of research areas include but are not limited to: Epidemiology of major psychiatric disorders, Outpatient management of cognitive disorders, Outpatient behavioral treatment of anxiety disorders, Behavioral techniques in the management of general medical disease, and Outpatient substance abuse disorders and their management. Dr. Perez is available to assist you in designing your elective.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5896 - LAW AND PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
Four week elective to conceptualize issues and perform law medicine consultations in general areas of mental health law, medical ethics and professional responsibility with specific projects on patient's rights, informed consent, medical experimentation, legal guidelines effecting patient care and other areas of medicine where legal, social and ethical issues predominate. An experience as a jail psychiatrist providing psychiatric examination, as an advocate for patient's rights in a state hospital or as a consultant to lawyers at neighborhood legal service could be arranged.
Academic Career: Medical School
Course Component: Internship
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5897 - BEHAVIORAL MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Four week elective aimed at familiarizing the student with theory and practical applications within the programs of one or two of participating faculty members. Techniques include behavioral assessment, nutritional intervention for diabetes and obesity, and interventions for enhancing coping with chronic disease or pain such as relaxation and biofeedback therapy. Develop an assessment and treatment plan for a representative case; conduct a behavioral treatment session of a selected case; critically evaluate the clinical behavioral medicine literature.
Academic Career: Medical School
Course Component: Internship
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5898 - INTRO TO CLINICAL PSYC RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Eight week elective exposure to clinical research projects. Variety of research projects available. Each student will be assigned a faculty mentor or mentors based on his/her particular interests. Current projects involve clinical, biochemical, neuropsychological, neuroanatomic and electrophysiology studies in schizophrenia. Experiences range from "bench-top" lab assays to patient interviewing techniques; data collection, basic computer skills and basic lab skills; basic knowledge of current psychiatric nomenclature and diagnostic instruments.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5899 - INDEPENDENT STUDY

Minimum Credits: 0
Maximum Credits: 0
Four week elective wherein the students are welcome to do an independent study or the possibilities of other studies besides the following ones: anorexia nervosa and bulimia nervosa; epidemiology of major psychiatric disorders; out patient management of cognitive disorders; outpatient behavioral treatment of neurotic disorders; behavioral techniques in the management of general medicine disease; genetic factors in major psychiatric disorders; outpatient drug and alcohol valid disorders and their management.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PSYC 5901 - EXTRAMURAL PSYCHIATRY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in psychiatry may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

PSYC 5903 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This course is intended for the nonmedical graduate student. It provides the opportunity to participate in ongoing clinical or laboratory research under the direction of a departmental faculty preceptor. The student, in collaboration with the faculty member, will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and time table for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

Psychology

PSY 1057 - TOPCS IN BIOLOGICAL AND HEALTH PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
Topics in biological and health psychology will vary from term to term, depending on instructor.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: (PSY 0010 or 0012 or 0015 or 0200) and (PSY 0032 or 0035 or 1031 or PSY 0036 and 0037) and (PSY 0505 or 1215 or NROSCI 1000)

PSY 1135 - SOCIAL COGNITION

Minimum Credits: 3
Maximum Credits: 3
This course examines the cognitive mechanisms that underlie social understanding. Drawing on current research in social and cognitive psychology, we will analyze how fundamental mental processes (e.g., language, memory, attention, perception) shape the way we understand other people, navigate group dynamics, and construct our sense of self. Through in-depth discussion of primary research articles, we will critically evaluate how individuals encode and make sense of social information, including group identity, emotional expression, and contextual cues. We will consider how these processes operate in real-world behaviors, decisions, and biases.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: PSY 0010 or 0012 or 0015 or 0101 or 0200

PSY 1907 - DIRECTED INDIVIDUAL RESEARCH LG

Minimum Credits: 1
Maximum Credits: 3
This course involves student participation in individual experimental research supervised by a member of the Psychology Department faculty. This course is particularly valuable for students interested in graduate study in psychology. There are several steps to enroll in this

opportunity. Please refer to our Experiential Learning website for more information.
https://www.psychology.pitt.edu/undergraduate/experiential-and-enhanced-learning/directed-research-1903-1907-and-advanced-directed
Academic Career: Undergraduate
Course Component: Directed Studies
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: PSY 0036

PSY 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1
Maximum Credits: 9
Students who are planning, conducting or completing the master's thesis may register for this course.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Psychology (PHD or MS)

PSY 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

Minimum Credits: 4
Maximum Credits: 4
This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the lifespan.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PSY 2005 - STAT ANAL 1/ADV STATS-UG

Minimum Credits: 3
Maximum Credits: 3
This course is the first of a two course sequence to provide the knowledge and skills needed to plan and conduct analyses using a uniform framework based on the general linear model. Students will learn techniques to conduct a variety of statistical tests; the appropriate interpretation of results will be emphasized. Topics include data management and visualization, hypothesis testing (including power, effect sizes, and confidence intervals), simple and multiple regression, moderation, and mediation. Students will use R software for statistical computations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2010 - STATISTICAL ANALYSIS 2

Minimum Credits: 3
Maximum Credits: 3
This is the second of a two-course sequence to provide knowledge and skills needed to plan and conduct analyses using a uniform framework based on the general linear model. Topics covered include one-way and factorial analysis of variance, analysis of covariance, repeated measures and mixed model analysis of variance, mixed model analysis of covariance, outlier detection, and transformations. Students will continue to use SAS for statistical computing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2035 - MULTILEVEL MODELS

Minimum Credits: 3
Maximum Credits: 3
This course covers the conceptual basis of mixed-effects and hierarchical linear models and their implementation in the R environment for statistical computing, with a particular focus on analyzing psychological or linguistic data. Course topics will include fixed and random effects, model comparison, contrast coding, binomial and Gaussian models, longitudinal data, and dealing with missing data. We'll also discuss the basics of statistical programming in R and other software packages no previous R or programming experience required!
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 2075 - HISTORY OF PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the origins of the theories and methods that underpin modern academic psychology. We will explore psychology's philosophical and scientific roots in the ancient world, the Middle Ages, the Renaissance, and the Enlightenment. This course will also cover several schools of thought within psychology such as structuralism, functionalism, behaviorism, Gestalt psychology, psychoanalysis, humanistic psychology, psychobiology, and cognitive psychology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2090 - STRUCTURAL EQUATION MODELING

Minimum Credits: 3
Maximum Credits: 3
This course covers the basics of structural equation modeling (SEM). It is intended for the applied researcher interested in employing SEM in their own work and being able to critically evaluate SEM work conducted by others. The primary goal is to provide students with a strong set of fundamentals that will allow them to flexibly apply SEM to answer diverse questions in a wide variety of data. Core topics covered will include conceptual introduction to latent variable models, fundamentals of covariance structure models (i.e., data requirements, identification, estimation, evaluation, and modification), measurement models and confirmatory factor analysis, path analysis, full SEM, measurement invariance/multiple group analysis, and the basics of longitudinal models (e.g., cross-lagged panel designs, growth curve models). Introductions to advanced topics will be offered time permitting (e.g., categorical indicators; exploratory structural equation modeling, latent mixture models, multilevel-SEM). Examples will draw from the behavioral sciences, mostly psychology. The course will use Lavaan (an R package) as the statistical package for conducting SEM. Students interested in using other packages (e.g., Mplus, LISREL, Stata, EQS) are welcome to use them, though instructor support for any given package may vary.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: PSY 2005 and 2010

PSY 2110 - TOPICS IN SOCIAL PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
Course focuses on a single topic within social psychology, such as group formation and development, victimization, social comparison, or the self. Choice of topic varies from one instructor to another.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: PSY-MS or PSY-PHD

PSY 2111 - FOUNDATIONS OF SOCIAL PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to provide graduate students with an overview of theory and research in social psychology. Topics covered include social cognition, social perception, the self, attitudes and attitude change, close relationships, prosocial behavior, aggression, group processes and performance, and stereotyping, prejudice, and discrimination. A seminar format is used, in which students are expected to read and comment on papers, participate actively in class discussions, and write a final paper.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 2130 - INTERPERSONAL RELATIONS

Minimum Credits: 3
Maximum Credits: 3
Survey of theories and empirical research from social psychology and personality relevant to the study of close interpersonal relationships. Topics covered include empathy, altruism, affiliation, aggression, sexuality, and interpersonal power.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2200 - CLINICAL PSYCH RESEARCH METHODS

Minimum Credits: 3
Maximum Credits: 3
Graduate level examination of major research methods used in clinical psychology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: PSY MS or PHD

PSY 2205 - PSYCHOPATHOLOGY

Minimum Credits: 3
Maximum Credits: 3
Provides a critical background in research strategies, phenomena, empirical research, & models of adult psychopathology. Emphasis on etiological & pathological research, with both psychological & biological findings to be discussed. Concentration will be on the major psychopathologies with clinical onset in adulthood, including schizophrenia, affective disorders, anxiety, addictions, & eating disorders. Conceptual & methodological issues that cross diagnostic categories will be stressed. Treatment approaches and differential diagnosis will be covered but not emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2210 - CLINICAL PROGRAM RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This monthly graduate seminar series serves as an introduction to ongoing research relevant to the field of clinical psychology through research presentations by students and faculty from the clinical psychology program, department of psychology, and other departments.
Academic Career: Graduate
Course Component: Colloquium

Grade Component: Grad SN Basis
Course Requirements: PLAN: PSY-MS

PSY 2211 - READINGS ON DIVERSITY TOPICS IN CLINICAL PSYCHOLOGY

Minimum Credits: 1
Maximum Credits: 1
Readings on diversity topics in clinical psychology.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

PSY 2220 - CLINIC PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
This graduate course involves supervised experience in interviewing, assessment and psychotherapy within the clinical psychology center. This course is open only to graduate students in the clinical psychology program.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology PHD or MS

PSY 2225 - NON-CLINICAL EXTERNSHIP PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
This graduate course provides the student with supervised experience in a community organization. The placement and number of credits must be approved by the student's program faculty. This course is open only to graduate students in psychology.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PLAN: Psychology PHD or MS

PSY 2230 - CLINICAL COGNITIVE ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
This graduate course focuses on the intellectual assessment of adults and children. Following a discussion of the history of theories of intelligence, the major instruments for assessing intellectual functioning will be reviewed, with a focus on the Wechsler Scales. Students will administer, score, and interpret several measures. The communication of assessment results will be emphasized. A brief introduction to the assessment of brain diseases and learning disability will also be provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2235 - CLIN PSYCHOPATHOLOGY ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
This graduate course covers psychometric theory and major methods for assessing psychopathology with an emphasis on objective tests such as the MMPI-2 and structured interviews. Both theoretical and practical issues of administration and interpretation are addressed. Open only to graduate students in the clinical psychology program.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2245 - DEVELOPMENTAL PSYCHOPATHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This graduate course reviews models of social development and considers several theoretical issues with implications for both normal social development and for the emergence of psychopathology. Social experiences that are seen as crucial for normal development or which may set the stage for later problems are discussed. Both theoretical formulations and empirical findings are critically reviewed with an emphasis on attachment, peer relationships and family relationships.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: PSY-MS or PSY-PHD

PSY 2250 - PSYCHLGCL TRMNT: SYSTEMS & PRIN

Minimum Credits: 2
Maximum Credits: 2
This graduate course covers the history and systems of psychotherapy, with a particular focus on psychotherapy process and outcome research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2251 - PSYCHLGCL TRMNT: COGNTV & BEHVRL

Minimum Credits: 2
Maximum Credits: 2
This graduate course covers the history and theoretical foundations of cognitive and behavioral therapies as well as evidence on their effectiveness for a range of psychopath ology in adulthood. Students will be exposed to basic principles of operant conditioning, behavioral analysis, counter-conditioning, strategies and case material will be introduced, but the class will focus on critical evaluation of treatment research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2252 - PSYCHLGCL TRMNT: BEHVRL MEDICINE

Minimum Credits: 2
Maximum Credits: 2
This graduate course examines history and current status of psychological therapies designed for health risk prevention and management of physical disease. Areas emphasized are risk factor modification, secondary prevention/rehabilitation, coping with medical illness and procedures, and community/public health interventions. Critical evaluation of research on these topics will be stressed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2253 - PSYCHLGCL TRMNT:FAMILIES & CHILD

Minimum Credits: 2
Maximum Credits: 2

This graduate course provides an overview of family systems theory and family interventions with children. The history and conceptual underpinnings of family systems approaches will be introduced along with a background in normal family development. Specific orientations, including structural, functional/behavioral, and strategic approaches will also be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2280 - ETHICS AND PROFESSIONAL ISSUES 1

Minimum Credits: 1
Maximum Credits: 1
This course introduces first-year clinical students to some of the core issues in professional psychology, including an overview of ethics and diversity issues and some orientation to the clinic and the team process. The largest part of the course will be devoted to the development of fundamental clinical skills.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 2281 - ETHICS AND PROFESSIONAL ISSUES 2

Minimum Credits: 1
Maximum Credits: 1
This course provides information for first-year clinical students regarding core issues in professional psychology, including a series of lectures on psychopharmacology, followed by a summary of process research in psychotherapy. There will be additional presentations in the areas of ethics, diversity, and several empirically supported treatment models. This course will be offered annually in the summer term.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2282 - ETHICS AND PROFESSIONAL ISSUES 3

Minimum Credits: 1
Maximum Credits: 1
This course addresses a number of topics of relevance for second-year clinical students, including ethics and diversity, as well as information regarding specific empirically supported treatment models and more general therapy techniques, such as relaxation skills training and emotional self-regulation. This course will be offered each year in the fall term.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2301 - DEVELOPMENTAL RESEARCH METHODS

Minimum Credits: 3
Maximum Credits: 3
This course will provide a graduate level examination of major research methods used in developmental psychology from early childhood through adolescence.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: PSY-MS or PSY-PHD

PSY 2302 - MIXED METHODS LAB IN MENTAL HEALTH

Minimum Credits: 3
Maximum Credits: 3
In this course, students will be introduced to mixed methods research in psychology. Mixed methods research consists of combining statistical trends (quantitative data) with participants' stories and personal experiences (qualitative data) to provide a better understanding of a research problem than either type of data alone. A primary aspect of this course will be to teach students a) how to determine if mixed methods are necessary given their problem statement and research questions, b) the advantages and challenges of using mixed methods, and c) how to design a mixed methods study. Undergraduate students will develop an independent research proposal, collect, and analyze data to test a mixed methods research question, and write an APA mixed methods paper. Graduate students will conceptualize and design a mixed methods research study and write a research study grant proposal.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PSY 2305 - DEVELOPMENTAL PROGRAM RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This seminar accompanies graduate training in developmental psychology. It consists of research presentations, discussions of the literature, and professional development in the field of developmental psychology. Presentations are made by graduate students and faculty of the developmental psychology program as well as outside speakers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

PSY 2310 - FOUNDS: DEVELM PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
A survey of theories and current research problems in developmental psychology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2315 - DVLPMNTL PSYCH: INFANCY

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the development of basic cognitive processes such as sensation, perception, memory, and thought during the first 18 months of life.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2325 - DVLPMNTL PSY: SOCIAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course covers the central theory and research concerning social and emotional development. Topics covered include: interpersonal relations with peers and family; aggression and pro-social behavior; sex-role development and moral development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

PSY 2326 - CULTURE, PARENTING AND LITERACY

Minimum Credits: 3
Maximum Credits: 3
The course focuses on positive development of minority children and their families and takes a strengths-based approach to studying them. Students examine different sources of evidence of whether and how sociocultural factors and parenting practices shape children's language and literacy development. Students discuss evidence-based interventions at home and school that aim to improve children's language and literacy skills, particularly in low-income and ethnically diverse communities. Class sessions involve a combination of lectures and group discussion based on empirical articles, book chapters, press articles, and videos. Students complete individual assignments. The course may include both graduate and undergraduate students, and that course requirements will be different for each group.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2330 - DEVELM PSYCH: COGNITV DEVELP

Minimum Credits: 3
Maximum Credits: 3
This course examines children's cognitive development in areas such as perception, language, memory and learning skills. Several theoretical perspectives, including Piagetian theory and the information-processing approach are discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2350 - SPECIAL TOPICS IN DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This¿course¿number¿was introduced in 2026 and will be used for¿courses that fulfill Developmental Psychology Program requirements for Breadth Developmental¿Courses.¿These are¿courses with a core focus on developmental psychology theories and empirical research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: PSY MS/PHD

PSY 2376 - TOPICS SEM IN DEVELM PSYCHOLOGY

Minimum Credits: 2
Maximum Credits: 3
This seminar will vary from term to term. It is designed to offer a graduate level seminar in specialized topics in developmental psychology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 2402 - COGNITIVE PROGRAM RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This series of presentations serves as an introduction to ongoing research relevant to the field of cognitive psychology. Presentations are made by graduate students and faculty of the cognitive psychology program, the department of psychology, and other departments.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad SN Basis

PSY 2410 - FOUNDATIONS OF COGNITIVE PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will introduce core issues, theories, and experimental findings in cognitive psychology. Topics to be covered include history of cognitive psychology, sensory perception, attention, memory, imagery, language, reasoning, learning and expertise, problem solving, decision making, and individual differences in cognition. The goal is to understand foundational theories and issues as well as the research methods used in this area, in other words, how human cognition can be studied scientifically, and why the results of experimental investigations support particular theories.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: PSY-PhD

PSY 2440 - TOPICS SEMINAR IN HIGHER COGNITION

Minimum Credits: 3
Maximum Credits: 3
This seminar will vary from term to term. It is designed to offer a graduate-level seminar in various topics in higher cognition and learning.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 2441 - TOPICS SEMINAR IN PSYCHOLOGY OF LANGUAGE

Minimum Credits: 3
Maximum Credits: 3
This seminar will vary from term to term. It is designed to offer a graduate-level seminar in the psychology of language production, language comprehension, or applications to second language learning.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 2442 - TOPICS SEMINAR IN COGNITIVE NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3
This seminar will vary from term to term. It is designed to offer a graduate-level seminar in various topics within cognitive neuroscience (e.g., language, memory, learning, decision making, or perception).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 2470 - HUMAN COGNITION: SKILL ACQUISITION

Minimum Credits: 3
Maximum Credits: 3
A course in the human cognition graduate core sequence dealing with the learning of cognitive skills, such as technical job skills and professional problem solving skills. Emphasis is on the acquisition of facility, the nature of effective practice, and the representation of knowledge that contributes to skilled performance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2471 - MAPPING HUMAN BRAIN CONNECTIVITY TECHNOLOGY BASIC RESEARCH AND CLINICAL APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
This course covers use of a novel Pittsburgh developed High Definition Fiber Tracking (HDFT) technology providing human brain connectivity with unprecedented fidelity. The technology maps a million streamlines (0.1mm diameters sets of axons) per person providing 93 miles of tracts within the head involving 40 tracts connecting 170 brain areas. We can follow tracts from source to destination mapping projection fields with high accuracy. The fibers can be visualized and quantified providing circuit diagrams of cortical networks. These techniques will advance the study of brain systems, disorders, development, neuropathology, and neurosurgery. Students will perform projects individually or in groups analyzing collected data or developing new analysis or biomedical methods. Students can do projects that are cognitive neuroscience studies of a brain system or technical development of new methods. Sample projects might include mapping a sensory system, developmental assessment or automated brain segmentation and circuit tracing and detection of clinical anomalies (e.g., TBI breaks, tumors). Technical projects might involve better fiber reconstruction, tracking, tract segmentation or developing new visualization or statistical projects. Students must have some statistics and research experience/course work and consent of the instructor.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad LG/SNC Basis

PSY 2475 - BEHAVIORAL NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course will explore the links between behavior (normal and abnormal) and the brain. Cognitive and affective processes will be emphasized. Throughout the course, students will be exposed to research involving humans and animals at a variety of levels: e.g., Analysis of behavior, neuroimaging studies of whole brain activity, recordings from single brain cells, examinations of brain chemistry, and manipulations and study of genetic information. No prior knowledge of biology or neuroscience is required. The format of the course will include both lectures and discussions of scientific papers. The lectures will introduce basic facts and methods of cognitive, systems, cellular, and molecular neuroscience, and they will provide overviews of topics in cognitive and affective neuroscience, considering both normal and clinically-impaired behavior and brain function. The readings will provide an opportunity to consider different methods in the context of the primary literature, permit selected topics to be explored in greater depth, and provide a foundation for self-exploration and evaluation of cognitive and affective neuroscience literatures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2476 - TOPICS SEMINAR IN COGNITIVE PSYCHOLOGY

Minimum Credits: 1
Maximum Credits: 4
This seminar will vary from term to term. It is designed to offer a graduate level seminar in specialized topics in cognitive psychology.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

PSY 2477 - DESIGN OF EDUCATIONAL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
To develop successful educational innovations, a systems view must be taken, analyzing instructional goals, constraints and resources, considering alternative approaches to conveying ideas, motivating students, and guiding students to instructional objectives. Students will work in teams to enact an innovative educational design process with real projects and real clients. In the past, educational systems being (re)designed included museum exhibits, high school robotics units, afterschool digital literacy workshops, college lab courses, processes for selecting student assessments tools, and a professional development sequence for mathematics teachers. Throughout the process we will be learning about and addressing constraints from (1) organizational and policy contexts; (2) learning sciences; and (3) disciplinary content.

The course will be interdisciplinary in that it will draw students with diverse backgrounds to form the design teams.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PSY 2502 - HEALTH FUNDAMENTALS

Minimum Credits: 3
Maximum Credits: 3
This is a 3-credit proseminar intended for graduate trainees in biological and health psychology. Key conceptual and methodological issues in several major areas of concentration will be presented and discussed in a seminar format, in the context of current research. Requirements include active class discussion, brief presentations, and several papers involving summary and critique of current issues in each area of concentration. Areas of concentration will include cardiovascular behavioral medicine, psychoneuroimmunology and behavioral oncology, addictions and health behavior, and health cognition.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 2505 - HEALTH PROGRAM RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Review of current research and topics in biopsychology.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad SN Basis

PSY 2520 - PSYCHONEUROIMMUNOLOGY

Minimum Credits: 3
Maximum Credits: 3
The course provides a general background in the new interdisciplinary area of research dealing with effects of physical and psychological stress on the ability of the immune system to withstand illness and disease. Emphasis is on experimental studies which demonstrate ways in which environmental factors alter immunocompetence of animals and humans and on neural and endocrine factors that may mediate such effects. The possible significance of nervous system immune system interactions for development of disease states such as cancer is discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2560 - HUMAN CARDIOVSLR PSYCHPHYSLGY

Minimum Credits: 3
Maximum Credits: 3
Cardiovascular psychophysiology examines the influence of psychological processes on cardiovascular function. The course examines evidence supporting three perspectives on psychological processes related to cardiovascular function; a stress-arousal perspective, an information processing perspective and a metabolic need perspective.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2575 - TOPICS IN PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This seminar will vary from term to term. It is designed to offer a graduate level seminar in specialized topics in psychology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2576 - TOPICS SEMINAR IN HEALTH PSYCH

Minimum Credits: 2
Maximum Credits: 3
This seminar will vary from term to term. It is designed to offer a graduate level seminar in specialized topics in biopsychology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: PSY-MS or PSY-PHD

PSY 2945 - PSYCHOLINGUISTICS

Minimum Credits: 3
Maximum Credits: 3
This course is a general introduction to psycholinguistics, which will look at processes of language understanding, language production, and language acquisition. Throughout the course, we will consider the relationship between theoretical linguistic concepts and constructs, and psycholinguistic data. We will also touch on related areas, such as processes of reading, language and the brain, and language and thought.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2970 - TEACHING OF PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is required of all graduate students fulfilling the departmental teaching requirement. This requirement involves full responsibility for teaching an undergraduate course in psychology during one term.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2975 - TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Supervised practicum experience in the Teaching of Psychology
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

PSY 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Independent research project developed under the supervision of a faculty advisor.

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9
Students who are planning, conducting or completing the Ph.D. dissertation may register for this course.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 3205 - SEMINAR IN BEHAVIOR GENETICS

Minimum Credits: 3
Maximum Credits: 3
This is a survey of recent topics in the field of experimental psychopathology.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 3226 - AFFECTIVE SCIENCE

Minimum Credits: 3
Maximum Credits: 3
Topics include contemporary issues in emotion research with an emphasis on emotion expression, developmental perspectives, communication, pathology and methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 3245 - SEMINAR IN ADDICTION

Minimum Credits: 3
Maximum Credits: 3
This seminar will examine research literature on alcohol use and abuse. A guiding principle in this course is that alcoholism is a heterogeneous disorder that is multiply determined. Both genetic and environmental factors contribute to its etiology. A second point of emphasis in this course is that understanding drinking and alcoholism is advanced through the study of basic psychological processes. Although the course will focus on alcohol, some of the material will be drawn from, or relevant to, other substances of abuse. The field of alcohol research is vast and this course will focus on aspects of particular psychological relevance, with an emphasis on human research. Seminar topics will range from acute effects of alcohol in social drinkers to issues related to prevention and treatment of alcoholism. Although the course will include clinical topics, it will not be a clinical "how to" course, and students from both within and outside the clinical area are encouraged to enroll.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PSY 3290 - RESEARCH CHILD PSYCHOPATHOLOGY

Minimum Credits: 3
Maximum Credits: 3

This seminar focuses on major research problems in the field of child psychopathology. Issues of classification, differential diagnosis, course, and outcome of disorder are addressed. Particular disorders are used to illustrate the issues, trends and methodological problems which characterize current research in child psychopathology. These include attention deficit disorder, conduct disorder, childhood depression and anxiety disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Specific research topics carried out under the direction of a particular member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

Public & Int'l Affairs

PIA 0102 - GLOBAL CHALLENGES, GLOBAL SOLUTIONS: INTRODUCTION TO GLOBAL POLICY

Minimum Credits: 3
Maximum Credits: 3
The course, PIA 0102, aims to explore challenges that extend beyond national borders. In the first part, students will learn about the governance context, identifying key actors, international institutions, and power dynamics shaping global decisions. The second part will cover various global challenges, fostering foundational knowledge and engaging students in policy debates around these challenges. Through readings, discussions, and expert lectures, students will gain a deep understanding of global policy issues and exposure to analytical tools. The course will encourage students to scrutinize international efforts, design and propose innovative solutions, and develop skills to actively contribute to complex global challenges. Emphasis will be on practical application through activities like crafting policy memos, utilizing data, and connecting with field practitioners. Substantive content will include international affairs topics such as security and development (broadly conceived). After introducing students to these frameworks, they will spend time examining a variety of global policy issues from both the domestic and international perspective. The course will feature regular guest lectures from practitioners in the fields of international development and security, including those selected from SPIA alums. This will give students a very clear link to potential career paths.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

PIA 1107 - WORKERS WITHOUT BORDERS

Minimum Credits: 3
Maximum Credits: 3
Why do people move for work? How do governments decide who gets to cross borders? What are the economic and political impacts of labor migration on countries of origin and receiving countries? This course takes a global look at labor migration, exploring why workers migrate, what happens when they do, and how policies shape these movements. Students will dive into debates around immigration's impact on jobs, how money sent home (remittances) affects development, and how countries manage labor through guest worker programs, visa schemes, and even investment-based citizenship. Students will explore global challenges related to the cross-national movement of workers, evaluate real-world policy solutions, and develop essential research, analytical, and communication skills.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

PIA 2003 - QUALITATIVE RESEARCH DESIGN & METHODS

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of contemporary methods used to design and execute qualitative research in the social sciences. In this course students will think about research design and the logic of inference as it applies to qualitative research, but also explore the diverse applications of research methods and then apply those methods to research questions of individual interest. The first portion of the course is devoted to understanding how to develop research questions that rely upon qualitative methods. To this end, we will explore debates about the appropriate use of qualitative methods as well as analyze and design research questions. The second portion of the course explores the most common designs used by those applying qualitative research methods in the social science. Before exploring specific designs, we will assess the nature of causality in qualitative research. Are approaches that rely upon qualitative methods distinct from those that rely upon quantitative methods? We will then look at some of the most common approaches to qualitative research. In the final portion of the course, we will learn techniques used to collect, analyze, and present qualitative data. The emphasis in this last section of the course will be on qualitative data collected in field settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Minimum Credits: 3
Maximum Credits: 3
PIA Administration of Public Affairs introduces students to techniques of management, drawing on insights from domestic, comparative, and global public management. The course covers a number of areas, including the functions and organization of government at multiple levels, including the regulatory and policy-making environment; core issues of public administration and management; the interface between government and citizens and governance partnerships in the public, private and nonprofit realms; the "four pillars" of governance - accountability, participation and social capital, transparency, and the rule of law; strategic management in the public sector; and "soft" skills associated with leadership.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2021 - INTERNATIONAL AFFAIRS

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course in the field of International Affairs (IA). It is designed to give students knowledge of the major theoretical approaches and issues in international politics. The course introduces students to basic concepts and schools of thought in IA and examines major institutions and processes through which foreign policies are made and implemented. A major objective is to relate theories and models to major national and international policy debates through the close examination of case studies. Reference will be made throughout to contemporary developments. The interlocking objectives of this course are: 1) to provide a grounding in the nature and characteristics of International Affairs; 2) to develop a broad understanding of the outstanding features of today's world and how it differs from other periods; and 3) to learn the key concepts for categorizing and analyzing the dynamics of international politics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: African Studies, Global Studies, Russian & East European Studies, West European Studies

PIA 2022 - QUANTITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3

Introduction to quantitative methods is a foundation course that provides an overview of statistical methods and hands-on applications to managerial decision-making in the public sector. Understanding statistical analysis and being able to work with data are important competencies of professionals in public policy and administration. Course topics include program evaluation, data collection and measurement in public policy and administration, descriptive statistics, hypothesis testing, processes for selecting statistical tests and assessment of statistical assumptions, measures of association and other bivariate statistics, index variable construction, regression analysis, and an overview of selected other statistical and quantitative methods applied to problems of public administration. Students get hands-on experience through the use of a statistical analysis tool. Recognizing the social, political, and economic context of data collection, analysis, and reporting practices in the public sector, this course also discusses the ethics of data analysis and information technology policy and management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2023 - INTERMEDIATE QUANTITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to provide an introduction to econometrics for policy analysts. The focus of the class will be on applied data analysis to practical problems. We will discuss some basics of econometric theory to support your understanding of the applications of these techniques. In the first part of the semester, we will introduce regression analysis and the assumptions underlying it. In the later part of the semester, we will see extensions of this basic idea: time series and panel regression, regression with a limited dependent variable, instrumental variables regression, and experiments. After this class you should be able to: 1. Understand basic empirical research in the social sciences. 2. Understand the theory behind basic econometric techniques. 3. Perform basic empirical analysis on social and political behavior.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2024 - ECONOMICS FOR PUBLIC AFFAIRS

Minimum Credits: 3
Maximum Credits: 3
Macroeconomics Macroeconomics, as the name implies, is the study of aggregate economic phenomena such as national income and product, inflation, employment, economic growth, and the associated fluctuations in these variables. At its center is the analysis of the fiscal and monetary policies used to achieve the macroeconomic goals of stability and growth. Students will gain understanding of the causes of economic recessions and the policy tools available to stimulate recovery and mitigate the economic and financial costs of these downturns.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2025 - MICROECONOMICS

Minimum Credits: 3
Maximum Credits: 3
Microeconomics is the study of the production, allocation and distribution of economic resources and output. It focuses on markets and analyzes how producers, consumers and policies interact to determine the market's prices and quantities. The course begins with the analysis of supply and demand and market clearing under competitive conditions. It will also cover market failure such as externalities and monopoly and analyze the associated policy interventions such as price floors, ceilings, quantitative restrictions, and market-based policies, namely, taxes and subsidies. The course also covers the analysis of labor markets, natural resources, and international trade. The key objective of the course is to apply microeconomic principles to the analysis of policy objectives.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Public and International Affairs

PIA 2027 - MACROECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This course applies tools from PIA 2024 economic of public affairs course (or equivalent) to examine current economy-wide challenges. These topics include economic development, environment, energy, health, international trade, and recent financial crisis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Public and International Affairs

PIA 2028 - PUBLIC POLICY ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
How can we improve the ability of society to choose between alternative policies? This course provides a framework to assess alternative policies on the dimensions of efficiency, equity, and political feasibility. The comparative institutional framework requires an interdisciplinary perspective which draws on economics, political science, and political economy. Throughout the course, we will consider how insights from these disciplines provide insight into the choices confronting policymakers seeking to bring society closer to their conception of the good life. The course is organized into three parts: an introduction to policy analysis; a framework for comparative markets and governments; and applications of the framework. One of the main goals of the course, besides mastering the material (as evidenced by an in-class midterm), is a series of papers applying these concepts as well as an original research paper conducting a policy analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2032 - ADVANCED QUANTITATIVE METHODS: CAUSAL INFERENCE FOR POLICY ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
What are the true impacts of a policy? Does the policy in question achieve its desired goals? Even with good data, this question is often difficult to answer, as policies are rarely introduced in isolation. This means that patterns in data may reflect the impacts of policies, but may also reflect the influences of various confounding factors. Through lectures, discussions, and hands-on data projects, this course will introduce students to quantitative methods aimed at identifying the causal impacts of policies. Methods introduced will include: difference-in-differences, regression discontinuity, and instrumental variables. By reading and discussing academic research papers, we will see that these methods can be applied to a wide variety of settings. Topics of these applications may include: the relationship between government spending and charitable giving, taxation, education policy, the impacts of the characteristics of politicians on policy outcomes, crime, among others. Students should have some pre-existing familiarity with regression analysis and experience in working with data in a statistical analysis package like Stata.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PIA 2023 or 3000

PIA 2038 - PEACEMAKING AND PEACEKEEPING

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce graduate students to the literature on conflict resolution and post-conflict recovery. In the first part of the course, we will examine the process by which belligerents in Civil Wars reach cease-fires and negotiate peace, why peace sometimes lasts and sometimes falls apart and what can be done to make peace more stable. Next, we will explore the longer-term prospects for economic and democratic rebuilding as well as reconciliation after Civil Wars. We will end the course by considering the consequences of Civil Wars for the regional and international peace and focus on terrorism, refugees, and weak states as destabilizing factors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2039 - ADVANCED METHODS: TEXT AS DATA

Minimum Credits: 1
Maximum Credits: 1
This is a course in advanced methodology in political science. The class will focus on topics related to measurement.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2041 - POLICY ANALYSIS FOR CYBERSECURITY AND INTELLIGENCE STUDIES

Minimum Credits: 3
Maximum Credits: 3
This course provides a multidisciplinary framework for analyzing cybersecurity and intelligence policies developed after the Intelligence Reform and Terrorism Prevention Act of 2004. Methods of policy analysis include expert forecasting and prediction markets, benefit-cost and benefit-risk analysis, performance monitoring and evaluation, problem diagnosis with structured analytic techniques, and the development of transparent policy arguments. Case studies are used to exemplify the interplay of policy analysis and the politics of policymaking in the pursuit of efficiency, equity, political feasibility, and ethics. The course is organized into three parts: I. A Framework for Policy Analysis; II. Methods for Policy Analysis; and III. Methods for Communicating and Using Policy Information. Case materials in cybersecurity policy and intelligence analysis will be used throughout the class. Requirements include two 5-page policy memos, an in-house midterm exam, and a take-home final.This course satisfies the SPIA core course requirement in public policy analysis.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2042 - SKILLS FOR GLOBAL POLICY PROFESSIONALS

Minimum Credits: 3
Maximum Credits: 3
This course will teach students professional skills critical for career success in public and international affairs. The skills taught fall into three primary categories. The first skill is clear, concise, and persuasive writing, which will be practiced in a series of short written assignments. Emphasis is placed on learning how to gather evidence, analyze relevant facts, and contextualize information to effectively inform and influence decisionmakers. The second category of skills is oral presentation of persuasive and explanatory analysis. Students will develop and deliver presentations to audiences in a variety of formats, attending to the structure and content of the presentation, as well as techniques of effective delivery. The third set of skills relates to preparation for working in professional environments. These involve learning how to absorb information quickly and efficiently, communication in a variety of settings, workplace etiquette, time management and multitasking, networking, taking initiative and working independently, interviewing, and teamwork. The course serves as a foundation for work to be completed in other MPIA classes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2043 - INTERNATIONAL ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
Designed specifically for Master of International Affairs students, this course delves into the theories, policies, and real-world applications of international economics, providing a comprehensive understanding of the complexities inherent in the global economy. This course will introduce both the micro-economic and macro-economic issues relevant to the economic relations among countries via international trade. The first half of the course deals with the microeconomic issues of international trade, and covers such issues as (i) why do countries trade?, (ii) what do they trade?, (iii) how are the gains from trade distributed?, and (iv) protectionism vs. free trade and regional economic integration. The second half of the course deals with issues in international finance and macroeconomics, and covers such issues as (i) the markets for currencies and exchange rates (fixed vs. flexible), (ii) balance of payments, (iii) adjustment processes, and iv) open economy macroeconomics (role of monetary and fiscal policies) in a macroeconomic framework.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2090 - FOREIGN STUDY

Minimum Credits: 3
Maximum Credits: 12
Enrollment in graduate courses at an approved institution outside the United States.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2091 - FOREIGN EXCHANGE STUDY

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2096 - CAPSTONE SEMINAR:

Minimum Credits: 3
Maximum Credits: 3
The intent of the capstone seminars is to provide students with a focused experience in working on a real world problem of policy and management in a team setting under expert faculty guidance. Each seminar is focused on a prescriptive question - what should a specified public official or institution do about a specified problem?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: PIA 2009 or PIA 2028; PROG: Graduate School of Public and International Affairs
Course Attributes: Asian Studies, West European Studies

PIA 2097 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2098 - INTERNSHIP

Minimum Credits: 0
Maximum Credits: 6
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

PIA 2099 - THESIS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis

PIA 2101 - MANAGING EMERGENCIES AND DISASTERS

Minimum Credits: 3
Maximum Credits: 3
This course provides a broad overview and practical exercise of frameworks and principles of emergency management in the United States and global contexts. The course builds on these frameworks to consider how communities understand and plan for risk; adapt plans and make decisions in response to actual emergencies and disasters; engage effectively in short and long-term recovery; and consider resilience and mitigation as they build back.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2103 - TALENT MANAGEMENT IN THE PUBLIC & NONPROFIT SECTOR

Minimum Credits: 3
Maximum Credits: 3
This course, designed for students in all SPIA Masters programs and for PhD students, links the fields of human resources management, organizational behavior, and leadership with hands-on exercises and cases to provide a basic understanding of the skills needed for successful supervision and management of people in public and non-profit organizations. Skills covered include effective hiring, motivation, and direct supervision of staff; evaluation and reward systems; effective communication in a multicultural or international environment; labor management relations; and participative approaches to management.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2104 - FINANCIAL MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Financial management plays a central strategic and controlling role in public administration. It is the one element that can and does most easily shape and condition administrative behavior patterns through the allocation and management of scarce resources. This course introduces students to fundamentals of financial management concepts and practices in the public and non-profit sectors. The course will focus on understanding basic financial concepts, accounting, and budgeting for state and local government and the financing fundamentals for the non-profit sector. As much as practical, this course may be individualized so that each student can pursue the element of financial management most relevant to their interests and/or professional goals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2108 - MATCHING MONEY WITH MISSION

Minimum Credits: 3
Maximum Credits: 3
This course traces the historic origins and contemporary expressions of philanthropy to offer an overview of the multiple dimensions of this growing and increasingly global source of capital and innovation in the nonprofit sector. Students become familiar with who gives, why, and how they structure their philanthropy. The course assesses different strategies and how new approaches like ephilanthropy and giving circles open and diversify the field. Global, faith-based, and venture philanthropy are among the topics covered. Market-based approaches like social enterprise and corporate social responsibility, along with accountability, impact measures, transparency, and their public policy implications are explored. The course draws on case studies and guest speakers. Students participate in SPIA's student philanthropy project, gaining hands-on grant-making experience throughout the semester by awarding funds to area nonprofits. This exercise links philanthropic theory to practice. At the end of this course students are able to articulate a robust definition of philanthropy's goals and the structures that advance them; demonstrate a range of hands-on grant-making skills; connect applied learning in grant-making to policy and practice issues examined in the course; model effective team work and decision-making practices that enhance grant-making; incorporate knowledge gained from practitioners and course work into personal philanthropic practices; recognize how contemporary issues in philanthropy intersect with the nonprofit, public and civic sectors; develop a research topic that contributes to peer learning; better assess community needs though an enhanced understanding of the Pittsburgh nonprofit sector.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2109 - REBUILDING AND BUILDING US PUBLIC INFRASTRUCTURE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2111 - REGULATION HEALTH, SAFETY AND ENVIRONMENTAL RISKS

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to improve skills in analyzing government efforts to control health and safety risks. The class is designed to illuminate the public policy issues raised by government efforts to manage risks. Economic, legal, ethical and political perspectives are brought to bear on the choices that policymakers have to make.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2115 - ENVIRONMENTAL ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
From global climate change to how much you pay for water and sewer service, many public issues intersect with the environment or natural resources. This course uses an economic lense to understand a range of environmental and natural resource issues facing policy makers. Through readings, class discussions, and assignments the course should help you build policy-related skills, including analyzing complex problems, communicating clearly, and drawing insights from data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies, Russian & East European Studies

PIA 2117 - PROGRAM EVALUATION

Minimum Credits: 3
Maximum Credits: 3
This course gives students knowledge, skills, and experience to define and measure program and policy impacts on clients/consumers, meet accountability requirements of funders, and design and revise programs to address the changing needs of stakeholders. Through in-class exercises, case studies and written assignments, students will be able to apply their new knowledge and skills to real life evaluation designs, implementations, and reporting. In addition, students will be asked to develop a plan to evaluate a public program of their choice including proposed methods of data collection and analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2122 - MANAGING AND FINANCING URBAN SERVICES

Minimum Credits: 3
Maximum Credits: 3
This course examines issues related to the public economy of local government taxation and spending. The problems facing central cities and metropolitan areas are highlighted using the Pittsburgh and Allegheny County region as context. The course is designed to maximize the student's participation while making the learning environment as "real world" as possible. To accomplish those goals students select either a city to develop a financial plan, a particular coping strategy to deal with fiscal stress, or an analysis of a nationally recognized best practice for the budget process. Students learn how to finance public services, infrastructure, and economic development (a model is discussed early in the course).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE

Minimum Credits: 3
Maximum Credits: 3
This course is about the governing of metropolitan regions in the United States. The concepts of metropolitan region is relatively new. Faced with rapid growth of suburbs, the creation of satellite cities, new modes of transportation, an academic roundtable of regional planning proposed that a "new political or administrative entity" at the metropolitan level needed to be created that was different from the precinct, ward, municipality, county, or state. The year was 1926. Seventy-one years later, Anthony Downs lamented, "as congress shifts many federal powers to lower levels of government it is missing a unique opportunity to resolve a fundamental flaw in America's government structure; the absence of any authority at the metropolitan regional level. Metropolitan regions have become the most

important functional units of economic and social life in almost all modern societies" (downs, 1997). The road to the metropolitan region takes us through the land of local government. Local governments are the building blocks of the metropolitan regions. The American system of governing and government is best understood as a territorial based distribution of power and responsibility. It is steeped in both law and popular culture. Over 40 years ago, Arthur Maas (1959) definded the structure of local government in the United States as an "areal" division of power wherein the territorial bounded local governments were by culture and practice, an integral part of the system of organizing the divided power between the federal, state, and local governments. With this background, we will compare and contrast governance strategies that have been or are being considered in regions throughout North America. These strategies will be analyzed through lectures, discussions, innovation presentations, brief policy memos and the use of formal debates between teams of students organized early in the semester.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2125 - CITY AND REGION THEORY AND PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course is about the current challenges faced in cities and regions, nearby and around the world - and how those challenges might be met. The majority of the world's citizens live in cities, and therefore one cannot talk about human progress without thinking about progress in cities. As "mega-regions" consolidate, small cities grow rapidly, and older industrial cities shrink, the managerial, policy, and planning capacities of governments come under increasing stress. How can cities meet these challenges? To facilitate understanding of these dynamics and issues, this course is divided into two parts. The first part provides a general background necessary for the second part. We define the general concepts of "city" and "region," and we talk about measurement issues involved in understanding what is happening to them. We also learn about the policy and planning process involved in addressing any issue in a city or region. The second part focuses on the challenges cities and regions face, and how to solve them. Solving them implies having a theory about what causes them, so this part will begin with a discussion of what urban scholars define as an ideal city and region. It will then move on to cover specific urban policies such as transit oriented development, the use of eminent domain for urban projects, community development, etc. Emphasis will be placed on understanding the practical issues of implementing urban and regional policies, and learning about actual experiences with such policies in particular places.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies, MCSI - Sustainability Related

PIA 2126 - STATE & LOCAL GOVERNMENT, POLICY, & POLITICS

Minimum Credits: 3
Maximum Credits: 3
The US has 87,000+ governments, only one of which is the US Federal Government. This course explores state and local governments, their politics and management, and the policy decisions they face. How these governments are structured, power dynamics, administrative culture and practices, intergovernmental relations, and how they serve their constituents are key topics to be covered. The course is a seminar that will review and analyze theory; provide practical knowledge through case studies, and feature presentations by elected officials, lobbyists, media, and citizen groups.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2129 - LAW AND CIVIL SECURITY

Minimum Credits: 3
Maximum Credits: 3

This course is designed to acquaint students with the maintenance or creation of civil society in conditions of political instability prompted by such things as security threats, disasters, or political upheaval. In particular, the course will explore the rule of law and the protection of rights and liberties as a bulwark of civil society and consider the requirements for their continued preservation. Upon completing this course students should be able to critically assess the concept of civil society and its requisite components from a historical, philosophical, and legal perspective and understand the role of rights, liberties, political processes, organizations, institutions, and norms to preserve civil society even in periods of conflict. The course is divided into (1) historical and theoretical foundations of civil society; (2) management of political, economic, and natural disasters and rights and liberties; (3) analysis of public policy solutions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2131 - LEADERSHIP

Minimum Credits: 3
Maximum Credits: 3
This course examines theories about leadership and provides students with feedback on their own leadership styles. Teams, as one context for demonstrating leadership, are explored in depth and methods for recognizing and managing group dynamics are introduced. Students learn how to explore concepts regarding leadership, teams and organization culture; assess their own leadership skills and style; receive feedback from colleagues on their style and behavior; and plan for their own leadership development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2140 - FINANCIAL PRACTICES FOR ECONOMICS AND ENVIRONMENTAL SUSTAINABILITY

Minimum Credits: 3
Maximum Credits: 3
This course examines the financial practices and processes required to promote economic and environmental sustainability (both public and private comparisons). Emphasis is put on how the economic component husbands the wise use of resources to effectively achieve specific organizational successes, promoting societal or external long-term prosperity, enhancing the opportunity for living things in the environment. On the environmental and social sides stress is put on respecting things and people both in particular organizational and external community. Next focus is put on financial indicators (both early warning and long term) that have been developed and applied to predict potential financial problems before they arise. Attention is focused on financial indicators (the financial monitoring trend system-ftms) that have been developed to promote stable and sustainable financial management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: MCSI - Sustainability Related

PIA 2145 - BENEFIT COST ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course is intended to give the students a grounding in the concepts and tools of benefit-cost effectiveness analysis. In determining whether or not to undertake a program or project, which of several possible projects should be undertaken, or how to evaluate an ongoing or completed project, benefit-cost analysis is a widely used method. The advantages or and limitations of benefit-cost analysis will be covered in order to give a perspective on public vs. private considerations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2156 - LAW, POLICY & TECHNOLOGY

Minimum Credits: 3
Maximum Credits: 3
Information technology and the information that it generates has increasingly become part of our daily lives shaping our practices, discourses, and institutions in fundamental ways. Personal information is used by consumers, professionals, and organizations to a variety of ends and in a number of different settings. The growing reliance on personal information not only challenges long standing demarcations between public and private institution in terms of responsibilities, obligations, and limits, but also calls for a reconsideration of how to ensure the protection of long standing civil liberties and civil rights. This course will consider the impact of emerging technologies within existing constitutional, statutory, and international guidelines and will then explore a range of policy solutions for managing the use of personal information in our public and private sectors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Natural resource management is complex, and emerges from frameworks of governance - the rules that govern ownership in society and the political and administrative institutions that have responsibility for management of natural resources. The course will examine resource ownership and management by government, private owners, and communal property actors. Institutional frameworks reflect nature of the resource being managed, the characteristics of the community seeking to manage the resource, and historical socio-economic factors. Geographically, the course will take a global view, with regional illustrations. The course will look at the theoretical approach referred to as "managing the commons." Institutionally, the course will examine government entities, international organizations, communities, non-governmental organizations, and trade associations. Substantively, the course will look at land, soil, and forests; water and rivers; oceans, fisheries, and coastlines; energy and mineral resources; and ecosystem services, and species protection.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: MCSI - Sustainability Related

PIA 2170 - MANAGEMENT NON-PROFIT ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
Nonprofit organizations and nongovernmental organizations are a part of what is generally referred to as civil society. While this course is primarily an introduction to leadership, management and policymaking in nonprofit organizations, it will, however, briefly, cover nongovernmental organizations. In the main, the readings, assignments, and course materials are designed to enhance your understanding of the nonprofit sector in the U.S. and to build conceptual and practical skills needed to perform effectively in positions of significant management responsibility in nonprofit organizations/nongovernmental organizations. Students who have substantial experience in the nonprofit/nongovernmental sector will relate the course materials to their own experiences and perspectives. But students who have no prior managerial experience (or limited experience) will also find the course to be valuable and instructive.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2180 - COMPARATIVE PUBLIC ADMINISTRATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2185 - STRATEGIC MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course deals primarily with the concept of organizational strategy ' how organizations position themselves to succeed in an ever changing environment. Secondarily, it deals with managerial strategy ' how leaders and managers in organizations make important decisions under conditions of uncertainty. Strategic management consists of a set of tools to help organizations thrive in dynamic and (sometimes) competitive environments. The essence of strategic management is the ability to leverage the organization's strengths and 'comparative advantages' to respond to emerging opportunities and challenges in its external environment. In government and nonprofit organizations, the practice of strategic management is complicated by the need to work effectively within the political system and to collaborate with other agencies for the delivery of goods and services. Purely competitive strategies must be tempered by a broader view of what is in the best interests of society at-large, not just the organization's self-interests. This course will help you to understand and apply the concepts and methods of strategic management in public and nonprofit organizations. Strategic planning is one of the many tools of strategic management. Strategic planning is a step-by-step process, usually undertaken every 3-5 years, to help an organization develop its strategy for the future. The strategic plan might, for example, highlight opportunities for the organization to grow by offering its services in new locations, add new services to its portfolio, alter its mission statement, or even merge with another organization. Alternatively, a strategic plan might identify ways for the organization to reduce its size, cut programs and staff, or even go out of business in an orderly way.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2187 - INEQUALITY, POVERTY AND PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3
Inequality of income and wealth has increased substantially in the United States in recent decades. This course will examine the dimensions of those changes, their causes and the costs and benefits of different possible remedies. In addition, it will explore the linkages between these financial measures and changes in social inequality and social behavior and in the worldviews of citizens. Finally, it will investigate political changes linked to these changes in society.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2188 - ECONOMIC DEVELOPMENT STRATEGIES AND PRACTICES

Minimum Credits: 3
Maximum Credits: 3
This course focuses on sub-national, local economic development. This course will encompass theory, policy, process and practice in state and local economic development. Our focus will be largely in the North American urban context over the post-World War II period, with international comparisons. We will also use examples from Pittsburgh in furthering our understanding of local economic development practice. We will find that in the U.S. Context, there are different interpretations and meanings to economic development, both in theory and practice. These certainly differ at the international scale, as well. Specific topics include: equity issues in economic development, economic cluster analysis, tax increment financing, brownfields revitalization, retail, and regional governance. The purpose of the course is to provide the student with knowledge of the approaches to economic development in theory and practice, techniques and methods of analysis, and debates ongoing in the field. Students will select one economic development policy or case to analyze in depth over the course of the term.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2202 - BEHAVIORAL ECONOMICS AND GAME THEORY

Minimum Credits: 3
Maximum Credits: 3
In this class you will sharpen and systematize your understanding of incentives and psychological motivation, identify and model strategic issues in real world cases in public and international affair, and communicate your analysis in a compelling and concise manner.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2204 - GRANT WRITING AND FUNDRAISING

Minimum Credits: 3
Maximum Credits: 3
Grant writing and fundraising are critical skills for people working in the nonprofit sector. "Grants" are funds donated by an organization such as a foundation; donations from individuals are obtained through a variety of other fundraising strategies. This course aims to provide an introduction to grant writing and fundraising for nonprofit organizations (NPOs/NGOs). No matter what type of position you have, as a program coordinator, executive director, corporate/community liaison, or a development officer, all nonprofit and public sector professionals need to be familiar with how nonprofit organizations obtain funding. Moreover, the writing, planning, analysis, and collaboration skills required for grants and fundraising are applicable and useful in every profession. You will learn how to research a variety of funding sources, write a grant proposal, and develop fundraising materials based on the needs, services, and constituents of a nonprofit organization. You will select one NPO/NGO to serve as the basis of a grant proposal and then work with a group to develop a fundraising plan for another "client" organization. More details and instructions about selecting a nonprofit organization to work with will be given in class. The course first focuses on grants, mainly from private (foundation and corporate) sources, and how to write a standard grant proposal that could be submitted or adapted to a variety of prospective funders including public/government funding programs. The course will then explore fundraising strategies for individual donors, including appeal letters, planned giving, event planning, the use of social media, and other tools.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2209 - MANAGING DIVERSITY FOR ORGANIZATIONAL AND REGIONAL EXCELLENCE

Minimum Credits: 3
Maximum Credits: 3
This course is designed to acquaint students with an overview of varying diversity management models and examine how regions are utilizing diversity management strategies to advance regional economic development objectives. Across the United States and in regions around the world, leaders are grappling with the challenge of creating more economically competitive places that meet and advance the needs of their residents. However, with the passage of time the demographics, backgrounds, expectations and needs of a region change. These changes and the pace of change require regional stakeholders to make constant adaptations to remain regionally competitive. The students will explore demographic shifts and the general ways in which diversity and inclusion can affect regional economic development, with a particular emphasis on regional human capital needs. Through benchmarking and comparative analysis, students will review efforts that other regions and institutions have undertaken. Students will study what diversity and inclusion models, terminologies, lexicons, definitions, and strategies have been incorporated into regional economic development and organizational efforts. Additionally, the students will conduct a project that will provide them with an opportunity to examine real time, practical challenges associated with executing a diversity and inclusion effort. Since the students will be assessing the diversity management efforts of other regions and organizations, students will also assess their own biases and preferences. Although we will not require students to reveal the results of these assessments, each student will participate in exercises that will provide them with insights into and greater awareness of the lenses through which they view themselves and the world. Throughout the duration of the course, students will revisit their assessment, discuss how their lenses may be affecting their view of the subject matter and approach to the class assignments. Additionally, the students will track their biases over time to determine whether their lenses and biases are evolving.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2210 - RACE, GENDER, LAW AND POLICY

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the definition, protection and conflicts of identity, gender, sexuality, race, religion, and ethnic, in law and policy in the United States. The course considers the historical and philosophical justifications that have been used to broaden the definition and protection of identity and engages in an analysis of how these efforts continue today. From desegregation of the past to race conscious admissions of today, the way we define and remedy racial discrimination involves complicated considerations of our legal definition of equality and the institutionalization of policy in the public and private sectors with Constitutional limits in mind. Similarly, policy guarantees against gender discrimination and the broadening of LBGTQIA+ rights once relied on biological justifications, but now claims of gender fluidity alter the kinds of legal and policy protections we are able to seek. The landscape of expanding legal and policy accommodation of emerging forms of identity also includes a consideration of conflicts and intersectionalities with other existing protections for identity. Religious exercise and practice, for example, can clash with those seeking accommodation of LBGTQIA+ rights, while law and policy struggles to strike a balance. This course will engage legal analysis, case based examples and structured student debates on emerging policy issues involving identity and its place in American society today.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2211 - NONPROFIT BOARD GOVERNANCE & LEADERSHIP

Minimum Credits: 1
Maximum Credits: 1
Sound board governance is essential for effective management of nonprofit organizations. This course provides students with real world experience in nonprofit governance by placing them on the governing board of a local nonprofit organization. Classroom instruction will introduce students to theories and practices related to effective board engagement and leadership in the nonprofit sector. Students will learn about the role of the board in providing strategic direction for the organization as well as its fiduciary responsibilities. They will also discuss best practices for boards, including those related to the recruitment and retention of diverse members and leveraging the board for organizational success. Students will be expected to attend all board meetings with their assigned nonprofit organization and classroom instructional sessions. Given the nature of the community partnership work in this course, students are asked to commit to taking the course over two semesters, for a total of 3 credit hours.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2213 - URBAN CULTURAL REGENERATION AFTER CRISIS: DOING INTERNATIONAL COMPARATIVE RESEARCH

Minimum Credits: 3
Maximum Credits: 3
The Issue: This course centers on three post-industrial cities: Pittsburgh, PA; Newcastle-Gateshead, UK; and Saint Etienne, France, to evaluate how their cultural regeneration strategies have adapted post-COVID. Many former industrial cities in Europe and North America relied on the arts and culture sector as a main driver of post-industrial regeneration and revitalization. These cities were remade through economic development strategies focused on culture and creativity, with arts and cultural redevelopment strategies, projects, and programs. The pandemic disrupted the arts sector's standard operating practices, causing devastating job losses, canceled programming, altered consumption practices, and requiring emergency relief packages. These disruptions were compounded by public health guidelines and the uncertainty around a rebound in pre-pandemic support for arts and culture. Governments - at all levels - responded in many ways to keep arts and artists in recovery, but these extraordinary circumstances brought into question the resilience of arts and culture as drivers for cultural regeneration in post-industrial cities and drivers for whom. Class background and work: This course provides practical experience in comparative international research and is well-suited to students interested in urban economic development and the cultural and creative industries. The coursework builds on the pre-pandemic research of GSPIA students to create a longitudinal perspective on the sectoral impacts of the COVID pandemic. While there are different methodologies for international comparative research, the class will employ a

mixed methods strategy of qualitative research supported by quantitative public data: Review and update scholarly and policy work on cultural regeneration and review previous SPIA work on the three cities; Formulate research questions based on impacts of COVID on the sector; Design site visit itineraries based on key cultural regeneration examples in each city; Develop research instruments and conduct international field work; and Complete analysis and interpret findings. Ability to travel to UK and France, Spring break, March 2023 is an essential prerequisite for this course (assuming no travel restrictions). This work is supported by the Jean Monnet Network Grant (TransAtlantic Perspectives on Energy and Cities), University Center for International Studies. The grant covers airfare, ground transportation, and accommodation travel expenses for students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2216 - ECONOMICS OF SOCIAL POLICY

Minimum Credits: 3
Maximum Credits: 3
This course will use the tools of economics, and draw on empirical research from economics, to explore issues around racial, ethnic, and gender disparities in the United States. We will consider questions such as: Why are there persistent gaps in labor market outcomes across groups? Why are there persistent differences across groups in educational attainment and opportunities? What drives the dramatic underrepresentation of minority groups and women in government, and to what extent does this impact the distribution of government spending? For each of these issues, we will consider the impact of policy on reducing, or in some cases exacerbating, these disparities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2217 - NEGOTIATING & MANAGING CONFLICT IN PUBLIC & NONPROFIT ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
Conflict and the need to negotiate reasonable, wise settlements are inevitable if not constant in our personal and professional lives. The skills necessary to identify conflicts, assess the validity of competing interests, and move parties to agreement are essential to the professional public manager. This course will examine types of conflicts, the specific context of conflict in public settings, and commonly used methods of dispute resolution by reviewing the current state of the literature on conflict and negotiation, sharing experiences among students, and participation in case studies and simulations. The ultimate goal of the course is to leave students with a "toolbox" full of analytic techniques and proactive skills necessary to deal with conflict in all areas of their lives.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2221 - ECONOMIC INEQUALITY AND AMERICAN DEMOCRACY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2222 - THE ECONOMICS OF INTERNATIONAL SECURITY

Minimum Credits: 3
Maximum Credits: 3
States have many tools of statecraft available for use in pursuing their national interests in the international system. While military options are often examined and reported on, economic statecraft is far more commonly employed. This course investigates the use of trade flows, the movement of capital, foreign aid, and economic development to pursue international objectives. It examines the use of such tools by

great powers, including the United States, Russia, and China. It also explores how the adverse consequences of punitive economic statecraft and poor economic development can help foster civil war. Case studies encompassing the actions of great powers and civil wars in the Middle East are used to ground the theory of economic statecraft in practice and highlight contemporary uses and challenges in the use of such tools in the international arena.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2223 - CITY OF WHITE SUPREMACY

Minimum Credits: 3
Maximum Credits: 3
The title of this course is meant to signal the objective of scrutinizing how systems of white supremacy have shaped the American city and how the American city functions in ways that reproduce and reinforce white supremacy. As George Lipsitz (2007: 12) tells us, "The lived experience of race has a spatial dimension, and the lived experience of space has a racial dimension." The first section of the course will focus on frameworks for understanding white supremacy generally, and as it relates to urban development specifically. The second section considers specific domains of urban policy and planning using white supremacy as the analytic framework. We will examine how white supremacy has been expressed across a range of urban development issue areas, including housing, transportation, the urban environment, education, criminal justice, and urban design, and how policies and planning practice have maintained or disrupted systems of white supremacy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2224 - REPARATIONS: POLICY, THEORY AND HISTORY

Minimum Credits: 3
Maximum Credits: 3
Against the backdrop of racialized mass incarceration, policing, and state surveillance, a chasmic racial wealth gap, racially disparate health outcomes, environmental racism, flagrant seizures of indigenous land, and a growing skepticism of liberal and corporate multiculturalism, a revitalized reparations movement has reemerged, challenging the intergenerational effects of white supremacy. However, demands for reparations, whether at the federal or municipal levels, remain encircled by technical, theoretical, and ideological debates. What is the moral basis for reparations? Does the history of racial exploitation, broadly conceived, explain present-day racial inequality? Who should pay for reparations and what group(s) should receive them? And, fundamentally, what actually constitutes "reparation?" In this course, we turn to these questions and more.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2227 - ADVANCED METHODS OF POLICY RESEARCH ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course in advanced methods of policy analysis focuses on four types of methods: -structured analytic techniques used in the intelligence community to make intelligence estimates and to identify national security threats; -problem structuring techniques used to solve ill structured or 'wicked' problems in areas of technology assessment, development planning, intelligence analysis, and economics; -forecasting techniques based on expert judgment which are appropriate when quantitative data are unavailable to make estimates of future states of energy, environment, technology, and related areas; -argument mapping techniques used to assess the quality of scientific and policy reasoning and to enhance critical thinking capabilities among professional policy analysts and planners. The seminar will feature short (30-45 minute) presentations by members of the Security and Intelligence Studies (SIS) program and professional analysts, researchers, and trainers in the Intelligence Community (IC) and elsewhere. Students should note that the methods covered in this course are part of a current analytic reform movement among intelligence analysts and elsewhere in the wider public, private, and nonprofit sectors. The course is open to qualified masters and doctoral students.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2230 - MASS POLITICS

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the political behavior of citizens in modern Western democracies, especially the United States. Since much of this behavior is institutionalized through elections, we will spend much of our time examining electoral behavior and participation. We will also deal with public opinion, political reasoning, and information processing, and mass-elite communication.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2231 - CONTEMPORARY US ENERGY POLICY

Minimum Credits: 3
Maximum Credits: 3
PIA 2231 -- Contemporary US Energy Policy Course Description: This class examines the energy policy choices facing local, state, and federal policymakers. The choices involve myriad issues, including, but not limited to: how and when to regulate energy markets, such as for environmental reasons; ensuring electricity is delivered safely and reliably; allocating research and development resources; and growing concerns about environmental (in)justice. This class will connect realistic policy outcomes to theoretical ideals underlying energy policy, including supply and demand, benefit-cost analysis, monetizing non-market goods, taxes and subsidies, discounting, and equity. Students should expect to build practical, intellectual, and interdisciplinary skills applicable to making energy policy decisions, particularly decisions that impact the environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Related

PIA 2234 - SOCIAL ENTREPRENEURSHIP

Minimum Credits: 3
Maximum Credits: 3
SPIA's social entrepreneurship class will be taught within the context of nonprofit management and practice, with an emphasis on purpose-driven leadership and skill development. The course will address the impacts of social entrepreneurship in multiple settings and how impact is measured and evaluated. Students will discuss and analyze the goals of "doing good" for social good in the nonprofit realm linking philanthropy, government, and volunteerism through innovative partnerships and financial ties. The instructor will make use of case study materials and connections to GSPIA's Johnson Institute for Responsible Leadership.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2250 - WORKING WITH PUBLIC INTEREST TECHNOLOGIES AND CIVIC DATA

Minimum Credits: 3
Maximum Credits: 3
This class is designed to equip students passionate about social justice issues to work with public interest technologies and civic data using a curriculum co-developed by four Pitt centers: Center for Analytical Approaches for Social Innovation (CAASI), Western Pennsylvania Regional Data Center (WPRDC), the Office of Diversity, Equity and Inclusion (DEI), and the University Honors College (UHC). The goal is to discern the opportunities and challenges that can come from working with technology and civic data, prepare students to understand and account for community dynamics, develop socially-responsible research and data practices, and implement projects that hold benefits for both community partners and students. This is not a quantitative course and no programming experience is expected.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2301 - INTERNATIONAL POLITICAL ECONOMY

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to international political economy, an interdisciplinary field related to international politics and international economics. This course introduces students to important actors and institutions that shape the global economic system. Central issues in international political economy include policy-making on the topics of trade, money, foreign investment, development, migration, and the environment. Major questions include: 1. What are the main economic and political forces that shape the international economy? 2. What domestic and external strategies have states adopted in order to develop their economies and to benefit from exchanges with other countries (while minimizing their vulnerability)? 3. Why and when do states seek to cooperate with each other in the management of the international economy? How successful have their efforts been? (4) What are the major challenges currently facing policy-makers in the management of the international economy? To answer these questions, students will identify key political and economic actors (governments, firms, workers, interest groups, international organizations) and examine interactions within and between states. , Drawing on both historical and contemporary events, the course focuses heavily on globalization's opportunities and challenges by examining the complexities of governing in an interdependent world
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: African Studies, Asian Studies, Latin American Studies, Russian & East European Studies, West European Studies

PIA 2302 - INTERNATIONAL FINANCIAL POLICY

Minimum Credits: 3
Maximum Credits: 3
International Financial Policy The course focuses on the international financial system and its significance for policymaking. Topics include: the balance of payments, foreign exchange markets, fixed and flexible exchange rates, purchasing power parity, and alternative monetary regimes. The course is designed to give students a command of the basic theoretical tools used in analyzing international financial issues and the ability to apply this theory to the real world. Students will write a term paper and make a presentation on a current or historical international financial issue.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Asian Studies, Global Studies, Russian & East European Studies, West European Studies

PIA 2303 - SECURITY AND INTELLIGENCE STUDIES

Minimum Credits: 3
Maximum Credits: 3
Many argue that the 21st century security environment is fundamentally different from and more dangerous than that which existed in previous eras. There is some evidence to suggest that this claim might be true; the security challenges absorbing the majority of states' time, money, and military efforts since the end of the cold war ' and especially since 9/11 ' are notably different from those of the past and, at times, they seem more pervasive. However, it does not necessarily follow that such proximate differences are symptomatic of a deeper shift in the nature of the inherently dangerous international arena. This course explores the nature of the international security environment ' past and present ' and considers whether and to what degree the logics for coping with security challenges have changed over time. In doing so, students will be introduced to the arguments and debates in the academic literature on security and intelligence issues and learn to apply them to contemporary challenges. We will spend the first third of the semester examining traditional security studies concepts and issues like war, coercion, effectiveness in nuclear and conventional warfighting, and the effects of regime type on security policies and achievements. The second third will then be dedicated to considering the utility of traditional concepts in understanding the nature of and strategically-preferable responses to security challenges pervasive in the current international arena like asymmetric warfare, nuclear proliferation and missile defense, terrorism, and space and cyber warfare. The last third of the course examines the nuts and bolts of the

United States national security apparatus to better understand how theory is (or should be) transformed into policy. We conclude by considering the costs and benefits of different American grand strategies moving forward.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Asian Studies, Global Studies, Russian & East European Studies, West European Studies

PIA 2305 - FOREIGN POLICY AND DIPLOMACY

Minimum Credits: 3
Maximum Credits: 3
This course examines how the United States government makes foreign policy and conducts its diplomatic relations with foreign governments and international organizations. It is designed for students who want to pursue a career in foreign affairs. It's main focus will be the state department and embassies, but it will also look at the role of the president and the national security council, the pentagon and other government agencies, congress, the media and think tanks. Key concerns will be the interagency process and the interaction of Washington with overseas missions. The course will acquaint students with how the state department and embassies are organized and function. It will discuss how recent secretaries of state have used the department's machinery, and it will introduce students to key diplomatic activities: working with allies, dealing with Russia, negotiating treaties, conducting shuttle diplomacy. Students will be introduced to the relevant functions of foreign service officers. There is a strong emphasis on drafting: press guidance, briefing memos, reporting cables, etc. Students will also assume the role of 'desk officer' and manage an issue of their choice throughout the course. Normally there will be a field trip to Washington to meet people working at state, on the hill, at think tanks and in foreign embassies. At the conclusion of the course, students will participate in a crisis management exercise that they design and execute. The goal is to develop the professional drafting, reporting, briefing and policymaking skills required to function effectively in Washington's foreign affairs community.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2306 - COMPETING PERSPECTIVES ON GLOBAL ENERGY: FROM WESTERN PA TO EASTERN EUROPE

Minimum Credits: 3
Maximum Credits: 3
This course provides professional school students in the fields of business, law, engineering, public policy and other areas with a first-hand experience of the global impact of contemporary developments in the natural gas and other energy sectors. Participants will first witness the effect that Marcellus shale has had in Western PA and then see how these developments are impacting the US's foreign policy and trade practices. After this, students will be familiarized with a very different side of the global natural gas and energy equation by travelling to Moscow, where they will see the kremlin's view of global and regional gas and energy markets. The course ends with an exploration of the role that transit states like Bulgaria play in global energy markets and efforts by these players to use their territory and energy alternatives to bargain with larger states at both ends of energy pipelines. Throughout this exploration, students will be exposed to a variety of stakeholders and a gain an understanding of energy's impact on domestic and international politics, economies, societies and the environment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: MCSI - Sustainability Related

PIA 2307 - HUMAN SECURITY

Minimum Credits: 3
Maximum Credits: 3
A human security approach puts individual well-being and empowerment at the center of analysis, displacing the traditional focus on state

security, in order to produce different priorities, new political synergies, and better domestic and global policies. This course introduces the core principles, critical debates, and emerging approaches to achieving human security in a diverse and conflicted world. Students engage with a challenging interdisciplinary field encompassing international development, security, and human rights. We examine the main approaches to "human security" and investigate substantive policy agendas on a range of global issues, addressing the classic trifecta of threats: want, fear, and indignity. Focusing especially on vulnerable populations, we explore human security approaches to political and interpersonal violence, poverty, environmental and health threats, and identity-based threats such as racism and sexism. We pay special attention to the roles of non-governmental actors alongside states and international actors. Students learn to utilize multi-sectoral and interdisciplinary thinking in order to articulate people-centered policy agendas and solutions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies, Russian & East European Studies

PIA 2308 - COVERT ACTION IN WORLD POLITICS

Minimum Credits: 3
Maximum Credits: 3
What is covert action? How does it differ from other hidden tools of statecraft? What are the common drivers of covert action across time and space? What are some of the major successes and failures of covert action over the past 70 years and what can these episodes teach us about secret operations in the 21st century? How has the proliferation of new technologies impacted the ways in which states think about and use covert action today? At present, there exists a mismatch between the relatively high frequency with which states turn to covert action to achieve foreign policy objectives and popular understanding of the subject, which is oftentimes limited and sometimes sensationalist. In this course, we will take a deep dive into the secret world of covert action, exploring the many faces of, and dispelling the many myths surrounding, this unique tool of statecraft. In order to accomplish these goals, we will examine the theoretical, historical, and contemporary research on covert action.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2310 - MARKETS AND STATES

Minimum Credits: 3
Maximum Credits: 3
Markets and States considers how governance explains why some countries are rich and others are poor. In the context of this course, "governance" refers to the formal and informal rules that liberate and constrain individuals and groups in their efforts to improve their economic situation. The course begins by considering the economic foundations of prosperity, including the role of competitive markets, private property rights, and foreign aid in the process of economic development. It then considers the role of the state in economic development, with emphasis on analysis of the political factors that create incentives for governments to do what is in society's best interests. Its empirical focus is on developing countries, but will also consider some examples of the political economy of development in the U.S., including when the U.S. was a developing country. The course will also focus on evaluation of development policies, including understanding the logic of randomized impact evaluations and other methods used to analyze the causal impact of public policies seeking to improve prospects for economic development. The course is relevant for students in international development, public administration, and international affairs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies, Russian & East European Studies, West European Studies

PIA 2311 - ADVANCED INTELLIGENCE ANALYTICAL TECHNIQUES

Minimum Credits: 3
Maximum Credits: 3

This course is intended for students who have already gained skill in writing intelligence analytical pieces from Introduction to American Intelligence, Terrorism as an Intelligence Problem, or Intelligence Perspectives on the Cold War Era. We will review some of the basic literature on intelligence analysis, study some of the more-advanced analytical writing techniques, and then will put them into practice in writing and orally briefing analyses on topics of current intelligence interest. During the course, each student will develop and research a topic -- chosen in consultation with the instructor -- of interest to the student and drawing on the student's own knowledge and expertise. The instructor and other students in the course will act as policymakers to critique the analyses for their insights and value to the policymaking process. Each student will produce a medium-length analytical product suitable for use as a professional writing sample of value in their career search.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2319 - INTERNATIONAL TRADE

Minimum Credits: 3
Maximum Credits: 3
International trade is important and controversial. All countries participate in international trade. Yet all countries restrict trade. In all countries there are people and groups who favor freer trade and there are others who oppose it. This course will introduce the student to the key issues and controversies in the study of international trade. We will examine economic explanations and analyses of why countries trade. What are the key determinants of trade - factor endowments, resources or skills? We will also analyze the benefits and costs from trade and how these are distributed within a country. Throughout we will adopt a policy perspective and will rigorously examine some elements of trade policy such as tariffs, quotas, subsidies, export taxes, and, the economics of free trade arrangements. We will look at the controversial issue of international trade and the balance of payments. Time permitting; we will analyze the effects of trade and international factor mobility on economic growth and development. We will broaden and deepen our knowledge of the specific subjects and improve our skills in applying the analytical tools that economists have developed to help understand these complex phenomena.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Asian Studies, Global Studies, Russian & East European Studies, West European Studies

PIA 2323 - INTELLIGENCE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course will empower students with a deeper understanding of the myriad ways U.S. intelligence analysts support policy makers. Students will have hands-on experience drafting written assessments in the style and format used by the intelligence community, including for the President's Daily Brief and in longer intelligence assessments such as National Intelligence Estimates (NIE). Students will also hone their oral briefing skills through in-class exercises. Examples for written and oral exercises will be drawn from the range of experience real-world intelligence analysts face, including providing strategic assessments of political and economic developments in support of U.S. bilateral and multilateral relations, analysis of terrorist groups and other non-state actors, and military analysts' support to the war fighter. Class readings will focus on understanding the delicate balance between intelligence analysis and foreign policy making, and what happens when policy makers disagree with analytic assessments or when intelligence analysts fail to provide timely and accurate information to policy makers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2327 - TERRORISM AND COUNTER TERRORISM

Minimum Credits: 3
Maximum Credits: 3
This course will deepen our understanding of the post-9/11 security environment by examining contemporary terrorist groups and the

history from which they spring. We will address a number of questions, including, what is terrorism and how has the terrorist threat changed over time? What are the data that we use to understand terrorist behavior and the patterns of terrorism? What motivates terrorists to engage in political violence against non-combatants? At what point does violent militancy cross over into terrorism? Does terrorism ever succeed, and, if so, under what circumstances? How does terrorism end? While much of our focus will be on so-called 'Islamist terrorism,' we will also explore other types of terrorism, including secular and sacred groups active in the United States, Western Europe, and elsewhere. Time permitting, we will also consider a number of other topics, including 'cyber-terrorism,' deradicalization, and state terrorism. As befitting the complex nature of terrorism, we will draw on numerous academic disciplines in studying these topics, including political science, sociology, psychology, history, anthropology, and economics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: African Studies

PIA 2328 - ETHICS AND NATIONAL SECURITY

Minimum Credits: 3
Maximum Credits: 3
This graduate seminar focuses on the ethical quandaries confronting principals who make decisions on national security policy. Students practice articulating foreign policy arguments, paying attention to the political, ethical, and social scientific aspects of those arguments. Issues covered include just war, humanitarian intervention, counterintelligence, counterterrorism, immigration, economic sanctions, foreign aid, and distributive justice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2329 - INTELLIGENCE & FOREIGN POLICY

Minimum Credits: 3
Maximum Credits: 3
As societies have become more reliant on information technologies, so they have become more vulnerable to disruption through attacks on information systems. This course ex amines the national information infra-structure, highlights its vulnerabilities to both criminal exploitation and at tacks by terrorists or hostile nations, and look at what can be done to enhance security in this area.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2335 - APPROACHES TO CONFLICT RESOLUTION

Minimum Credits: 3
Maximum Credits: 3
The resolution of disputes at national and international levels requires creative approaches to conflict resolution. Resolving disputes through successful negotiation has become a valued skill and could even be considered a "fine art" Of course, some disputes cannot be completely resolved, especially those which have evolved into violent conflict. In these cases, successful negotiation can lead to a more peaceful and productive situation which could eventually evolve into a permanent settlement. This course first examines the nature of conflicts: how they begin and can sometimes lead to violence or even war. We then analyze the role of negotiation and its potential for mediation to defuse disputes. This course covers both the theory and the practical application of conflict resolution using case studies and role playing. The course objective is to provide students with both the theory of conflict resolution as well as the skills involved in successful negotiation. In relation to the negotiation process, the course focuses on the following questions: when is negotiation feasible and desirable as an approach to conflict resolution? What format (bilateral/multilateral) and procedure is appropriate for a given negotiation? What are the main issues in setting up a negotiation? How can negotiation "formulas" be devised and evaluated?
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2340 - SPACE AND NATIONAL SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course examines how space-based services provide critical support to military and intelligence operations and contribute to national security more broadly. The course is designed to investigate several interrelated themes, weaving together relevant aspects of technology, strategy, and policy. The material is approached from both functional and historical perspectives, exploring the basics of military and intelligence space operations and ending with an examination of the space-related technical, strategic, and political challenges facing the nation today and in the foreseeable future. The course is taught in a relaxed atmosphere, combining lecture and discussion, and is aimed at achieving a deep understanding of the material and a vibrant exchange of ideas. Upon completion of this course students should be able to understand and evaluate policy proposals for national security space and intelligence systems, strategies, and operations. Students should be able to perform competent policy analyses, develop well-reasoned positions, and communicate those positions in concise, persuasive professional papers. The course is taught in three phases. Phase 1 focuses on the fundamentals of satellite operations. Here students explore, at a non-engineering level, the basic principles of orbit and learn what kind of military and intelligence missions are flown in space, at what orbit each mission is flown, and why. Phase 2 surveys key developments in space operations and national policy in the cold war. Students examine how military satellite programs developed during that period and what missions they came to support. Phase 3 examines America's dependence on space today, surveys emerging threats to the nation's space infrastructure, and considers the implications of these developments for U.S. National security policy. Students weigh the pros and cons of such controversial programs and concepts as ballistic missile defense, anti-satellite weapons, space control, and orbital weapons designed to attack targets on earth.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2346 - INTRODUCTION TO AMERICAN INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
This course will focus on how the U.S. intelligence community collects and analyzes information to support U.S. national security and foreign policy objectives. Students will examine the historical foundations of the intelligence community and consider how the role of intelligence has changed over time, particularly after the attacks of September 11, 2001. Students will also consider the legal, moral, and ethical factors that influence the roles and conduct of the U.S. intelligence community. Finally, this course will take a closer look at selected current intelligence topics, such as Russia, China, terrorism, weapons of mass destruction, and cyber security.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2348 - HOW TO MAKE WAR

Minimum Credits: 3
Maximum Credits: 3
Wars are relatively common events in the international arena, and political communities fight them for myriad reasons. The outcomes of wars have profound consequences for the course of historical events, political outcomes, and the lives and well-being of millions, including those who did not fight. But what happens in between the decision to go to war and the end of fighting? HOW do belligerents fight wars? This course will introduce students to how wars are actually fought on land. Students will learn about the translation of national political objectives into military strategy and campaign plans; the raising, training, and equipping of forces; the different types of combat arms available for use and their limitations; the role of naval, air, cyber, and space forces in land warfare; the principles of command; the crucial role of logistics; and the unquantifiable, but often decisive, human element of warfighting. These topics and issues will be introduced and considered using specialist texts, military and official documents, battle histories, and the critical examination of contemporary conflicts. Students will have opportunities to apply the insights they gain through in-class simulations (wargames), net assessments, and mock briefings. States' abilities to fight shape their decisions about whether or not to go to war. Additionally, the ways that states fight have profound implications for the consequences of war, with attritional and maneuver systems of force employment having very different

impacts on both combatants and non-combatants in warzones. Accordingly, at the end of this course, students will not only have a clear understanding of how wars are fought, but also be better prepared to understand, partake in, and shape debates about the use of force in the international arena.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2350 - THE POLITICS OF INTERNATIONAL TRADE

Minimum Credits: 3
Maximum Credits: 3
This redesigned class will cover the political economy of trade, broadly defined to include global production and the activity of multinational firms. As the examples of Brexit and the protectionist policies and rhetoric of the Trump administration remind us, openness to the international economy is a political choice. Indeed, all governments face a dilemma: how to balance the demands of economic actors (workers, industries, firms) who demand protection from global competition, while guarding the benefits of globalization - jobs created, gains to consumers, growth-inducing innovation - from protectionist (i.e. anti-globalization) rhetoric and policies (e.g. trade barriers). We will examine how governments in developed and developing countries can manage this dilemma through trade policy, social welfare policy, industrial policy, and development strategy. To understand how this dilemma shapes the politics of trade within and between countries, we will first cover major economic theories of trade, foreign investment and global production (i.e. offshoring). These theories tell us which economic actors are the winners and losers from trade. Second, we will examine the political process that shapes trade policy at the domestic level. Finally, we will cover the international politics of trade, including free trade agreements and the WTO. The class will also help students develop their policy analysis skills. One requirement will be a short data-driven research project. Class time will be devoted to spending time on data collection, data preparation, and analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2352 - STRATEGY AND POLICY

Minimum Credits: 3
Maximum Credits: 3
This course examines the nexus of military strategy and national policy, exploring the development and use of military power for political ends. In short, it is about how states make war. The course is designed to investigate several interrelated themes. First is the role of military theory as a foundation for doctrine and strategy. The second explores the relationship of military strategy to national objectives and political decision-making. The context in which the foregoing issues are examined is provided in the third theme: the social, technical, and intellectual evolution of warfare from the early nineteenth century to the present. The course is taught in a relaxed atmosphere, combining lecture and discussion, and is aimed at achieving a deep understanding of the material and a vibrant exchange of ideas. The course is taught in five phases; the first is foundational and the four that follow are historically oriented. The course phases are: (1) basic concepts and theory; (2) the 19th century through the first World War; (3) the interwar period through the Second World War; (4) the Cold War; and (5) the post-cold war era and beyond. Phase 1 lays a theoretical foundation that students apply in analyzing historical developments presented in each of the four subsequent phases. Additional theories are introduced in phases 2 through 5 in context of the technological and intellectual developments that inspired them. In each of those phases, students also explore the evolving nature of civil-military relations and the impacts of social, intellectual, and technological developments on military strategy and national policy. At the end of the course, students are invited to synthesize their knowledge of military theory, strategy, and policy to assess the strengths and weaknesses of current U.S. Strategic thought and discuss prospects for more effective strategies and policies in the future.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2353 - CREATIVE APPROACHES TO INTELLIGENCE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Modern diplomatic thought is a survey course in diplomatic history. While emphasis is on the history of the Western world (U.S.-Europe), their relations with Asia, Africa, and their developing countries are also covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2353 - CREATIVE APPROACHES TO INTELLIGENCE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
U.S. intelligence reform initiatives following release of the 9/11 and the weapons of mass destruction commission reports included efforts to improve intelligence analysis by adopting common analytic standards, promoting techniques to mitigate bias and test hypotheses, and fostering interagency collaboration. The Office of the Director of National Intelligence's first National Intelligence Strategy noted that the objective was greater "depth and accuracy" of intelligence analysis, but nearly two decades later, it is unclear to what extent the pursuit of analytical rigor and transparency has achieved this goal. Critics have argued that the initiatives have discouraged the type of creative thinking that is essential for informing decision makers who face a wide array of threats and challenges in a highly complex and competitive international environment. This course will explore the meaning and role of creativity in intelligence analysis, examine how institutional, cultural, and cognitive factors support or hinder the creative thinking and the use of alternative approaches, and consider what types of analytic production might be well-suited for a creative mindset. Course assignments will provide the opportunity to develop skill in drafting and briefing analytic assessments while comparing the results of creative approaches with conventional analytic workflows.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2353 - CREATIVE APPROACHES TO INTELLIGENCE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
U.S. intelligence reform initiatives following release of the 9/11 and the weapons of mass destruction commission reports included efforts to improve intelligence analysis by adopting common analytic standards, promoting techniques to mitigate bias and test hypotheses, and fostering interagency collaboration. The Office of the Director of National Intelligence's first National Intelligence Strategy noted that the objective was greater "depth and accuracy" of intelligence analysis, but nearly two decades later, it is unclear to what extent the pursuit of analytical rigor and transparency has achieved this goal. Critics have argued that the initiatives have discouraged the type of creative thinking that is essential for informing decision makers who face a wide array of threats and challenges in a highly complex and competitive international environment. This course will explore the meaning and role of creativity in intelligence analysis, examine how institutional, cultural, and cognitive factors support or hinder the creative thinking and the use of alternative approaches, and consider what types of analytic production might be well-suited for a creative mindset. Course assignments will provide the opportunity to develop skill in drafting and briefing analytic assessments while comparing the results of creative approaches with conventional analytic workflows.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2353 - CREATIVE APPROACHES TO INTELLIGENCE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
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analytical rigor and transparency has achieved this goal. Critics have argued that the initiatives have discouraged the type of creative thinking that is essential for informing decision makers who face a wide array of threats and challenges in a highly complex and competitive international environment. This course will explore the meaning and role of creativity in intelligence analysis, examine how institutional, cultural, and cognitive factors support or hinder the creative thinking and the use of alternative approaches, and consider what types of analytic production might be well-suited for a creative mindset. Course assignments will provide the opportunity to develop skill in drafting and briefing analytic assessments while comparing the results of creative approaches with conventional analytic workflows.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2355 - WWII,THE COLD WAR, AND THEIR IMPACT ON DEVELOPING NATIONS

Minimum Credits: 3
Maximum Credits: 3
This is a policy-relevant history course that examines the international relations of the 20th century, as well as the lasting legacy of the cold war today. After discussing the causes, conduct, and consequences of World War II, students study the rise of the Soviet Union and iron curtain, postwar trusteeships, and the process of decolonization by which large swaths of Africa and Asia obtained their independence. Class lectures cover just war theory, the geopolitics of war, the rise of NATO, and the major cold war conflicts in Cuba, Afghanistan, Iran, and Vietnam. Using historical case studies, students learn important practical skills useful for a career in diplomacy, international negotiation, or statecraft, as seen through the eyes of master practitioners.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Asian Studies, Russian & East European Studies

PIA 2358 - POLITICAL ECONOMY OF THE INTERNATIONAL FINANCIAL SYSTEM

Minimum Credits: 3
Maximum Credits: 3
Why do states select the economic financial policies that they do, and with what effects? This elective course introduces students to the interplay of politics and economics within international financial system. Topics include the trilemma (fixed exchange rates, free capital movement, and independent monetary policy), and how reputation and perception ' distinct from policy choices ' have real effects in areas as diverse as credit ratings, sovereign debt, and political risk. We will analyze large, rising powers within the international financial system, and explore the strength of financial and monetary policy special interests. Group presentations throughout the semester will address current events, touching upon each of the BRICS countries Brazil, Russia, India and China . Students develop transferable, professional skills as they engage with the above topics. The course will provide opportunities to practice business writing, verbal communication of complex ideas, and the creation of effective visuals (charts/graphs/figures) to organize and present information as a basis for policy analysis and evaluation. Students will engage in group presentations and will select a course-relevant, individual topic of interest to learn about throughout the semester. At the end of the course, each student will have developed a set of documents that reflect deep knowledge of his or her topic, communicated in simple, clear language that includes compelling evidence to establish a knowledge base and to support claims about cause and effect. For all exercises, the intended audience is a group of policy-makers who are non-experts in the specific topic under consideration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Asian Studies, Global Studies

PIA 2359 - CIVIL WAR & CONFLICT RESOLUTION

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide you with a framework for understanding and analyzing ethnic conflicts and Civil Wars, the most

pervasive forms of armed conflict in the world. These intrastate conflicts killed millions of people, destabilize governments and entire societies, usually involve neighboring states and often undermine regional stability. Some conflicts engage the interests of distant international powers; many draw in international organizations. For these reasons, ethnic conflicts and Civil Wars are major security problems. The first part of the course is a brief overview that distinguishes conflict (an everyday occurrence) from violent conflict (a relatively uncommon event) and separates ethnic conflict from Civil War. The second part of the course analyzes the causes of violent conflict, ranging from psychological explanations to international factors. The third part of the course examines domestic strategies for dealing with ethnic and political differences, from accommodative strategies to violent ones. The fourth and final part of the course examines international responses to intrastate conflict, including the use of economic, political and military policy instruments.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: African Studies

PIA 2360 - CYBER SECURITY POLICY

Minimum Credits: 3
Maximum Credits: 3
In our increasingly interconnected world, nearly everyone is reliant upon information technology as they go about their daily lives. This reliance on technology and people's related desire for immediate access to information, provides an opportunity for various actors to advance their personal goals, whether it be for political purposes, financial or other criminal endeavors, or as a platform to advance their social causes. As such, the need for solutions to this ever-growing problem goes beyond just technical solutions. In the course, students will learn how to approach cyber security from a policy and planning perspective. Students will be introduced to various threats and learn how to develop 'plans' at the operational and strategic level to mitigate them. Students will be introduced to various governmental policies, strategies and directives from both the US and non-US perspective that have been crafted to address the cyber threat. Finally, students will learn about the various governmental and non-governmental organizations that are working to deal with the daily challenges of cyber warfare.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2362 - LEADERS & U.S. FOREIGN POLICY DECISION-MAKING

Minimum Credits: 3
Maximum Credits: 3
How do U.S. presidents make foreign policy decisions? The class will review the constraints, dilemmas, risks, and opportunities that American presidents face during international crises and wars. It will expose students to alternative explanations for how states make foreign policy, with an emphasis on the decision-making process. We will critically analyze the decision-making process that led to the undertaking of major and historical decisions in the U.S. history and will conduct simulations of potential crisis scenarios. The course will examine rationalist and psychological theories of decision-making, as well as how other characteristics of leaders can create patterns of decision-making in foreign policy. A key part of this course is the role of advisors and intelligence officials in assisting policymakers. Students will take on the role of members of the federal agencies with seats on the U.S. National Security Council in a roleplaying exercise on how to advise the President in an international crisis. As part of this simulation exercise, students will collaborate on policy options, propose them in a group setting, and draft a debriefing memo on the policy ultimately chosen to address the crisis. Students will also write and present a leadership analysis on current international leaders to assist students in understanding the parties across the negotiating table in policy issues involving the United States.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2363 - INTERNATIONAL HISTORY

Minimum Credits: 3
Maximum Credits: 3
Policymakers, scholars, analysts, journalists, average citizens, and others frequently talk about the "lessons of history" and what they mean for understanding, interpreting, and reacting to contemporary events in the international arena. Yet, history as we know it is the synthesized, and often stylized, reporting of certain people and certain events that some investigators have deemed worthy of study. Accordingly, the lessons we seek to learn from history are consequently often hidden, obscured, or mangled beyond recognition. Despite its imperfections, the received historical record is the only guide we, and policymakers, have to understanding the present and thinking seriously about the future. Accordingly, history must be studied, considered, and used with care. This course prepares students to embark on each of these tasks in several ways. First, students will become acquainted with the key events, trends, and developments in international history since the beginning of the twentieth century. Second, students will think seriously about the contingency of historical events and consider not only the lessons of decisions made (along with their consequences), but also those of many of the unrealized histories of the twentieth century. Third, students will explore the connections between events and developments of the past and contemporary debates, problems, and issues. Finally, students will, by reporting on their work in multiple formats, develop their capacity to use and present history in an effective, policy-relevant manner.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: African Studies, Asian Studies, Global Studies, Russian & East European Studies, West European Studies

PIA 2365 - TRANSNATIONAL SECURITY & ILLICIT FINANCE

Minimum Credits: 3
Maximum Credits: 3
Illicit networks that operate transnationally use a variety of methods for raising and moving money and exploit vast global capital flows to evade detection. Their financial activities contribute to instability, corruption, and conflict in countries and regions where they operate and threaten the integrity of the international financial system. Multilateral institutions over decades have developed international standards to guide the development of national and regulatory frameworks for addressing money laundering and financial crime, and states have expanded the use of economic tools to target and disrupt illicit financial operations. These efforts, which rely on private sector compliance, have increased administrative requirements and costs for financial institutions and governments alike, but gauging their effectiveness is challenging. This course examines the characteristics of the financial operations of several categories of illicit networks and the threat such operations pose to human, national, regional, and international security. We will consider the strengths and limitations of current policy tools for countering illicit financial activity and implications for the private sector.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Asian Studies, Russian & East European Studies, West European Studies

PIA 2366 - INTERNATIONAL ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
This course examines multilateral diplomacy and international cooperation, paying special attention to the role that institutions play in shaping the modern world. Students learn practical skills relevant to a career in a multilateral setting, as well as information about the history of major institutions and some important political science theories on the nature of cooperation. The class is divided into three parts: part 1 examines the role institutions play in international politics and covers the various theoretical debates surrounding their efficacy. Part 2 covers the history, structure, and function of major international organizations like the united nations, NATO, the European union, African union, organization of American states, and others. Part 3 examines some managerial techniques important to working in a multilateral setting, and is designed to give students concrete skills that will be important in a career in multilateral diplomacy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies, West European Studies

PIA 2370 - TERRORISM AS AN INTELLIGENCE PROBLEM

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the important and topical issue of international terrorism and how the U.S. intelligence community responds to demands from U.S. policymakers and allies to detect terrorist threats, to collect intelligence on terrorist groups, and to analyze and assess their intentions, plans and capabilities. Rather than examining international terrorism from a theoretical point of view, we will look at the tactical and strategic issues of most concern to the U.S. intelligence community. As part of the students' professional development, the instructor also will teach the students to write brief intelligence analytical-style memoranda, a skill that will be useful in any professional career.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2372 - POLITICAL ECONOMY OF EAST ASIA IN COMPARATIVE PERSPECTIVE

Minimum Credits: 3
Maximum Credits: 3
This course is a graduate seminar designed to explore the content, process, and consequences of China's institutional reforms from a comparative perspective. Through a detailed examination of the literature on property rights, markets, and the role of the state in economic development, it is hoped that broader comparative insights may emerge about reform in China that distinguishes it from the experience of regimes in Eastern Europe, the former Soviet Union and developing and developed nations worldwide. The overarching question is what explains the course of China's institutional change. Specific questions include the following: Who were the key political actors involved? What was the role of the central state and its agents? What incentives motivated their particular responses to the reforms? What role did changes in property rights play in the success of China's reforms? Why were some reforms easier to implement than others? Who were the winners and losers in the different reforms? What major new problems have emerged as a consequence of piecemeal reform? How have those been handled?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies

PIA 2374 - THEORY OF INTERNATIONAL RELATION

Minimum Credits: 3
Maximum Credits: 3
This course will survey a broad range of literature dealing with international relations theory. The course will view the literature in terms of the critical questions areas in international relations and will be designed to describe each approach and to evaluate the utility of the approach in terms of bringing understanding to some of these question areas.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies, West European Studies

PIA 2379 - INTRODUCTION TO CYBER CRIMES

Minimum Credits: 3
Maximum Credits: 3
Traditionally, crime has taken place in the physical world. Since the dawn of the internet, criminal activities on the web have been continually increasing. Crime is no longer restricted to a town, city, state or even country because internet crime transcends all different types of jurisdictions. In this course, students will learn the types of crimes that occur online, as well as receiving an overview of how these crimes are conducted. Since this course focuses on computing technologies, students will be given the basic necessities needed to understand the technologies they will be utilizing throughout this course, as well as future courses. Students will learn safe computing practices and how to gather the necessary data to help track down criminals on the web. Topics covered will include introduction to various

technology topics, distributed denial of service attacks, ecommerce fraud, counterfeiting, 0-day exploits, discussion on various cyber criminals and nation state threats, etc. Lastly, students will learn about the different organizations, both public and private, and the various policies and laws that are intended to counter the increase in cybercrime.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Russian & East European Studies

PIA 2380 - HUMAN TRAFFICKING

Minimum Credits: 3
Maximum Credits: 3
According to some estimates, there are at least 10 times as many girls now trafficked into brothels annually as African slaves were transported to the New World in the peak years of the trans-Atlantic slave trade. More children, women and men are held in slavery right now than over the course of the entire trans-Atlantic slave trade. Human trafficking is the third largest international criminal industry in the world after illegal drug and arms trafficking, and it is the fastest growing. This course examines the domestic and international dynamics of human trafficking from a variety of disciplinary and practitioner perspectives. Assignments allow students to practice evaluating anti-trafficking policy on both scientific and ethical grounds and making persuasive arguments on the basis of that analysis. Prerequisite: None.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2387 - NATO AND ALLIANCE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the organization and operation of history's most successful alliance, the North Atlantic treaty organization, as a key forum for international cooperation. In today's world nations are working together more intensely than ever and on a wider range of challenges. Thus, students who want to work in any branch of government are likely to find themselves working with their counterparts in other countries, particularly if they work in military and security related areas. Moreover, even if they are working in non-military fields, they may find themselves working alongside NATO-led forces, where an understanding of how the alliance works would also help. Throughout the course, students will follow and analyze current developments at nato, and they will also be introduced to its history since 1949. Special attention will be paid to nato's crisis management missions in Bosnia, Kosovo and Afghanistan, as well as to nato's relations with partners, including russia, and with other international organizations, including the European union and the un. There will also be an emphasis on negotiations among allies at nato. Normally the course will include a field trip to washington to meet people working on nato issues today. At the conclusion of the course, students will also participate in a nato crisis management exercise that they design and execute. The goal of the course is to develop the knowledge and skills necessary to function effectively in a key international organization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Russian & East European Studies, West European Studies

PIA 2388 - SOVEREIGNTY,GLOBALIZATION & INTERNATIONAL LAW

Minimum Credits: 3
Maximum Credits: 3
This course begins with an exploration of the history and sources of international law. We then survey the legal process and the application of international law to explore laws governing relations among states, and its expansion to non-state actors (e.g., the private individual, international organizations, NGOS, and multinational corporations).Students will learn about how and why international law is created and develop an understanding of the mechanisms and institutions of its enforcement. The enforcement of international law, its successes and difficulties, will require students to learn about, inter alia, the nature of international disputes, the subjects of international law, and the forums in which disputes are settled. Throughout the course, we will consider the emerging challenges faced in an international law

paradigm including, organized violence, global markets, cultural coherency and conflict, identity and citizenship, technological evolution, and environmental regulation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2389 - CRIMINAL OPERATIONS IN THE CYBERWORLD

Minimum Credits: 3
Maximum Credits: 3
This class will focus on how criminals conduct business in the online world. It will introduce students to various topics such as carding, transnational cybercrime, and web mobs. The class will explore specific communication channels and money transfer systems that are utilized by online criminals. Students will be exposed to criminal methodologies that have become popular in the cyber world. Students will also have the chance to analyze a criminal target and will present intelligence findings at a mock briefing as part of the final project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Russian & East European Studies

PIA 2394 - ISSUES IN GLOBAL ECONOMIC AND FINANCIAL SECURITY (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
This course will discuss trends in global economic and financial security and ways to enhance it. The focus will be on ways to ensure global monetary and financial stability, including through appropriate regulation to reduce the incidence of financial crises and asset price bubbles. Other critical issues, including food and energy security and the role of finance in promoting development, will also be discussed. Although this is a policy course, students should expect to learn a good deal of economics and finance in the process of learning about these issues. These will be important intellectual tools as the future policy discussions on economic security and development will likely continue to focus more and more on finance and thus require more knowledge of finance than in the past. This course will be less narrowly technical, more policy and political economy oriented, but nonetheless appropriate for students concentrating in global markets, development, finance and trade.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs
Course Attributes: African Studies

PIA 2397 - INTERNATIONAL ECONOMIC NEGOTIATIONS (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
This course looks at a variety of different types of negotiations concerning economic issues, including multilateral trade and investment negotiations, bi- and pluri-lateral trade negotiations, and negotiations aimed at the settlement of specific disputes. We will discuss the influence of domestic politics, and the role of international organizations and non-governmental stakeholders such as NGOs, labor, multinational corporations, and domestic interest groups. The course is particularly useful for those considering careers in international trade, business, markets and finance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs
Course Attributes: African Studies

PIA 2399 - INTERNATIONAL ECONOMIC ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
This elective course examines international organizations, with emphasis on institutions that govern countries' international economic policies and that affect international economic flows. We will study the Bretton woods institutions (the GATT/WTO, the IMF, the world bank) in-depth, along with regional economic arrangements (the EU), the OECD, the foreign aid regime (DAC), the system of bilateral investment treaties (BITS), international financial regulatory bodies (such as the BCBS, the FSB, and the FSF), and OPEC. Students will learn about international economic dilemmas that arise within an anarchic international system, and arrangements among countries to mitigate and govern such issues. Students will study how power and political processes work within and outside of international institutional arrangements. At the end of the course, students will be able to analyze the role of international economic organizations as both amalgamations of states that hold varying preferences, and as autonomous actors, within the international system within current events. Students develop transferable, professional skills as they engage with the above topics. The course will provide opportunities to practice business writing, verbal communication of complex ideas, and the creation of effective visuals (charts/graphs/figures) to organize and present information as a basis for policy analysis and evaluation. Students will engage in group presentations and will select a course-relevant, individual topic of interest to learn about throughout the semester. At the end of the course, each student will have developed a set of documents that reflect deep knowledge of his or her topic, communicated in simple, clear language that includes compelling evidence to establish a knowledge base and to support claims about cause and effect. For all exercises, the intended audience is a group of policy-makers who are non-experts in the specific topic under consideration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2400 - INTERNATIONAL ORDER AND GRAND STRATEGY

Minimum Credits: 3
Maximum Credits: 3
course description to follow
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2403 - JUDICIAL PROCESS

Minimum Credits: 3
Maximum Credits: 3
This course examines courts and judges as political actors. It emphasizes the non-legal factors that affect the decisions judges make and that influence judicial interactions with other political actors and institutions. Most material will focus on the US court system, but there will be some work of a comparative nature. Students will be responsible for critically analyzing reading materials and producing an independent research project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2410 - AMERICAN LEGISLATIVE PROCESS

Minimum Credits: 3
Maximum Credits: 3
This course will focus is on the journal literature of the last decade- involving representation, legislators and their behavior, legislative structures, legislative parties, interest groups, executive-legislative relations, legislative reform, national and subnational legislative systems.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2411 - AMERICAN FOREIGN POLICY

Minimum Credits: 3
Maximum Credits: 3
Students will learn about foreign policy, strategy, and politics through the lens of American diplomatic history with an emphasis on the evolution of thought, practice, and tradecraft in the conduct of U.S. foreign relations. Beginning with colonial antecedents and the ancient, medieval, and modern sources that inspired the Founding generation, the course will examine how U.S. policy was formed and implemented during the eras of the War of Independence and early Republic, territorial expansion, Civil War, naval expansion and civil service reform, World Wars/Interwar, and the rise of the current national security process since World War II. Attention will be given to the development of the diplomatic and consular services through their early forms and professionalization, as well as to the sources of inspiration and methods of practice for American diplomats and other practitioners of U.S. statecraft in various eras. American negotiating styles will be studied in comparison with various foreign interlocutors, as well as the social, cultural, political, and ideational factors that influenced American diplomacy, including the evolution of diverse schools of thought about America's role in the world. This course will be both an intellectual history of American foreign relations and a practical offering to help students build skills to succeed as makers, implementers, and analysts of contemporary U.S. foreign policy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2412 - ANALYZING CRITICAL INTERNATIONAL SECURITY CHALLENGES

Minimum Credits: 3
Maximum Credits: 3
This course consists of three 15-hour weekend workshops 'meeting Friday 6-9pm, Saturday 9am-5pm (1-hour lunch break), and Sunday 9am-1pm'each of which explores a critically important international security topic in the news today. The topics planned for 2015 include: the pros and cons of nuclear abolition; assessing the need for missile defenses; and analyzing China's military capabilities. Using films, lectures, discussion and debate, and group simulations, these workshops will expose students to the key factors shaping each security challenge. The objective is to promote balanced and critical thinking in assessing threats and evaluating choices facing security and intelligence practitioners. In addition to a reading list of articles and monographs' all downloadable or available via the university's digital library' and two books (both provided courtesy of the instructor), the syllabus also provides students with a bibliography of books, journal articles, and major monographs for those wishing to pursue more advanced study. Grades will be determined on the basis of classroom participation and three take-home essays.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2419 - CYBERCRIME

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

PIA 2424 - POLITICS ,DEVELOPMENT AND CONFLICT IN THE MIDDLE EAST

Minimum Credits: 3
Maximum Credits: 3
The United States has many interests in the Middle East (defined for this course as Morocco to Iran), and SPIA students who embark on careers in government or the development sector are likely to cross paths with this complex region. This course will focus on the region from the perspective of its governments, non-state actors, and people, an understanding of which will be critical for SPIA students looking to succeed in intelligence, foreign policy, or development work in the Middle East. It will examine local politics and governance, with a particular focus on developments since the Arab uprisings of 2011. It will provide students with a deeper understanding of development challenges and opportunities in the region. Finally, it will explore the roots of political and sectarian conflicts in the region, with a

particular focus on regional actors' perspectives on these conflicts and prospects for resolution.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2429 - THE WAR ON DRUGS

Minimum Credits: 3
Maximum Credits: 3
The War on Drugs examines the history of drug control policy in the United States and the internationalization of drug prohibition. Topics include: the history of drug control policy in the US and internationally; the nature of drug abuse and addiction and current drug use patterns, the different components of drug control policy, including crop eradication, drug interdiction, leadership decapitation, law enforcement, and drug treatment and prevention; the structure of the drug trade in the Andes, Mexico, Afghanistan, and the US; and alternatives to drug prohibition, including legalization and harm reduction. The course highlights similarities and differences between the war on drugs and the war on terror with an eye towards understanding how our experience with the first can better inform our response to the second.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2430 - ETHNIC POLITICS

Minimum Credits: 3
Maximum Credits: 3
What is ethnicity and why is it such a powerful basis of politics? This seminar focuses on the role that ethnicity plays in four core areas of politics: mobilization, democratization, redistribution, and violence. We will read and discuss academic scholarship paired with contemporary policy-oriented work, with wide geographic coverage, on issues such as immigration policy, employment discrimination, ethnic favoritism in public goods provision, political campaigns, riots, and genocide. Students will then have the opportunity to develop and test their own argument related to ethnic politics in a final paper developed and critiqued through the semester that answers a question related to ethnic politics. Prerequisite: None.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2431 - THE NEW SOCIOECONOMIC LATIN AMERICA AND CARIBBEAN-CHINA RELATIONSHIP: THEORY AND EVIDENCE

Minimum Credits: 3
Maximum Credits: 3
The objective of this course is to understand general and detailed topics in the current Latin American and Caribbean (LAC) and China socioeconomic relationship since the 1990s and particularly in the fields of trade, financing, foreign direct investments (FDI) and infrastructure projects. The first section of the course will begin with a group of sessions on conceptual debates in development theory, data sources for trade, FDI, and infrastructure projects, as well as a structure to analyze the LAC-China relationship in the 21st century. The second section of the course will examine details of the LAC-China relationship in terms of proposed strategies and analysis in each of the four mentioned items (trade, financing, FDI and infrastructure projects), as well as analysis of existing literature in LAC and China. The third section of the course will present case studies of the LAC-China relationship in specific countries and/or of specific topics in one of the suggested 4 topics and/or of specific value-added chains; students will participate with presentations in this section of the course. The final session will also present main results, challenges, and policy suggestions for the current and future LAC-China relationship, both from a bilateral and regional perspective.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2432 - ADVANCED SEMINAR: IN SECURITY AND INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2434 - CIVIL-MILITARY RELATIONS

Minimum Credits: 3
Maximum Credits: 3
This course explores the relationship between militaries and the polities they serve. Militaries are crucial governmental institutions in the modern world, serving as the guardians of sovereignty and safety. However, militaries also possess the tools and capability to threaten the very people and polities they are meant to protect. Striking the proper balance between military capability and civilian control of the armed forces is therefore an essential task for all political communities. The difficulty of doing so underscores the importance of knowing what the necessary delicate balance looks like as well as what factors make success and failure in such ventures more or less likely. In exploring this essential topic of good governance, we will examine the historical roots of civil-military relations, military takeovers of and defections from civilian governance institutions, and the theory and practice of civil-military relations in modern democratic societies (particularly the United States). Particular topics to be considered include coups d'état, military disobedience, civil-military relations in wartime, the "civil-military gap," and the role of servicemembers in the political life of the community. Throughout the course, we will ask and explore three specific questions: What is the dividing line between civilian and military spheres of activity? How much influence should civilians have on activities within the military sphere? How much influence should the military have in the civilian sphere? And we will grapple with the implications of the fact that there are few, if any, clear answers to these questions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2440 - RUSSIAN FOREIGN POLICY

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the history and contemporary reality of Russian foreign policy and grand strategy. The course will examine themes of change and continuity over time in the conduct of Russia's foreign affairs. Russian policymakers' decisions and actions will be analyzed in historical perspective and through a variety of paradigmatic lenses. Students will consider important historical episodes, as well as post-Soviet developments and current events, to include the ongoing war in Ukraine and Russia's activities in Eurasia, the Middle East, Africa, and beyond. Throughout the course, students will encounter recurring themes, such as enduring Russian conceptions of national interest and persistent geographic, demographic, and economic constraints, as well as institutional factors, including leadership dynamics, divergent legal frameworks, bureaucratic and strategic cultures, the role of the security services in shaping and executing policy, ethnic politics, civil-military relations, economic and defense-industrial organization, and the evolving character of the Russian Orthodox Church. We also will examine the role of international instruments, such as peace treaties and arms control agreements. Students of all academic disciplines with an interest in the topic are encouraged to enroll. Instruction will feature pedagogies such as case studies, memorandum writing, simulations, and guest lectures from experts in sub-topics. A key goal of the course is to help students prepare for a range of careers in foreign policy and public service. Instructor is a foreign policy practitioner with over a decade of professional experience working on Russia-related issues in defense, national security, and economic policy arenas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Russian & East European Studies

PIA 2448 - POLITICAL ECONOMY OF DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course begins by discussing Amartya Sen's concept of "development as freedom" and reviewing the trends in poverty, inequality and human development indices in both developed and less developed countries. We examine how various development strategies -

investments in human capital, public goods, and responsive governance; corrections to market failures (e.g., externalities, monopolies); and efforts to address structural discrimination (e.g., against Indigenous peoples) - can improve socioeconomic outcomes for individuals and communities. We also examine efforts to reform the international system, including food production, the international trade regime, the international patent regime, which influences innovation and access to medicines; and international Loss and Damage funds to support climate mitigation and adaptation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: African Studies

PIA 2449 - HUMANITARIAN INTERVENTION

Minimum Credits: 3
Maximum Credits: 3
Humanitarian intervention is the set of responses by international actors who assist people when they are deprived by a natural disaster or political conflict of the basic necessities of security, shelter, food, water, and medical care. Such crises typically occur in countries with weak governing institutions, involve large-scale population displacement, and attract a diverse range of international organizations and states. This course introduces the international humanitarian aid system; reviews ethical, legal, political, and pragmatic challenges; and, through a series of case studies, investigates the processes and outcomes of humanitarian assistance efforts by non-governmental organizations, inter-governmental organizations and governments. The class concentrates on politically induced crises and the controversial role of military actors in the humanitarian realm.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2456 - COMPARATIVE POLITICAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2460 - LATIN AMERICA SOCIAL & PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3
This seminar explores contemporary issues of social and public policy in Latin America through complexity, systems, glonacal, policy diffusion, comparative, and case-study approaches. In the first section participants review general policy concepts and theories, to be followed by the historical, economic and political context of public and social policy in the region. The second section examines several policy areas such as education, employment, poverty alleviation, public administration, social security, health, minorities, and violence. Using complexity and systems perspectives it is possible to understand how social and public policy influences the development and practice of fields like education and it could be also influenced by those fields. Disciplines such as economics, history, health, political science, anthropology, and sociology shape and help to make sense of educational issues and vice versa. This seminar is an opportunity for students in education and other disciplines to engage in interdisciplinary deliberation on policy issues in this region and fulfills the requirements for certificates in Latin American studies. Materials for the class include current news, scholarly publications, videos and other material published in English, Spanish, and possibly Portuguese (students must be able to read at least basic Spanish).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2462 - THE PRACTICE OF DIPLOMACY

Minimum Credits: 3
Maximum Credits: 3
This course will explore the practice of diplomacy, with an emphasis on the evolving roles of embassies, diplomatic services, foreign ministries, and certain international organizations. The practical, theoretical, legal, and institutional frameworks within which states and other actors employ diplomacy as a tool for pursuing security, prosperity, influence, and other aims will be considered, along with central questions and emerging issues. Is diplomacy an "art," a "science," or something different entirely? How have states and other actors used various methods and strategies for achieving political, economic, and cultural ends in diplomatic arenas? What sort of platform is required for overseas consular services, summitry, major international events, and other management challenges? How are big data, artificial intelligence, and other emerging technologies influencing diplomacy, especially in light of shifting geopolitics and relatively new arenas of competition and cooperation, like space, cyberspace, and the polar regions? The course will have a focus on contemporary and recent U.S. diplomacy, with case studies from other periods and diverse countries for historical and comparative perspective. Texts will include selections from classics such as Francois de Callieres's Art of Diplomacy ("De la maniere de negocier avec les souverains"), Satow's Diplomatic Practice, Nicolson's Diplomacy, foundational international legal documents such as the Vienna Conventions, and contemporary primary sources. Students will refine core skills required for the practice of diplomacy, including policy writing, public speaking, critical analysis, and "soft" skills like negotiation, persuasion, and tact, as well as diplomatic lexicons, protocol, and etiquette. The course will incorporate simulations and other practica as an aid to instruction, as well as information about careers in diplomacy and related fields.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2463 - ORDER AND VIOLENCE: EVALUATING POLICY, ENHANCING GOVERNANCE

Minimum Credits: 3
Maximum Credits: 3
Establishing and maintaining political order in the state is essential for governance. This course first examines various threats to political order around the world and how they manifest in different forms of violence, including organized crime, gang violence, insurgency, genocide, terrorism, and riots. Armed with theory of causes of disorder and knowledge of specific cases, we review policy designed to address those types of disorder and evaluate effectiveness of those policies. Students will practice writing in short, analytical, policy-oriented memos, and how to evaluate policy using different kinds of evidence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2464 - MONEY LAUNDERING

Minimum Credits: 1
Maximum Credits: 1
This course will introduce students to the main mechanisms and modalities of money laundering as well as to anti-money-laundering efforts and why their effectiveness is limited. Different money laundering methods will be explored and some consideration given to new technologies and how they might be exploited. The course will also examine money laundering case studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2465 - FINANCIAL DIMENSIONS OF TERRORISM

Minimum Credits: 1
Maximum Credits: 1
This course will examine the financial dimensions of terrorism with particular emphasis on terrorist acquisition of resources and funds through criminal activities. Attention will be given to a variety of organizations and how they raise, move and spend money. The efforts by governments to combat terrorist financing will also be considered with a particular focus on why governments and the international community have had only modest levels of success.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Attributes: Asian Studies

PIA 2466 - DATA ANALYSIS VISUALIZATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2467 - INTRODUCTION TO AMERICAN INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
This course will focus on how the U.S. intelligence community collects and analyzes information to support U.S. national security and foreign policy objectives. Students will examine the historical foundations of the intelligence community and consider how the role of intelligence has changed over time, particularly after the attacks of September 11, 2001. Students will also consider the legal, moral, and ethical factors that influence the roles and conduct of the U.S. intelligence community. Finally, this course will take a closer look at selected current intelligence topics, such as Russia, China, terrorism, weapons of mass destruction, and cyber security.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2468 - CHOOSING NUCLEAR WEAPONS

Minimum Credits: 3
Maximum Credits: 3
Why do some states choose to develop nuclear weapons and others do not? Have the reasons for nuclear weapons acquisition changed over time? Are more states likely to acquire nuclear weapons in the future? Once they have nuclear weapons, how do states choose their strategies for using them to advance foreign and security policy objectives? Why do states choose to give up nuclear weapons? Is a world without nuclear weapons possible? Is a world without nuclear weapons desirable? The answers to these questions are crucial to ensuring stability, peace, and security in the international realm. Problematically, they are also fundamentally contested by academics, policymakers, military officers, and the general public. This course will provide students with the tools to understand, partake in, and shape these debates about nuclear weapons. It will provide students with a foundational understanding of what nuclear weapons are and how they work. Then, drawing on both academic scholarship and primary source material like declassified documents, it will introduce students to: the myriad decisions confronting policymakers considering the acquisition, use, and elimination of nuclear weapons; how such decisions are made; and how such decisions can be improved. Academic scholarship from the disciplines of political science, history, public administration, and psychology will be used to develop theoretical frameworks and analytical toolkits necessary to think critically about elements of the nuclear weapons lifecycle. Primary sources and declassified documents concerning not only the United States' experience with nuclear weapons, but also that of countries like the USSR, China, the United Kingdom, France, Israel, South Africa, India, and Pakistan will be used to test and refine those frameworks and toolkits.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Russian & East European Studies

PIA 2469 - SOCIAL ENTREPRENEURSHIP

Minimum Credits: 3
Maximum Credits: 3
SPIA's social entrepreneurship class will be taught within the context of nonprofit management and practice, with an emphasis on purpose-driven leadership and skill development. The course will address the impacts of social entrepreneurship in multiple settings and how impact is measured and evaluated. Students will discuss and analyze the goals of "doing good" for social good in the nonprofit realm linking philanthropy, government, and volunteerism through innovative partnerships and financial ties. The instructor will make use of case study

materials and connections to GSPIA's Johnson Institute for Responsible Leadership.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2470 - U.S. FOREIGN POLICY AND LAW REGULATING THE USE OF FORCE

Minimum Credits: 3
Maximum Credits: 3
This seminar examines the role of both domestic and international law in regulating the use of force as a part of U.S. foreign policy. It focuses on the use of covert action by the CIA as an example of a use of force that is regulated both by domestic and international law. The first portion of the course examines the history of the CIA and its use of covert action. It also examines theoretically and empirically why covert activity is an attractive choice for policymakers and the effect of covert action on relations between states. The course then shifts to discuss domestic regulation of the use of force, focusing on Congress's role in the domestic regulation of the CIA's activities. The course will feature an in depth analysis of primary documents related to U.S. intervention in the Angolan Civil War of the mid-1970s. Lastly, the course examines the role of international law in regulating the use of force abroad. The course examines the laws of war and how international law applies to covert action. Modern extensions of covert activity are also considered, such as the use of private military contractors and drone targeting.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2471 - ESPIONAGE SURVEILLANCE & SECRET INFORMATION IN INTERNATIONAL AFFAIRS

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to the importance of secret information in the conduct of international affairs. Students will first learn about the ways in which states share information, protect secret intelligence, and deceive each other, both in war and peacetime. The course will also delve into how surveillance and espionage are practiced among states and on domestic populations. This includes discussion of the international legal framework for espionage; the development of intelligence sharing between allies (such as Five Eyes); the authority and limits of U.S. domestic and foreign surveillance (such as the role of the Foreign Intelligence Surveillance Act and the Foreign Intelligence Surveillance Court); as well as more recent uses of cyber capabilities to spread misinformation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2473 - STRATEGIES OF GLOBAL INQUIRY

Minimum Credits: 3
Maximum Credits: 3
Global Studies is an expansive and dynamic interdisciplinary field that explores current and past transnational processes, such as migrations, human rights, ethnonationalism and imperialism, economic and institutional globalization, and transnational social movements. Within the academy, it is a meeting place or community of inquiry for scholars interested in topics that spill beyond temporal, political, disciplinary, ecological, geographical, and cultural boundaries. This seminar will hone graduate students' abilities to analyze issues and events through global and transnational research frameworks that incorporate various disciplinary perspectives, and to investigate linkages between global processes, social justice, and human well-being. The course is designed to complement each student's own disciplinary background and interests, and to foster preparedness for collaborative and inter-disciplinary global work. It will stimulate student abilities to think critically about a broad range of theoretical and methodological issues involved in global research, including ethics, the co-production of the global and local, the nature of "global" research questions, and research designs from different disciplinary perspectives. In addition to providing a framework for global thinking and learning, the seminar also intends to create a "community of junior global studies scholars" and thus places strong emphasis on attending regularly, participating actively, and presenting critical analyses in a scholarly manner. This is the core seminar for students in the Global Studies graduate certificate program (UCIS).
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2474 - CONTEMPORARY CHINA AND INTERNATIONAL POLITICAL ECONOMY

Minimum Credits: 3
Maximum Credits: 3
This course examines China's role in international economics and politics. It will introduce students to the domestic institutions and actors in China, and then discuss the impact of China's outward economic activity (in terms of trade, investment, finance, and foreign aid) on foreign policy and international politics. Finally, it explores China's role in international institutions and global governance. Students will deepen their understanding of the evolving role of China in the international order and the political implications of a rising China, as well as develop their analytical skills on policy analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2475 - FAILURES FIASCOS AND DISASTERS

Minimum Credits: 3
Maximum Credits: 3
The history of United States (and other countries) security policies during the twentieth century and the early part of the twenty first century, is replete with intelligence failures and foreign policy fiascos. An enormous intelligence apparatus and decision makers who are often regarded as "the best and the brightest" have been prone to errors of commission and omission that have resulted in strategic surprises, disastrous wars, botched military interventions, and inadequate or ineffective responses to challenges and threats. In addition, there are also what can broadly be termed industrial and technological disasters. Although some of these can be traced to poor regulation, it appears that certain kinds of organizational pathologies have also been at work. There is a rich literature on disasters that facilitates interesting comparisons with failures in intelligence and foreign policymaking. Accordingly, this course will give students an opportunity to examine failures in intelligence, foreign policy, and technology/industry. Students will provide cases studies in each of these three areas and then seek to identify possible commonalities across the three domains. Cases include the Fall of the Shah, the Bay of Pigs, Vietnam, Somalia, and Iraq as well as the Challenger Disaster, Bhopal, and Boeing's 737 Max.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2476 - NONVIOLENT RESISTANCE MOVEMENTS

Minimum Credits: 3
Maximum Credits: 3
In this course, students will learn about civil resistance movements, which are efforts to challenge certain entities using nonviolent collective action. Nonviolent resistance movements have recently gained popularity as a form of political resistance, particularly in the aftermath of the Jasmine Revolution in Tunisia. In contrast to the usual focus on political violence in conflict literature, nonviolent resistance has emerged as the primary means of challenging authority. We will examine the various theories and explanations for why and how these movements work, as well as the responses of states to them. Additionally, we will delve into the political, economic, and social factors that contribute to the emergence of these movements and the outcomes they produce. The course will also provide an opportunity for students to engage with marginalized voices in discussions on global politics and to develop their critical thinking and analytical skills by taking intellectual positions, defending them with evidence, and participating in peer review. Through the perspectives of policymakers, activists, and scholars, students will explore the significance of civil resistance for various stakeholders, including policymakers, civil groups, activists, and international cooperation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2477 - ECONOMIC STATECRAFT INTERNATIONAL SECURITY

Minimum Credits: 3
Maximum Credits: 3
The central role of economic statecraft in contemporary international politics reflects the importance of economic elements of power in an interdependent world as well as the state's evolving relationship with the commercial sector. The course examines the practice of economic statecraft in coercive national and intergovernmental approaches for addressing security threats and challenges, the utility of economic and financial tools for achieving policy goals, and the complexity of designing effective strategies that mitigate adverse consequences. Case studies compare the nature, strengths, and limitations of economic statecraft in great powers' foreign policies and explore regional organizations' use of economic instruments to enforce norms and standards.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2478 - ASYLUM POLITICS & POLICY

Minimum Credits: 3
Maximum Credits: 3
This course will provide a survey of topics about refugees in a comparative perspective. The course will first provide an overview of the international humanitarian protection framework that differentiates asylum from other types of migration such as the 1951 Convention Relating to the Status of Refugees and the role of the United Nations High Commissioner for Refugees (UNHCR). We will then analyze contemporary issues including but not limited to refugee resettlement, deterrence policies, offshore processing, temporary protections, climate displacement protections, and refugee integration policies. In addition to studying these processes in the United States, we will utilize case studies of refugee producers and hosts in the Global North and South such as the European Union, Venezuela, Australia, Syria, Jordan, Kenya, Turkey, and Myanmar.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2480 - UNAUTHORIZED MIGRATION: POLICY & PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course explores how governments manage, regulate, and increasingly criminalize a¿unauthorizeda migration. We will examine the legal, political, and policy frameworks that shape state responses, from detention and deportation to regularization and labor market inclusion. Case studies from the U.S., Europe, Latin America, and beyond will help students understand how irregular status is produced, experienced, and contested. Topics include the securitization of borders, human rights concerns, the role of local and international institutions, and the policy trade-offs that states face. Students will analyze real-world policies, engage in critical debate, and develop research and writing skills to assess the impacts of irregular migration governance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2496 - GOVERNING TECHNOLOGY

Minimum Credits: 3
Maximum Credits: 3
Technological innovation is one of the key features of human society. How then should technology be governed? Today, the pervasiveness of digital technologies in everyday life poses ongoing challenges for regulation and governance. How should the generation and use of private data be managed? What approaches can policymakers and regulators use to assess the risks and uncertainties of new technologies? What can be done to ensure technology reduces inequities and improves livelihoods? This course provides interdisciplinary concepts for understanding how techno-social systems are changing and for analyzing how broader national, regional and international developments are shaped by law, policy, culture, social norms, political economy, regulation and security. Class sessions focus on empirical examples so that students can apply different conceptual tools and propose creative solutions to real-world problems. Case studies cover current and anticipated concerns, including automation, consumer protection, changing global standards, data governance and digital transformation, as they relate to important issues of climate change, criminal justice, democratic stability, food systems, internet governance, public health and security. Specific issues addressed include developments in cyber security, algorithmic regulation, digital identity, fintech, biotech and

machine learning. Designed to accommodate students from different backgrounds and career stages, the course is suitable for students with an interest in technology and society as well as professionals working in government, the private sector and nongovernment organizations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2501 - DEVELOPMENT POLICY & PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This is a survey of development policies, issues, institutions, and resources for professionals working in development. Lectures, discussions, and presentations in class focus on analysis of development policies, and on new and significant policy issues, skills, methodologies, and resources. The course helps students develop the ability to analyze development issues from several perspectives, understand the breadth of international development as a field of professional service and academic study, and clarify their priorities for acquiring skills in preparation for that service. Students completing the course will be able to grasp the history of approaches and experiences with development, identify and critically analyze major institutions involved, assess political and institutional environments of development, employ some key social science and administrative tools, and recognize and understand principles of other significant skills and emerging methodologies in development practice. The course is organized in three parts: 1) dynamics of development and social change; 2) development management: who's in charge; And 3) contemporary issues and skills. Throughout the course we will introduce, discuss, and return to case studies that illuminate key issues and themes: the global HIV/AIDS pandemic, microfinance programs in development, the chad-cameroon oil pipeline project, water system privatization, and the global and local food prices and production.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: African Studies, Global Studies

PIA 2502 - ENVIRONMENTAL POLICY: LOCAL & GLOBAL

Minimum Credits: 3
Maximum Credits: 3
We study policy tools that can help society to protect the environment and public health while achieving sustainable and equitable economic progress globally and locally. We discuss various environmental challenges (e.g., stratospheric ozone depletion, electronic and hazardous waste management, plastic pollution) and global solutions (e.g. international agreements like the Montreal Protocol and negotiations for an international plastics treaty). We discuss efforts to end the US/EU exports of highly toxic pesticides to developing countries and to address the World Trade Organization decisions that affect environmental protection. Locally, we discuss how local government can spearhead the shift toward sustainable pathways, e.g. by adopting renewable energy and energy efficiency programs and by using zoning laws to limit polluting activities. We discuss how the public can hold governments and corporations accountable to achieve environmental justice, e.g., through greater oversight of regulatory agencies, advocacy for greater transparency in agencies and by corporations, and through citizen lawsuits. This course meets the requirements for the Sustainability Certificate, Sustainable Development Certificate, Sustainable Engineering program, Circular Economy Certificate, Global Health Certificate, Global Studies Certificate, Area and Regional Certificates and other programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies, MCSI - Sustainability Related

PIA 2503 - CIVIL WAR & CONFLICT RESOLUTION

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide you with a framework for understanding and analyzing ethnic conflicts and Civil Wars, the most pervasive forms of armed conflict in the world. These intrastate conflicts killed millions of people, destabilize governments and entire societies, usually involve neighboring states and often undermine regional stability. Some conflicts engage the interests of distant international powers; many draw in international organizations. For these reasons, ethnic conflicts and Civil Wars are major security

problems. The first part of the course is a brief overview that distinguishes conflict (an everyday occurrence) from violent conflict (a relatively uncommon event) and separates ethnic conflict from Civil War. The second part of the course analyzes the causes of violent conflict, ranging from psychological explanations to international factors. The third part of the course examines domestic strategies for dealing with ethnic and political differences, from accommodative strategies to violent ones. The fourth and final part of the course examines international responses to intrastate conflict, including the use of economic, political and military policy instruments.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: African Studies

PIA 2506 - SEX AND HUMAN SECURITY

Minimum Credits: 3
Maximum Credits: 3
What effects do power relations between men and women, and between different gender and sexual orientations, have on human security? What is the connection between global gender inequality and experiences of security, development, and human rights as the three founding fields of human security? How does taking sex into account shift national and global policies, priorities, and human security outcomes? How well are international and national institutions doing in addressing connections between sex/gender and human security, and what remains to be done? The human security field has made such questions a priority by addressing neglected issues such as rape as a strategy of war, domestic violence as an obstacle to development, and gender/sexuality as a human right. More generally, it aims to address all human security issues comprehensively by including attention to gender. In this course, we focus on neglected gender issues and learn how to apply tools of gender analysis to our human security work more broadly. This means we examine human security using gender as a category of analysis, and that we address gender gaps in traditional approaches to issues at the intersection of security, development, and rights. We begin by studying the merits of different gender analysis approaches relevant to human security issues. Through a gender lens we then critically examine the causes and implications of human security issues such as: violence that systematically targets a sex or gender as a particular group; rape as a strategy of war and a foil to peace keeping; inequality and domestic violence in non-conflict contexts. We also examine gender aspects of human security threats such as child soldiering, modern slavery, and environmental disasters. We critically assess institutional and policy responses and learn to develop more effective gender-aware human security responses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2507 - HUMAN RIGHTS AND SOCIAL CHANGE

Minimum Credits: 3
Maximum Credits: 3
Human rights are powerful and important tools in governmental, intergovernmental, and non-governmental work across a range of fields -- from international development, to politics and public administration, to security and justice. This course provides students with analytical and policy skills in human rights, using an interdisciplinary approach which engages human rights in law/policy, politics and society, philosophy and ethics. It provides students with essential understanding of international human rights laws as tools of individual empowerment, and as evolving social norms shaped by individuals seeking to create fairer societies. We learn to interpret international human rights laws and underlying principles, to grapple with debates and controversies in diverse contexts and cases, and to apply theories of how international human rights create social change in domestic settings worldwide. Questions driving this course include: How can international human rights law (IHRL) help to solve chronic domestic policy problems? What specifically are states' obligations under IHRL? What are the obligations and roles of nonstate actors? What are some common myths and misunderstandings about human rights? Why do some countries comply with human rights while others do not? How can obstacles to implementation be overcome in specific settings? In particular, how do NGOs and other non-state actors participate in human rights change? How do nonstate and transnational actors utilize human rights to promote justice and to combat harmful state and societal actions? What are some processes and strategies of human rights change? We use case studies to illustrate and give depth to a wide range of intersectional human rights issues, such as health, harmful social practices, education, poverty, hunger, policing and justice. We focus in particular on discriminated groups such as children, the poor, women, indigenous, racial, ethnic, and LGBTQIA+ groups.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies

PIA 2508 - NGO ADVOCACY & INTERNATIONAL COALITIONS

Minimum Credits: 3
Maximum Credits: 3
NGOs play powerful advocacy roles at national, regional, and global levels to help solve wide-ranging human rights and international development problems. As influential critics, idea entrepreneurs, and forces of social change, advocacy NGOs have expert skills sets which they use to expose problems, uplift marginalized voices, shape policies, politics, and social norms, and mobilize implementation. To "scale up" or maximize effect while ensuring advocacy is rooted in local realities, NGOs often collaborate through coalitions involving local, regional, or international partners, and tap into broader civil society networks and social movements. To avoid risks and generate long-lasting positive outcomes, their analysis, strategic planning, and practical skills must be rooted in core concepts and values such as ethical and inclusive advocacy, empowerment, and "transformative solidarity" - that is, "standing in solidarity with people, taking their agency as a starting point, rather than acting for people" (Jackson 2020). Students in this course engage with these foundational NGO advocacy concepts, approaches, and skills. We learn to assess the benefits and risks of advocacy in different contexts, and to examine how NGO advocacy campaigns relate to diverse stakeholders, build alliances, handle sensitive issues, and convey powerful messages. We learn what responsible and ethical advocacy, and their opposites, look like over the life cycle of campaigns. We become adept at analyzing NGO advocacy strategies in a variety of campaigns and contexts. And we learn to apply the advocacy strategy framework, analytical tools, and practical advocacy skills perfected by experienced NGOs/INGOs and practitioners, by participating in a term-long simulation in which students work collaboratively as NGO representatives to develop a professional and innovative NGO coalition campaign proposal on a topic of importance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2509 - PROJECT MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Translating classroom theory into innovative field-based practice remains a project manager's most difficult challenge. The purpose of this course is to provide students with practical strategies and tools that can be used in the design and implementation of successful development projects. The course will be a highly interactive exploration of field-based development strategies and real-world projects that suffered lethal and catastrophic setbacks yet ultimately achieved solid and sustainable outcomes as a result of their innovative design. Students will be introduced to the basics of the project cycle, given specific management tools for project design and, working in groups, asked to develop project initiatives addressing a problem in a developing country of their choice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2510 - ECONOMICS OF DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Why are some countries rich and others poor? How do population growth, migration and gender impact economic development? How can we reduce the cost of environmental protection? To answer these and other critical development questions, this course takes a policy-oriented approach to economic development, presenting economic theory in the context of critical policy debates. This course has three key objectives. The first is to provide students with an appreciation for the problems and constraints that all countries face in the process of development, with a focus on poor countries and the Sustainable Development Goals (SDGs). The second is to provide theoretical frameworks which facilitate analysis of these problems and generation of relevant policy implications. The third is to provide country and problem-specific contexts within which students can apply the knowledge they acquire during the course. Special effort is made to highlight the diversity of experiences and viewpoints in international development, and to give attention to marginalized views and groups.
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies, Global Studies

PIA 2512 - POVERTY AND INEQUALITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies

PIA 2513 - RELIGION AND INTERNATIONAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Religious ideas, beliefs, and institutions are influential almost everywhere development practitioners work. This course engages students actively in understanding the roles of religion and culture in economic, social, and political change; the varieties of religious institutions and movements in poor societies; and the significance of religion in several key policy areas. The approach draws on sociology, economics, political science, and anthropology to understand the practical implications of religion for development work. Students completing the course will be able to use and critically assess major approaches to the study of religion and social change, recognize key doctrinal and institutional features of major world religions, incorporate religious institutions and thought into an analysis of civil society, assess the roles of religious actors in conflict situations, evaluate options and strategies for working with faith-based organizations, and apply diverse ethical perspectives to major development policy issues. The course is organized into three parts: (1) an introduction to religion, culture, and development; (2) a comparative survey of major issues and case studies including each of the major "world religions" and key issues such as gender, inclusion and exclusion, human rights, religion and social movements, and faith-based organizations; and (3) religion and the policy and practice of development, including conflict, HIV/aids, and topics determined by the class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2519 - COMPARATIVE GOVERNANCE

Minimum Credits: 3
Maximum Credits: 3
This course equips students with practical skills and insights into comparative governing institutions, focusing on real-world political incentives and policymaking constraints. It emphasizes hands-on analysis of case studies to understand the operational dynamics of global political institutions and their influence on policy. By honing analytical and strategic skills through practical examples, students are prepared to tackle the challenges of international affairs and strategy, making this knowledge a vital tool for their future careers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2520 - FOOD SECURITY: AGRICULTURE & RURAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Focusing on food, hunger, agriculture and rural livelihoods in low- and middle-income countries, this course is a survey of nutrition, agriculture, and food policy issues. It is a course for non-specialists in agriculture who need to be able to work with agronomists and other specialists, in rural and community development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2522 - CLIMATE POLICY - LOCAL & GLOBAL

Minimum Credits: 3
Maximum Credits: 3
We examine strategies at the local, national and international level to address the climate emergency and to transition to more sustainable and equitable economies. We discuss how local governments and state governments and countries across the globe, despite the significant challenges, have made concrete advancements. These include the growing deployment of energy efficiency renewable energy and storage, which are cost-competitive, resilient and reliable; and private and public investments into green R&D, jobs and renewable energy, so that countries can compete in the green global economy, and the population can benefit from good quality jobs and community ownership of renewable energy projects. We examine the policy tools to incentivize the shift of taxpayer and investors funds from the fossil fuel sector to the renewable energy sector, including mandating climate risks disclosure for financial institutions and climate litigation to hold governments and fossil companies to account. We also examine how public investments are assisting the just transition of fossil fuel workers and communities. We draw on the experience of countries that have made notable shifts to green energy, including China and Germany, and US states such as California and Texas. Finally, we discuss efforts to counter climate misinformation and false solutions and to counter the suppression of climate research, knowledge and advocacy. This course meets the requirements for the Sustainable Development Certificate, Sustainable Engineering Certificate, and Global Health Certificate, Area and Regional Certificates and other programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course explores the range of non-state actors in developing/transition countries that are important to promoting socioeconomic and political change. We will examine the origins, evolution and multiple roles played by this diverse group of non-state actors, including business and professional associations, trade unions and political movements, policy advocacy groups and civic education/democracy-building organizations. Among the issues preoccupying practitioners and researchers, and this course, are: what factors influence the presence and vibrancy of civil society in different countries? How has the state ' in various times and places -- determined the context in which civil society organizations pursue their goals? With what strategies and with what success have civil society organizations been able to influence or change state policies? What autonomy and accountability issues arise in state-civil society relations, and how does the international donor community facilitate or complicate these relationships?In the process we will introduce specific tools from the social disciplines and development practice for working with civil society organizations, including assessing the strength of civil societies, measuring social capital, and assessing 'partner' organizations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2527 - FINANCIAL MANAGEMENT FOR NGOS AND NON-PROFITS

Minimum Credits: 3
Maximum Credits: 3
This skills course covers various accounting methods in both private sector organizations as well as Nongovernmental Organizations (NGOs). Upon completing this course students should be able to read and understand annual reports of profit and nonprofit organizations, analyze the published financial statements within the reports to ascertain the well-being of the organization, and to make managerial decisions based upon the results of this analysis. This course is divided into (1) understanding basics of accounting for all organizations; (2) measurements and analysis of financial statements using accounting tools such as common-size statements, liquidity and profitability analysis, debt vs. equity; and (3) budgeting and cost-benefit analysis using contribution margin.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY

Minimum Credits: 3
Maximum Credits: 3
This course will attempt to define this balance by looking at issues of local government, governance and civil society in Latin America, the Caribbean, Eastern Europe, Asia and Africa. It focuses on the dynamics of governance with primary attention being the grass roots base of democracy and their relationship to institutionalized state structures. Focus is on the nexus between theories of governance and the practical implications of that theory on political behavior. The basic source of our understanding about governance, will be the reading. It is lengthy and various. The categories under which reading is assigned are somewhat arbitrary and as we go along the re-examination of earlier readings will be essential when we get further into the course. Because of the length of each week's reading assignment, it is essential that students keep up with the reading from week to week. Failure to do so will result in academic "overload" as the course draws to an end. The course will be a mixture of in-class discussions and lectures. The lectures, it should be noted, are not intended to summarize the reading but rather give the independent views of the instructor. All students in the class should read the core readings. Each student should also read from at least one of the three topic lists. There will be four assignments for the successful completion of the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2529 - POLITICAL ECONOMY ANALYSIS FOR GLOBAL AFFAIRS

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to tools of applied Political Economy Analysis. Many government agencies around the world require such analysis before considering policy change or adopting new strategies. As a result of this course, students will have a framework to situate policy interventions within the context of the political and economic processes in a society including the incentives, relationships, distribution, and contests of power between groups and individuals. Such analysis supports more politically feasible and thus, more effective policy strategies by setting more realistic expectations of what can be achieved, over what time frame, with consideration of risk. Institutions matter for development, but Political Economy Analysis tells us how they matter and shows us what needs to be done in order to overcome obstacles to change. By helping to identify these incentives, this course provides a more grounded, informed approach to policy design. This structured analytical approach helps policymakers examine political, economic, and social forces that influence policy outcomes around the world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies

PIA 2530 - GENDER EQUALITY AND THE UNITED NATIONS

Minimum Credits: 1
Maximum Credits: 1
In this year-long transdisciplinary course, students will collaborate directly with the United Nations Development Programme (UNDP) and other partner institutions on policy-relevant research on gender inequality in public institutions worldwide. Students will develop their skills in data collection, analysis, and reporting. Students' research will feed into an ongoing Pitt-UNDP collaboration and support gender equality as part of the United Nations 2030 Agenda for Sustainable Development. Students will have professional opportunities to interact with policymakers and practitioners at international and national levels, and are expected to present their research at the UN Secretariat in New York City during the spring semester. This course operates in conjunction with an internship program that places select students as junior researchers in partner institutions during the summer following the course.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2531 - HUMAN RIGHTS, THE SDGS AND DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course explores how human rights principles and practices are reshaping development practice, and how this is reflected in the Sustainable Development Goals (SDGs). We will analyze how the SDGs are affecting governments' development policies, how NGOs and social movements are engaging with the goals, and critically analyze the value and impact of global goal-setting. We will introduce skills and methods that practitioners are using to implement and monitor SDG targets and indicators and human rights principles; communication strategies used in promoting the SDGs; and the prospects of the goals in the context of the Covid-19 pandemic and the current trend toward authoritarian populist governments. Students will focus on an issue area or geographic region of interest to them, and develop expertise in an area such as women's land rights, the decent work agenda, income inequality, universal health coverage, or sexual and reproductive health rights.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2532 - GLOBAL ENERGY POLICY

Minimum Credits: 3
Maximum Credits: 3
This course addresses global energy issues. First, we examine energy sources globally including oil, gas, nuclear, hydro, biofuels, solar and wind. Specifically, we explore methods to estimate the benefits and costs/risks (economic, environmental, health, political) from various energy sources. We discuss how market forces, market failures, lobbying, and government policies influence the gaps between private and social costs of energy. Second, we examine incentive policies for the adoption of renewable energy (e.g. carbon pricing, cap & trade, renewable portfolio standards, pull-push innovation policies), barriers to their adoption (infrastructure, storage, and intermittency), and overall benefits from restructuring towards a greener economy. Third, we address incentive policies to increase energy efficiency (e.g. fuel economy standards, rebates, leed certification). Fourth, we examine the role of international trade, investment, technology transfer and climate policy in increasing energy efficiency and renewable energy worldwide. Fifth, we examine the geopolitics of energy sources (e.g. US, EU/Russia, China/Africa, Central Asia & Middle East). We discuss the growing recognition that investment in energy efficiency and renewable energy can mitigate national security concerns stemming from fossil fuel dependency.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2533 - SOCIAL INNOVATION FOR INTERNATIONAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course explores social innovation in international development across global regions. It examines the roles of governments, NGOs, businesses, and grassroots movements in creating innovative and appropriate solutions to pressing social, economic, and environmental challenges in diverse regional contexts, with particular emphasis on the roles of public policy. Using case studies, class discussion, lectures, hands- on activities and research, students will critically analyze the factors that facilitate or hinder social innovation and assess its impact on development outcomes. Additionally, students will acquire practical skills in identifying social problems and unmet needs, designing and assessing social innovations that are sustainable and scalable, and communicating with a multi-stakeholder audience. The topics addressed include affordable clean energy, micro-finance, mobile banking, open-source pharma, vocational education for illiterate women, urban innovation, crowdsourced crisis mapping, reforestation, and digital democracy, as well as topics selected by students. The course concludes with a forward-looking discussion of emerging trends, global governance, and the role of AI and technology in shaping the future of social innovation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2543 - POLITICS OF DEVELOPING COUNTRIES: DOMESTIC & INTERNATIONAL

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to competing conceptions and theories of development in the post-WWII period. Using various lenses (post-colonialism, liberalism feminism) and perspectives (international and domestic), we will explore the socio-economic and political issues that developing nations face and the various positions taken by global actors. We will critically evaluate dominant concepts, measures, and theories of development of three major regions: the Middle East and North Africa, Sub-Saharan Africa and Southeast Asia. We will examine the domestic policies and political institutions underlying the policy process, and the role played by groups with diverse policy interests. Additionally, we will explore the central features and limitations of existing international and regional political and economic structures intended to enhance political and economic development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2544 - CENTRAL EURASIA: POLITICAL ECONOMY AND GEOPOLITICS

Minimum Credits: 3
Maximum Credits: 3
The Political Economy of Central Eurasia provides an overview of the pressing security, geopolitical, and development issues in one of the most important regions in the world. This course will cover histories as well as key developments in the five Central Asian Republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), Afghanistan, Iran, and Western China (Xinjiang). It will also focus on global strategy in Central Eurasia analyzing foreign policy objectives of countries such as the US, China, and Russia. This class will prepare students to analyze and address key foreign policy challenges in this strategically vital region.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2547 - ENVIRONMENT, SOCIETY, & POLICY IN GLOBAL APPALACHIA MICRO COURSE

Minimum Credits: 1
Maximum Credits: 1
The political definition of Appalachia, which spans 13 states from southern New York to Northern Mississippi, dates to the early 1960s, when regional governors encouraged the Kennedy and Johnson administrations to assist their mountain counties, where one in three residents lived in poverty. Since then, much of the study of the region has been inward-looking, prioritizing local and regional perspectives. This micro-course looks outward to examine the region from a global lens. It will encourage students to consider how local events and decisions often have global repercussions, and vice versa. The course will also take a comparative approach and discuss other regions of the world that have developed in a similar trajectory as Appalachia. A comparative approach creates the opportunity to analyze similar regions that have experienced divestment as a result of exploitative industries and communities that have shown resistance to the forces of global extractive capitalism. In Spring 2025, the course will use a global framework to examine and analyze the interconnections between environment, society, and policy in Appalachia. Over the course of three days, information on these topics will be presented to students by multi-disciplinary experts and leaders in their fields. Students will also engage with one another and the instructors through activity sessions which will ask students to apply course concepts to analyze case studies, construct mock policy debates, and identify certain policy problems and stakeholders in the region.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad LG/SNC Basis

PIA 2550 - ECON MEETS CS: MECHANISM DESIGN AND APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
Mechanism design is "reverse game theory": instead of starting with a game and solving for the outcome, we start from a desired outcome (for example, social welfare maximization) and design an institution / mechanism that would accomplish it. While this branch of economics has much policy relevance, the methods of analysis are fairly abstract and results are restricted to certain environments.

Computer science approaches, such as measures of complexity, methods of computing approximations and the use of simulations, provide a necessary bridge between mechanism design in theory and its implementation in practice. As examples of applications we will discuss Matching and Market Design, which is one of the most practical fields in Economics, with real world applications in school choice, organ exchange, doctor-hospital match, among many others.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2551 - GENDER AND DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course seeks to critically examine how development processes affect women, men and gender relations. By doing so it aims to contribute to an ongoing policy discussion on the meaning and operationalization of diverse, inclusive, and equitable development. The course begins with theoretical approaches to gender and development, development economics, feminist critiques, and their methodological implications for mainstreaming gender into development practice. In the second half, the course studies how gender relations are impacted by social change in the form of positive or negative development. In this policy applied section, the discussions focus on a set of policy issues including reproductive health, migration, climate change, ITCs, work, citizenship and leadership. The overarching goal in both sections is to encourage students to review and debate what we already know and what we still don't know about policies designed to close gender gaps globally. The course concludes with a discussion in the form of a mini-conference on the progress record of the United Nation's 2030 Agenda for Sustainable Development
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Gender, Sexuality & Women's St, Global Studies

PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course examines the management of organizations working in international development and humanitarian assistance with a focus on NGO management. This course has three key objectives. The first is to introduce students to the work and environment faced by development organizations. The second is to provide theoretical and practical frameworks for the analysis of management challenges and generation of relevant recommendations. Big questions we investigate include: why are NGOs fundamental for development? How can NGOs improve their accountability and effectiveness? How to best approach a complex decision problem? What are the key opportunities and dangers in organizational "partnerships" between governments and NGOs, northern and southern organizations, etc.? How can NGOs leverage community participation? The third objective is to help students develop transferable management skills, which will help them get a job in international development. Assignments emphasize primary research and focus on building critical writing, analytical, and presentation skills that demonstrate a broad understanding of the key management challenges facing development organizations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2553 - GLOBAL HEALTH POLICY

Minimum Credits: 3
Maximum Credits: 3
The Sustainable Development Goals prioritize investments in human health. We study policy instruments to support the innovation, access, and affordability of medicines and vaccines in developed and developing countries. These include pull mechanisms (e.g., advanced purchase commitments), push mechanisms (government funding for R&D), and public-private partnerships. We explore the national and international responses to COVID-19 to understand the need for and barriers to global pandemic preparedness. We explore how World Trade Organization provisions and bilateral agreements between US/EU and developing countries balance (or fail to) medical innovation

with access and affordability to these innovations. We delve into policies to address the public health impacts of industrial agriculture that accelerates antibiotic resistance. We examine how international cooperation has assisted or hindered responses to existing challenges (e.g., addressing maternal/child mortality, AIDs, malaria, neglected tropical diseases, diarrheal diseases). Finally, we consider the global health challenges resulting from the climate emergency.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

PIA 2563 - PLANNING & DESIGNING DEVELOPMENT PROJECTS

Minimum Credits: 3
Maximum Credits: 3
This skills-based course is designed for students who are interested in working on policy and programmatic issues impacting local, national and international development agendas. In an effort to addressing those issues, the course utilizes the foundational steps of project design, starting with the identification of a main problem, moving to planning of implementation, to monitoring and evaluation, and it concludes with a session on impact evaluation assessment design. The course will give students a hands-on experience and an opportunity to develop their project ideas into implementable, deliverable and presentable professional outputs. Only requirements are a specific and real-life issue/problem, curiosity for solutions, and careful and active engagement with materials presented. Each class meeting proceeds in two parts: a substantive lecture and discussion based on assigned materials, and workshop on individual projects. From the moment the problem is identified until it is solved, every project goes through a series of design phases known as the project cycle. Each phase in the project cycle is crucial and needs to be fully completed and perfected before moving onto the next phase. Mimicking that real professional experience, the course is organized around the phases of the project cycle. At the completion of the semester, students will become both fully versed in Project Cycle Management (PCM is the results-based decision-making tool used widely in development focused organizations at all levels) and will have had opportunity to apply PCM tools to their own project ideas. Students will have a complete project proposal that can be submitted for fundraising purposes and can be used for a graduation portfolio showcasing their applied training to prospective employers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2567 - TECHNICAL ASSISTANCE AND PROGRAM DESIGN

Minimum Credits: 3
Maximum Credits: 3
Instructor Permission is required. Field based learning and cultural emersion are vital to gaining the skills necessary to have successful careers in international development and human security. With this in mind, the African Studies Program, the School of Education and the Law School are collaborating to expand the University of Pittsburgh field-based activities programs into a full-fledged learning research seminar which will now be available for all of East Africa and in other parts of Africa, Asia and Central and South America for students who are interested. Over several phases, taking place in Pittsburgh and overseas, students will familiarize themselves with relevant literature, design a project for a research activity, an evaluation, or an organizational development opportunity in relation to the proposed project, and finally compile a policy/research paper on the project as part of a post-travel independent study. Students will work with organizations dealing with issues of gender violence, homeless and other vulnerable youth, social entrepreneurialism and income generation, as well as other topics developed by students. This course will not only increase the experiential learning profile of the university and its students but will be a continuing mechanism for increasing the partnerships and network between Pitt academic centers and alumni and development organizations in East Africa and other parts of the world. Graduate and upper-level undergraduate students (by invitation) will participate in a Pittsburgh infield-based learning research seminar for their overseas work in the summer of 2019. Their research project will be due on August 31. Students can register for the course either in the Spring semester or the Fall semester of 2019. The instructor will work independently with each person individually to develop their program. There will be three phases to the course/activity (depending on whether course credit is sought.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2574 - AFRICAN DEVELOPMENT SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course explores development issues in Sub-Saharan Africa. It facilitates multidimensional considerations of these issues and examines the very meaning of "development" as a concept for Africa. Historical and contemporary paths of development in Africa are examined. Important analytical focuses of the course include the roles of both internal and external factors influencing development policy and management. This includes African regional organizations, nation states, and traditional societies; external factors such as, international regimes; as well as European, North American, Middle Eastern, and Asian state participants in African development activities. Students completing this course are expected to have: a better background for understanding Africa, African peoples and civilizations; knowledge of the social and cultural issues affecting development in Africa; alternative frames of reference for interpreting information about Africa; appreciation of various challenges facing Africa; and the capacity to develop and defend a well-designed policy position on an African development issue. The course is divided into: part 1 (the underdevelopment of Africa: scale and sources); part 2 (the non-development of Africa, 1960-present); part 3 (contemporary approaches to African development); part 4 (emerging challenges and opportunities for African development); and part 5 (African policy debates: where do we go from here?)
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: African Studies

PIA 2582 - LATIN AMERICAN POLITICS

Minimum Credits: 3
Maximum Credits: 3
This course is a reading seminar designed to introduce graduate students to the basic international literature on political questions and problems in the Latin American context. The course will focus primarily on the topics of 'regime transition' in Latin America.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Latin American Studies

PIA 2584 - POLITICAL ECONOMY OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
In this class students will continue (from "economics of education") to develop techniques for economic analysis. The subject is placed in a broader intellectual and political context. Particular attention is given to critique of neoclassical economic analysis, to alternative frameworks for economic analysis, including class-conflict and institutional approaches, and the applications of economic analysis in the educational policy process.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2585 - U.S. FOREIGN ASSISTANCE AND INTERNATIONAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Why does the U.S. provide foreign assistance? How much does it cost? What does the U.S. spend foreign assistance on? What is the impact of U.S. assistance in countries around the world? This course will explore these questions and cover the way the federal budget process is supposed to work and the way it actually does work, with a specific focus on the U.S. foreign assistance budget implemented by the U.S. Department of State and U.S. Agency for International Development. The course will also examine the decision making process for allocating foreign assistance, including its impact on benefiting countries; its influence on sectoral objectives (such as democracy or global health); and its effect on U.S. policy. Through country and sector case studies, students will gain practical expertise in analyzing country

and sectoral contexts and making recommendations on foreign assistance to senior leaders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2587 - ECONOMICS OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This class introduces students to the economic analysis of education, with particular emphasis given to the economics of education in developing countries. Among the topics to be covered are: human capital theory, educational production functions, rate of return analysis, various issues in educational policy and finance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2590 - LOCAL AND GLOBAL FOOD POLICY & SUSTAINABILITY

Minimum Credits: 3
Maximum Credits: 3
Introduction to the dynamics of world production & trade in foodstuffs & agricultural produce. Emphasis will be placed on using the tools of economic analysis to examine the evolution of agricultural sector with economic development, including the issues of agricultural self-sufficiency, & environmental degradation, the role of technical change in agricultural production, food security, famines, & food aid, the impact of economic policies on agricultural growth and performance, the institutions and mechanisms involved in international trade in agricultural products.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2602 - EVOLVING GLOBAL SECURITY LANDSCAPE (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
U.S. National security strategy and policy face great challenges in the 21st century. Political, military, legal, and economic factors will affect both strategy and policy. This course will assess those factors and their effects on possible solutions to those challenges. The course approaches national security from both military and government-wide perspectives and addresses the executive branch, the congressional, and the global environments. The professor will emphasize a practitioner's approach to issues and will use lectures, readings and original source documents, class discussions, and guest speakers from the national security community. Students will deliver short written papers, mostly in the form of one-page memos, and will undertake group assignments leading to oral class presentations. The primary focus is on contemporary issues and events, but the instructive value of history is also prominent throughout the course. For students who wish to take this course, prior knowledge of or study in national security is strongly recommended but not required. This course will help students with foreign policy and security studies concentrations prepare for the evolution and challenges of coming years.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2603 - DEVELOPMENT IN AFRICA: CHALLENGES, CONSTRAINTS AND STRATEGIES (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
A half-century after most African nations gained their independence, the continent continues to be a disproportionate generator of conflict

and instability. Simultaneously its global importance grows, due to external preoccupations with energy security, anti-terrorism efforts, emigration, and disease. Despite these complex dynamics, the international community's engagement with Africa continues to be largely focused on crisis management and humanitarian assistance. This course will explore the underlying reasons: historic, political, economic and cultural -- for Africa's chronic weakness and dependency, as well as the West's often myopic response to these pressing problems. It will take a close look at some of the most destructive developments in the post-colonial period, including state collapse, genocide, and HIV/AIDS. We will then seek to better understand the manifestations of crisis in Africa and how to more effectively tailor our responses. To that end, we will delve into the world of humanitarianism, from its traditional charitable manifestations to more recent trends such as humanitarian intervention, r2p, and reconciliation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs
Course Attributes: African Studies

PIA 2604 - GEOPOLITICS OF SOUTH ASIA (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
This course will look at the region against the historical backdrop of its relations with the world. But the major focus will be on the dramatic developments within South Asia during and since the 90's and the region's evolving relations with the US, China, Russia, Japan, Iran the middle East and central Asia. Especially how the US is helping India in realizing its aspirations for a big power status, and a factor of stability in the region, and Pakistan in its salvation from chronic weakness by building its capacity to reform itself. Pakistan, both as a partner and potential target, in the war against religious extremism and terrorism, has become a major foreign policy challenge for the us and is likely to occupy an important place in the national security and foreign interests of America for some time. The course will look at these threats and challenges specially the US war against extremism, more particularly the Taliban and Al Gaeda, being fought with the help of two critical allies, Pakistan and Afghanistan.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2606 - WASHINGTON PRACTICUM (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
The Washington practicum is an opportunity for D.C. semester students to combine the practical training and professional development of an internship with your graduate coursework. The practicum encourages you to develop in-depth knowledge of an organization and its relationship to certain issues and policy process, to define your own career aspirations, and to network in a professional setting. Students will prepare a job description with your internship supervisor, complete an institutional analysis of the internship site, and submit a policy memo. Your grade will be based on these three assignments.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2607 - STATE CRAFT AND SMART POWER IN THE DIGITAL ERA (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
This course examines new approaches to the practice of statecraft in an era of rapid global change. Globalization, including accelerating digital communication, is upsetting traditional international order and institutions, and changing the pace and intensity of decision making. Nation-state governments, while still the primary actors, must adjust to new sub-national, regional and transitional forces and players in a far more complex global arena. As digital communication brings publics into politics and policy far more than ever before, this course helps participants better understand and prepare for these and other current challenges for smart power. Features guided classroom discussion, presentations by officials and outside experts, and in-class exercises such as a resource allocation/strategic planning session

(somewhat akin to one of the major elements of the PMF and FSO oral exams) as well as policy simulations. The course's emphasis on policy, institutional and professional concerns, will be particularly relevant to those seeking employment in public service, NGOs, public policy think tanks and consulting firms.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2609 - GLOBAL SUSTAINABILITY & DEVELOPMENT: POLICY IMPACT AT THE NATIONAL LEVEL

Minimum Credits: 3
Maximum Credits: 3
This course offers an overview of the concept of sustainability and its application in economic, environmental, social and development spheres from the perspective of policy practitioners. It examines the issue through the perspective of three planetary ecosystems - water, land and air - and explores associated public policy issues - urbanization, globalization, depletion of ocean resources, land-based sources of marine pollution, deforestation, climate change and national security. Drawing on a policy thinking tool developed for this class, the seminar will assess the evolution of international legal frameworks and related concepts since 1970 and apply the tool to identifying and analyzing current and future policy options at the local, state, national and global level. This course provides business and finance, economic development, national security as well as environmental majors a command of key concepts, analytic tools, and professional literacy for addressing sustainability issues across a range of disciplines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs
Course Attributes: Asian Studies

PIA 2610 - AFRICAN DEVELOPMENT: CHALLENGES, CONSTRAINTS, & STRATEGIES, WASHINGTON, D.C.

Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2611 - CHALLENGES TO CRISIS AND DISASTER MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2614 - LOBBYING AND ADVOCACY (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
In this course, students will learn core knowledge and skills required for lobbying and advocacy work. Students will meet with guest speakers and mentors who are lobbyists, will practice lobbying skills through exercises and assignments, and will produce policy writing samples. This course will focus primarily on lobbying in the federal legislative context; it will also address the federal agency context to a lesser extent.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2615 - POLICY-MAKING (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the processes of federal law-making and public policy development. A primary purpose of the seminar is to enrich students' understanding of law-making and policy development by focusing on a series of case studies concerning particular laws and policies and introducing information about the relevant political dynamics, bureaucratic systems, and other real-world factors. Thus, in addition to studying written materials, students will talk with Washington-based attorneys and others who are experts in the relevant fields.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2616 - WHO WILL RULE THE 21ST CENTURY? WASHINGTON, DC

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2617 - ISSUES IN PUBLIC DIPLOMACY DC SEMESTER

Minimum Credits: 3
Maximum Credits: 3
This course will provide a deep dive into the origins of information statecraft and explore case studies to provide a detailed understanding of the scope, sophistication, and significance of the geopolitics of information. Building on key theoretical models, including markets for loyalties, networks, and game theory, this course will provide an analytic framework for understanding the range of information statecraft activities, as well as the key variables likely to influence the success or failure of a public diplomacy campaign or program. Monitoring and evaluation techniques and best practices will also be covered, as well as the foundations of digital analytics and metrics. Classes will feature occasional guest speakers from the State Department, the Department of Defense, and the NGO community. At the end of the course, students will be subject matter experts on public diplomacy and global media strategy, the information statecraft toolkit, and the significance of these tools and tactics in international affairs.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2618 - FRONTIER OF FINANCE DIGITAL CURRENCIES SECURITY AND DEVELOPMENT DC SEMESTER

Minimum Credits: 3
Maximum Credits: 3
This new course will focus on how the global financial revolution underway, the Fintech revolution, can help lead to sustained, inclusive and strong growth and enhance security, as elaborated in the UN's Sustainable Development Goals. The course will explore cutting edge themes at the intersection of finance, technology, policy, development and security, as well as cross-border dimensions. It will not be narrowly focused on technology, and is appropriate for students pursuing development, economic and security fields.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2619 - CURRENT ISSUES IN US LATIN AMERICAN RELATIONS

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the contemporary relationship between the U.S. and Latin America, offering the opportunity to discuss US policy in the region with current and former government officials, scholars, and non-governmental organization representatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2620 - RISING CHINA AND CHALLENGES TO THE GLOBAL ORDER (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2621 - CONFLICT AND SECURITY IN CYBER SPACE (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2622 - CENTRAL CHALLENGES IN NATIONAL SECURITY LAW AND POLICY(WASHINGTON DC)

Minimum Credits: 3
Maximum Credits: 3
Using a series of case study modules that jump off the front page, the course examines critically the hardest U.S. national security law and policy challenges of the decades ahead. The case studies range from decisions to intervene and what laws apply if we do intervene in humanitarian crises, insurrections, or civil wars, and what laws should govern when we are involved; dealing with the Arab Spring; dealing with Iran and North Korea related to nuclear weapons; anticipating and controlling new technologies in warfare and surveillance; managing civil/military relations in protecting the homeland; countering the cyber threats to our infrastructure and cyber-attacks waged by nation states, such as China and Russia; managing public health as a national security issue; resource depletion and global warming as a national security issue. Students will learn to integrate legal and policy analyses and will gain lessons in how policy is made and implemented with significant legal guidance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2623 - RUSSIA AND POST-SOVIET POLITICS

Minimum Credits: 3
Maximum Credits: 3
Russia and Post-Soviet Politics. A survey of the major issues in contemporary politics in the post-Soviet region in general, and Russia in particular. The seminar will briefly examine the pre-Soviet and Soviet period, but the primary focus of the course is on developments since 1991. Topics to be examined include the Soviet collapse and transition, the nature of Putinism as a political and economic system, broader patterns of reform in the post-Soviet space, and Russian foreign and security policy, including US-Russian relations. We will meet with multiple guests from the DC area community of Russia scholars and practitioners. We also will watch two documentary films, one on social change and the transition from communism in Russia and one on Putin's motivations for interference in the US 2016 elections.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2624 - FROM FRAGILITY TO RESILIENCE:NEW APPROACHES TO GLOBAL DEV DCSEMESTER

Minimum Credits: 3
Maximum Credits: 3
While some countries move up the development ladder on the way to greater economic growth and stability, others struggle with cyclical fragility and the negative repercussions that come with it. The path from fragility to resilience is rarely linear, requiring a mix of security, stabilization, humanitarian aid, and development assistance. This course will examine the non-kinetic tools deployed in fragile states, examining their utility and effectiveness in specific country and regional cases.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2625 - STRATEGIC FORESIGHT IN INTERNATIONAL RELATIONS DC SEMESTER

Minimum Credits: 3
Maximum Credits: 3
This course will provide graduate students with a structured approach to thinking about the future of the international environment. It is a foundation in qualitative foresight methodologies with direct application to national or organizational strategic planning. It also provides a tour du horizon of the global trends shaping the world 10-20 years into the future and beyond. Through real-world case studies and classroom exercises, the course exposes students to the practical application of foresight methodologies to policymaking and resource decision-making. These methodologies are routinely used by strategic planners in leading global intelligence organizations, national security ministries, multinational corporations, and non-governmental organizations. Strategic foresight is an under-appreciated "hard" international relations skillset, particularly useful in navigating the profound global transitions underway that affect risk and competitiveness for countries, companies, and individuals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2626 - CRYPTO BROS & DOGE COIN

Minimum Credits: 3
Maximum Credits: 3
Course taught by Maxwell in Washington.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2627 - EMERGING CHALLENGE OF DISRUPTIVE TECHNOLOGIES (WASHINGTON, DC)

Minimum Credits: 3
Maximum Credits: 3
This course will examine how disruptive technology may impact a nation's approach toward its use of diplomacy, information, military, and economic power to advance national objectives. Students will investigate key concepts and impediments to the adoption of technology by organizations and individuals, make educated predictions regarding the role technology could play in competition in the international arena, and assess ethical factors involved in the use of technology, both old and new.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2628 - RISING ATHENS DEFENSE DIPLOMACY AND DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3

This course uses the deity Athena (the goddess of wisdom, war, and strategy) as a heuristic in order to critically engage the structure and substance of U.S. national security policy. Particularly after 9/11, U.S. national security and foreign policy has been dominated by the Department of Defense. Arguably Ares, the god of war and tactics, has been ascendant. Yet the U.S. has not been winning wars and it remains underprepared to use non-military instruments to achieve strategic success. The ancient Greeks knew that militarism without strategy was a losing proposition, which is why Athena - the multifaceted female god of art, war, empathy, protection, architecture and many other things besides - was the deity for victory. Over the duration of the class, students will explore national security policy through the lenses of gender, creativity, storytelling, strategic empathy, and interagency structures in order to tease out how the U.S. might build better national security strategies and policies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2629 - DISINFORMATION AND INFLUENCE IN THE DIGITAL AGE (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
This course will explore how global actors have weaponized false or misleading information to shape public perceptions, achieve strategic geopolitical goals, make money, and pollute the information environment. Students will study the new tools being used by state and non-state actors and examine the reach/effectiveness of disinformation campaigns in shaping public dialogue. This course will further explore how the practice of disinformation has changed in the information age, how both state and non-state actors weaponize technology, social networks, and other tools for dissemination, and what makes human beings and societies vulnerable to information operations. In addition to covering state-sponsored information operations, this course will also dive into financially motivated operations, the role of the media and state media, and the inadvertent spread of viral false information, differentiating between different types of campaigns. Additionally, students will have the opportunity to study how to detect these campaigns using open-source investigative techniques and discuss the difficulties of attribution particular to the information operations space. Finally, this course will explore regulatory, diplomatic, technological, and societal mitigations and interventions aimed at protecting the information environment, assessing their effectiveness.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2630 - 21ST CENTURY STRATEGY (WASHINGTON DC)

Minimum Credits: 3
Maximum Credits: 3
The art of war and grand strategy is often invoked yet rarely understood, resulting in catastrophe. Too often policy makers, members of congress, academics, think tankers, journalists, pundits and even flag officers discuss strategy but remain ignorant of the concept. Consequently, strategy is frequently confused with tactics, bureaucracy, academic theory and other things - all to ruinous effect - as evidenced in Vietnam, Iraq and Afghanistan. You will learn universal strategies for the strong, the weak and most things in between. We will examine the ideas of Sun Tzu, Kautilya, Jomini, Clausewitz, Mao, T.E. Lawrence, Galula and other scholar-practitioners. Case studies include the Peloponnesian War, American Revolution, 2006 Lebanon War and African warlords. The course will teach you how to think strategically and builds on what senior U.S. military officers learn at war colleges, taught by a professor at such an institution. However, we will probe much deeper than what is usually taught at war colleges and civilian institutions so that you are equipped to fight and win 21st century wars.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2631 - HUMAN RIGHTS, NATIONAL SECURITY & AMERICAN VALUES

Minimum Credits: 3
Maximum Credits: 3
This master's seminar focuses on human rights challenges, considerations and realities across the globe as they intersect with American values and United States national security. The course examines human rights as a topic, including key documents, processes and stakeholders, in addition to the way human rights plays a role in foreign policy through both public and private sector decision-making. Specific topic areas covered will include human rights institutions and documents; new trends and considerations in human rights including

technology and human rights; human rights in the context of both inter- and intra-state conflict; geopolitical competition and human rights; human rights and identity groups; business and human rights; and human rights as an element of U.S. foreign policy. Students will benefit from frequent guest lectures from across the Washington policymaking community and discussions with experts from the Center for Strategic and International Studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2632 - NEGOTIATING THROUGH GLOBAL CHANGE

Minimum Credits: 3
Maximum Credits: 3
Every conflict ends in a negotiated settlement; it may not be peace, but it is a political solution that allows parties to move forward. This course exposes students to business and policymaking concepts of negotiation, using case studies from recent history and examining current affairs. Students will apply the principles of negotiations in class through role-playing exercises and will meet with negotiators who have served in some of the world's most intractable conflicts, including the Iran nuclear deal, Middle East peace process, and US-China-Taiwan relations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2634 - SPEECH WRITING & EFFECTIVE COMMUNICATING FOR POLICY PRACTITIONERS (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
How do you write a great speech that has impact in the international arena or helps move the policy agenda forward? From research to rhetoric, Speechwriting and Effective Communicating for Policy Practitioners" will address that question and explore a range of techniques that speechwriters use to create memorable messages for the international stage. This course will be taught fully online in Fall 2021 by Dr. Jamie Shea, former Deputy Assistant Secretary General for Emerging Security Challenges as well as the former NATO spokesperson. During the course you will study historic and contemporary speeches tied to significant international issues as well as learn how to craft and critique the language of international affairs. There will be regular writing assignments as well as, reading, listening assignments, and discussion, as well as guest lectures from seasoned practitioners. In the end you will understand how foreign policy ideas are communicated and perhaps find a speechwriting voice of your own. Dr. Shea will teach the course live from Brussels, BE.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2635 - CONFLICT IN SUB-SAHARAN AFRICA: CAUSES AND CURES (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
This course will be an overview of security issues from African and global perspectives. The course will begin with a historical look at colonial powers in Africa, the dynamics of the Cold War and how it shaped the wars of decolonization and the establishment of African liberation movements. The course will then address the fate of the post-colonial states and the emergence of US security assistance after the end of the Cold War as well as the emergence of transnational threats in the region.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2636 - CONFLICT AND MIGRATION (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3

: This course will explore the juncture of migration and conflict. Using a case-study approach the course will delve into several recent conflicts that have had migration emergencies significant enough to have international impact. These will include the recent and persistent conflict in Syria, the end of conflict in Afghanistan, the migration challenge in Central America, and migration in the Sahel toward Europe. This course will also look at the migration challenges from a U.S. perspective and provide students an opportunity consider the laws, history, and reasons behind U.S. immigration policy. The course will be telescopic, focusing first on older migrations while quickly turning to more recent and even current events.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2637 - US SECURITY CHALLENGES IN THE MIDDLE EAST (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
This course will explore historical, current, and anticipated future US security challenges in the Middle East, exploring how policy makers have understood and understand threats and their options to address them. We will analyze how the US sets goals for its regional actions, how its actions in the Middle East fit into a broader global strategy, and how different global contexts shape different US responses. This course will have a policy focus, and writing assignments will develop the ability to write short, forceful and effective memoranda.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2638 - TRANSATLANTIC RELATIONS IN A MULTI-POLAR WORLD(WASHINGTON DC)

Minimum Credits: 3
Maximum Credits: 3
The Transatlantic Relationship, formally embodied in the North Atlantic Treaty Organization (NATO), has been a cornerstone of international security since the end of the Second World War. NATO helped to ensure that a war between the Soviet Union and the United States did not occur. It helped to pacify post-World War II Europe, to reduce fear amongst European states and to enable European integration and the eventual development of the European Union. Several non-democratic allies transitioned into liberal democracies, arguably due in part to their NATO membership. Following the end of the Cold War and dissolution of the Soviet Union NATO facilitated the transition to democracy in eastern Europe. The alliance was, and seemingly remains, the main forum for Europe, Canada and the United States to discuss the most pressing global security concerns. But animosity during the administration of George W. Bush, apathy during the Presidency of Barrack Obama and downright hostility from the Trump White House has left NATO shaken and weak. Europeans, meanwhile, failed to invest in NATO following the end of the Cold War and are increasingly torn between NATO and the EU's European Security and Defense Policy (ESDP). This seminar explores the historic foundations of NATO and dissects current issues such as the challenge from Putin's Russia, rising illiberalism in Europe, populism in the US and EU, migration pressures, defense industrial issues, terrorism and the role of China in Europe and the wider world. The course finishes by exploring possible future developments of what has been known as the "most successful alliance in history" in an emergent era of multipolarity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2639 - BIG DATA AND OPEN-SOURCE INFORMATION (WASHINGTON DC)

Minimum Credits: 3
Maximum Credits: 3
This course will provide graduate students with a structured analytic approach to assess national security and foreign policy risks and trends. The course will use case studies and hands-on exercises to demonstrate the practical application of fundamental structured analytic techniques and the use of diverse information sets to policymaking and resource decision-making. These techniques are used by strategic planners in leading global intelligence organizations, national security bureaucracies, multinational corporations, and non-governmental organizations as part of their strategic foresight and scenario generation activities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2640 - HUMANITARIAN ACTION: CHALLENGES, RESPONSES, RESULTS (WASHINGTON DC)

Minimum Credits: 3
Maximum Credits: 3
This course will address major humanitarian challenges worldwide from the late 20th and early 21st centuries. This will include disasters caused by nature and man: conflicts and major economic stress. Challenges for women, children, refugees, displaced people. Involvement of government, UN agencies, NGO's, militaries, donors, press, and others. Students will consider, through discussion and case study review, the interplay between humanitarian ideals and practice, the varieties of humanitarian disasters, and consider the roles played by actors (donor capitals, NGOs, the international community, etc.) as well as preparedness and self-help planning by nations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2641 - POLITICS, POWER, & GLOBAL SPORT (WASHINGTON DC)

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the intersections of sports, politics, and society in an international context. Combining examinations of contemporary topics and historical case studies, the course addresses the enduring and complex links between sport and major issues in global affairs including cultural diplomacy, nationalism, and human rights.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2642 - ECONOMIC STATECRAFT (WASHINGTON DC)

Minimum Credits: 3
Maximum Credits: 3
As the crisis in Ukraine makes clear, some national security challenges require the adept use of the tools of economic statecraft. This course examines the mechanisms, operations, and outcomes of these economic tools. The course focuses on tools designed to coerce change and those offered as incentives and positive inducements. Case studies may also address trade barriers and preferences, financial sanctions, export controls and investment restrictions, foreign lending, and development aid.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2643 - NAVIGATING THE NATIONAL SECURITY BUREAUCRACY WASHINGTON DC

Minimum Credits: 3
Maximum Credits: 3
Navigating the National Security Bureaucracy: This case-study based course will examine the nature of the defense and national security bureaucracy in the United States and examine the way that senior leaders have sought to work with, thru, and around these structures to create more effective security policy. Issues that will be examined include the dynamics of civil-military relations, personnel and training, the defense acquisition process, the challenges posed by emerging technologies, and the roles that industry, Congress, and the media play in shaping these policies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2644 - FORESIGHT, INSIGHT, AND THE FICTION OF NATIONAL SECURITY (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
While old paradigms seem to be failing us in war and peace, the creative management of national security challenges are more important than ever. We require new approaches - not reading the same, old texts, or using the same, old methodologies and theories. It is primarily for this reason - the need for imaginative, strategic leaders - that this class uses fiction as the launching point for discussion. As the 9/11 Commission noted in tehir report, "The most important failure was one of imagination." Students in this course will use fiction as a springboard will hone several key student skills including creativity, the ability to better empathize with complex situations and potential opponents, uncerstanding unfamiliar or strange cultures in order to consider unseen challenges and potential solutions and, grappling with ambiguity, contradictions, complexity, and ambivalence - entertaining for fiction but cirtical when considering the real world. Perhaps most importantly, students will hone their ability to ask the right questions - a prerequisite to finding least bad options, which is increasingly their job as they move into higher leadership positions.Finally, students will emerge from this course changed readers - better able to deconstruct (and reconstruct) text, think critically about what is read, and know when, and when not to, apply these frameworks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2645 - NATURAL SECURITY - DC SEMESTER

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the role of natural resources/environment/climate change in conflict and security, including its foundational role in economic and military security, from driving conflict and migration to being used as a tool in resolving conflict and peacebuilding.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2646 - SPACE, POLICY & NATIONAL SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course is offered by the Maxwell School. Dr. Kun-Chin Lin.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2681 - FRONTIER OF FINANCE (WASHINGTON DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
The course will focus on the fintech revolution under way and what it means for sustainable development and national security globally. It will explore cutting edge themes at the intersection of finance, technology, policy and development, as well as their cross-border dimensions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2684 - CONGRESS AND THE MAKING OF U.S. FOREIGN POLICY - DC SEMESTER

Minimum Credits: 3
Maximum Credits: 3
This course will examine the role that the United States Congress plays in the making of U.S. foreign policy whether as partners or adversaries with the White House and other Executive Branch agencies. Using historical and current case studies, this course will examine the sources and conduct as well as the actual process of making foreign policy to include addressing the political and bureaucratic dynamics shaping those decisions. Students will examine direct and indirect ways by which Congress impacts U.S. foreign policy action including the appointments clause, the approval of treaties, the authorization, and appropriations processes as well as through oversight and

investigations. Students will examine current tensions and frictions between the branches and how that impacts the way the U.S. addresses contemporary challenges. The course will include short lectures, extensive seminar discussion, and will involve significant interaction with guest speakers who have experience addressing the issues raised during the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2705 - NEIGHBORHOOD AND COMMUNITY DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
The concept of neighborhoods in cities has had many meanings and understandings over time. The neighborhood can be interpreted as a spatial, social, political, racial, ethnic, cultural or economic unit. How have urban neighborhoods changed? What has been the impact of local, state and federal policies on neighborhoods over time? What role has and does community development play in neighborhood development? How and why did some urban neighborhoods decline in the 20th century? How have urban neighborhoods revitalized? What are current impacts of the COVID19 pandemic and how are they affecting local planning? This course focuses on neighborhoods and community development largely in the North American urban context over the post-World War II period, with international comparisons. For cultural studies students, we include a dedicated focus on placemaking as a means for revitalization across city neighborhoods and international comparisons of cultural regeneration strategies, particularly in the COVID and post-COVID era. We use many examples from the Pittsburgh region, providing a wonderful source of cases for helping to advance your understanding of neighborhood and community development. The course will introduce students to the dynamics of neighborhood change, with an emphasis on equity issues explicit and implicit in cities and urban development, neighborhood data analysis and tools for analyzing neighborhood development and change, history of urban development, and policies and plans that have helped to shape and transform urban neighborhoods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Related

PIA 2710 - BUDGETING

Minimum Credits: 1
Maximum Credits: 1
This course will introduce students to the local government budgeting process. Students will learn policies and procedures for preparing and adopting operating and capital budgets. The course will also focus on revenue, expenditure, tax, debt and pension policies along with some of the budgeting challenges faced by many local governments today.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2711 - CONTRACTING

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2713 - CAMPAIGNS FOR POLICY CHANGE

Minimum Credits: 1
Maximum Credits: 1
How do you turn anger into action? Protest into progress? Interest into influence? For starters, having history, morality, well-attended marches, or even facts on your side - though helpful - is never enough. Successful campaigns and their leaders have specific strategies and tools to move the public, policies and politicians i n order to achieve their goals. This course offers an intensive, skills-based and highly interactive experience. Strategies and campaign components are drawn from the instructor's work on national and international pol icy and

political campaigns, as well as interactions with some of the biggest campaigns and best pol icy campaign professionals in the world. The instructor's campaign experience includes appearing on Fox News, speaking on N PR, testifying before the U.S. Congress, organizing rallies in D.C. and New York City, writing or appearing in: the Wall Street Journal, Associated Press, ABC News, New York Times, Bloom berg, USA Today, The Hill, San Francisco Chronicle, Huffington Post, and having blogs re-printed in many state and local newspapers. Reports authored and campaigns led by the instructor have been cited i n several books and a feature length documentary. The lectures, class participation and assignments will l cover primary elements of a campaign -- from organizing your advisors to fund raising to being a spokesperson i n the media. The instructor will l provide the process and outcomes of effective strategy development. Each course component will use actual or real-time examples of how to (and how not to) execute the resulting tactics effectively. There's tough work and enormous satisfaction that comes when you stop talking about a problem and actually want to solve it. This course will challenge - and at times entertain -students willing to quickly apply what they learn to defend policy positions and to create the plans and elements of real campaigns. The urgency and need for skilled, smart and strategic advocates to fight for the public interest and protect our democracy has never been greater.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2715 - GIS FOR PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3
A geographic information system (GIS) is a powerful tool for the public sector and used in a variety of disciplines. GIS builds on existing methods while offering new dimensions. This course provides students with a solid foundation of the principles and applications of GIS, an introduction to the desktop software ArcGIS, and demonstrates its uses in the public sectors. Students utilize ArcGIS to analyze and display spatial and demographic data. The construction of policy is then predicated on analysis. Skills learned in core courses can be brought to this course and built upon. Students have the flexibility to focus on their particular area of interest within the public sector through project work. The course is taught via lecture and hands-on experience using the ArcGIS software.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2716 - COMPARATIVE LOCAL DEVELOPMENT POLICY AND PLANNING

Minimum Credits: 1
Maximum Credits: 1
Issues of economic development, social equity and environmental sustainability are at the heart of local policy and planning, whether it is taking place in the US or in other countries. Looking at experiences in a comparative perspective, in this 1.5 credit course, students will gain a practical understanding of the commonly used tools by local governments, as well as their interaction with regional and central government actors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2717 - STRATEGIC COMMUNICATIONS

Minimum Credits: 1
Maximum Credits: 1
Understand the strategic and tactical role of the communications function within a nonprofit/NGO organization. Develop ability to analyze audiences, establish positioning, craft messaging and write a communications plan for an organization, program or initiative in the nonprofit sector. Gain contacts with working communications professionals with nonprofit/civic experience in the region.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2718 - COMPARATIVE CULTURAL REGENERATION IN PITTSBURGH, NEWCASTLE, UNITED KINGDOM AND ST. ETIENNE, FRANCE

Minimum Credits: 1
Maximum Credits: 1
Instructor permission is required. This is a course for required students who will be taking the Spring 2020 Capstone Seminar in Urban Planning and Governance: Cultural Regeneration in International Perspective. This course will review the theory and background of cultural regeneration, conduct a case study of cultural development and placemaking in Pittsburgh, and prepare background and time line for spring Capstone and field visit to Newcastle, United Kingdom, and St. Etienne, France.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2719 - APPLIED GIS IN THE LOCAL GOVERNMENT CONTEXT

Minimum Credits: 1
Maximum Credits: 1
Geographic Information Systems is evermore present in the public sphere. This course will explore various uses of GIS in local government and public policy contexts. This course is designed to succeed PIA 2715, GIS in Public Policy, and will build on and test the comprehensive techniques covered. Some GIS new skills will be introduced. We will apply spatial analysis to a variety of problems with an emphasis on the local government and community perspective. Then, we will critique our efforts with the goal of defining the best uses of GIS, and how it can be most impactful in these settings. Students must have completed PIA 2715 or its equivalent before registering for this class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PIA 2715

PIA 2720 - APPLIED GIS IN THE LOCAL GOVERNMENT

Minimum Credits: 3
Maximum Credits: 3
Geographic Information Systems is evermore present in the public sphere. This course will explore various uses of GIS in local government and public policy contexts. This course is designed to succeed PIA 2715, GIS in Public Policy, and will build on and test the comprehensive techniques covered. Some GIS new skills will be introduced. We will apply spatial analysis to a variety of problems with an emphasis on the local government and community perspective. Then, we will critique our efforts with the goal of defining the best uses of GIS, and how it can be most impactful in these settings. Students must have completed PIA 2715 or its equivalent before registering for this class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PIA 2715

PIA 2721 - BUDGETING

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to the local government budgeting process. Students will learn policies and procedures for preparing and adopting operating and capital budgets. The course will also focus on revenue, expenditure, tax, debt and pension policies along with some of the budgeting challenges faced by many local governments today.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2730 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS

Minimum Credits: 1
Maximum Credits: 1
This eight-week workshop introduces students to the focus group as a data-gathering tool and prepares them to use focus groups in their work. Critical components of the class observation of and hands-on experience with facilitating discussions, taking notes and analysis for report preparation. By the end of this workshop students are expected to describe the theoretical underpinnings and processes of focus groups; identify situations in which focus groups are an appropriate methodology; design all aspects of focus groups, including sampling and writing questions; conduct focus groups; record focus groups; and analyze and report on focus groups' data. The workshop uses lectures, discussions, and interactive exercises to familiarize students with all aspects of focus groups, including the theoretical basis of focus groups, formulating questions, recruiting participants, facilitating the discussion, taking notes, and applying the data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2732 - LOG FRAME AND DEVELOPMENT PLANNING

Minimum Credits: 1
Maximum Credits: 1
The design of an efficient and successful development project requires careful analysis and planning. The logical framework ("logframe") was designed to assist in this process. PIA 2561 Log Frame Skills will study the theory behind project design, implementation and evaluation through proper understanding of this tool. The course will use case studies and emphasize exercises in developing logframes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS

Minimum Credits: 3
Maximum Credits: 3
This course is presented in three sections. The first section concerns foundations and perspectives of sustainable development, to include human relationships with the environment; economic models of sustainability; and equity and participation in sustainability issues. The second section concerns planning and analysis for sustainability within a regional context, to include governance, planning, and assessment frameworks. The final section focuses on sustainability in practice, considering regional approaches to sustainable energy and transportation, food and water systems, green infrastructure, and innovation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: MCSI - Sustainability Related

PIA 2742 - HUMANITARIAN CRISIS

Minimum Credits: 3
Maximum Credits: 3
This course examines more than a dozen major humanitarian crises from around the world during the past 25 years. It analyzes key cross-cutting themes and how response and recovery efforts have been managed, while giving additional attention to reducing disaster risks. Through readings, class discussions and negotiation exercises we will consider the performance and respective roles of primary actors such as united nations agencies, Non-governmental Organizations (NGO's), international organizations, military forces and the official authorities of affected countries. The course has a strong experiential emphasis as reflected by visiting speakers with first-hand field experience, and contact with disaster management graduate students and practitioners in other countries. Students will participate in three simulated negotiations by agencies working in Haiti, Darfur, and Pakistan. They will also work together in comparative research teams,

engaging with selected overseas partners, and prepare a joint presentation. Two short papers also will be assigned. Broader themes will include the role of leadership, ethical dilemmas, state-NGO-military relations, policy advocacy by NGOs, the growth of local and national capabilities, the evolution of the international system of humanitarian response, and programmatic ideals such as 'do no harm' and 'disaster risk reduction'. By the end of the course, participants will acquire a deeper understanding of political, military, and humanitarian responses to major humanitarian crises, as well as current initiatives that seek to reduce people's exposure to future threats. This fifteen week course is designed for graduate students interested in working in humanitarian or international crisis activities, whether on behalf of host governments, institutional donors, civilian international or local agencies, military forces, or the media.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2743 - URBAN AND LOCAL POLICY MAKING IN THE UNITED STATES

Minimum Credits: 3
Maximum Credits: 3
This course examines policy through the lens of urban and local problems and policy issues, including gentrification, race, development, and resource allocation. Local and municipal policies have developed as cities have grown and cleavages between urban and rural have deepened. We will examine the origin and evolution of local politics and policy, trace the development of local governmental institutions, coalitions, and development. Concepts such as the debates and discussions of public servants' and institutional policymaking with respect to public values for public services, place making, etc. Students will be equipped with an understanding of the cultural, constitutional, institutional, organizational, and ethical context of public administration through experiential and collaborative learning. As a graduate course, this class is designed to familiarize students with the literature in subnational political systems, including federalism, and the variety of theoretical and methodological approaches on the topic. The course will be rooted primarily in the political science and policy and public administration literatures, but will include political science, sociology, geography, and interdisciplinary works in urban studies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2801 - FOUNDATIONS OF QUANTITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce the beginning graduate student to the major conceptual and theoretical issues of contemporary political science. During the term, focus will be in three basic areas of inquiry; a) political science as a science; b) paradigms, frameworks, approaches; and c) examination of contemporary examples of applications of the above in various substantive fields of political science.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2802 - EMPIRICAL METHODS OF RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This seminar is the second in a three-course methodological sequence required for graduate students in political science. It introduces students to techniques of research design and analysis, and is designed to enable students to read and understand empirical social science research. Problems of scientific method, concept formation, measurement, and statistical inference are explored; students learn to use some of the statistical techniques common in political research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2810 - ADVANCED METHODS CAUSAL INFERENCE

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the challenge of causal inference in the social sciences. We will begin by approaching causal inference from the standpoint of experimental analysis. We will then study several non-experimental methods that aim to recover causality using observational data, including matching, instrumental variables, difference-in-differences, and regression discontinuity. The class will combine methodological training with exposure to important recent research in the social sciences that employ these methods. The goal of the class is not only to convey the concepts central to causal inference but there is also a heavy emphasis on helping students develop their capacity for research design.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2811 - AMERICAN ELECTORAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
This seminar complements PS 2230: Mass Politics. Like 2230, this seminar examines the America micropolity. But while 2230 focuses primarily on what happens in citizens' proverbial heads when they think about politics, this course will emphasize the practical applications and consequences of those thoughts - what people do in the electoral arena, what factors influence that behavior, and how electoral outcomes can be predicted or explained.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2812 - COMPARATIVE PARTIES AND ELECTIONS

Minimum Credits: 3
Maximum Credits: 3
In this seminar, graduate students will be introduced to a wide variety of readings in the history of Western Europe.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2813 - SEMINAR POLITICAL INSTITUTIONS

Minimum Credits: 3
Maximum Credits: 3
The basic question of this seminar is "what difference do institutions make"? The first part of the seminar attempts to focus on that question, while defining it more precisely, through comparative, formal, and evolutionary analyses of institutions. The second part of the seminar examines proposals for reform of institutions, particularly in the American context. Seminar participants will be asked to analyze particular proposals for institutional reform and evaluate them.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2814 - INTERNATIONAL POLITICAL ECONOMY

Minimum Credits: 3
Maximum Credits: 3
This seminar explores in eclectic fashion a number of major conceptual thrusts and policy problems in the international political economy. Some of the work deals with system level properties of international political economy, while other work compares how various advanced industrial states deal with similar foreign and domestic economic challenges.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2815 - WOMEN & POLITICS

Minimum Credits: 3
Maximum Credits: 3
Women have participated in politics as citizens, voters, activists, and elites. However, the extent to which women can and do serve in these roles varies substantially within the U.S. and cross-nationally. This course will examine core works and current developments in the field of women in politics from both a behavioral and institutional approach. We will discuss the role of women in social movements, public opinion, voting behavior, electoral politics, legislative studies, and public policy. While this is a substantive course, there will be a strong focus on the methodical approaches used to study women in politics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Gender, Sexuality & Women's St

PIA 2816 - RESEARCH TOPICS ON THE POLITICAL ECONOMY OF DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This is a PH.D level course that explores the causes and effects of poverty, under-provision of public goods, bad governance, and conflict in low-income countries. We will look at the role of institutions, historical legacies, state capacity, regime type, corruption and clientelism, natural resources, ethnic divisions, and international aid in explaining under-development. While this is primarily a substantive course, it will also expose students to cutting-edge methods at the forefront of research on the political economy of development, including experimental and quasi-experimental methods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2817 - PEACEMAKING AND PEACEKEEPING

Minimum Credits: 3
Maximum Credits: 3
This course offers case studies of multilateral peacekeeping and peacemaking efforts in relation to regional and ethnic conflicts, such as those in Bosnia, Kosovo, Rwanda and Somalia. It looks at the underlying rationale for intervention in such conflicts and the problems and dilemmas that arise.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2818 - DOMESTIC POLITICS AND INTERNATIONAL CONFLICT IN THE INFORMATION AGE

Minimum Credits: 3
Maximum Credits: 3
This course focuses on theories that relate to legislative organization, executive-legislative relations, and legislator behavior, and party politics from a comparative perspective. We frequently use literature on the US congress to frame the discussions, but read and analyze literature on Western and EAstern Europe, Latin America, Asia, and other parts of the world.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2819 - FORMAL POLITICAL THEORY

Minimum Credits: 3
Maximum Credits: 3

This seminar introduces students to formal modeling of political and economic phenomena. It has a social choice and a game-theory component. The former explores issues involved in the aggregation of individual preferences through majority and other voting rules. The latter-larger of the two components-surveys non-cooperative game theory and explores its applications to various questions of interest to political scientists.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2821 - COMPARATIVE POLITICAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the study of comparative mass political behavior. It is designed to emphasize cross-national similarities and differences in public opinion, voting behavior and political participation, and thus will complement the U.S.-dominated material presented in PS 2701 'American Electoral Behavior' and PS 2230 'Mass Political Behavior.' The course will first cover the comparative perspective on traditional subjects in the behavior field, such as turnout, the structure and sophistication of mass opinion, media impact, partisanship and models of voting behavior. It will then turn to more specialized areas such as political protest, the development and impact of democratic values, trust and "social capital" in new democracies, and the analysis of public opinion and participation in ethnically, religiously and linguistically divided societies.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2822 - SEPARATION OF POWERS

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the relationships among the branches in a separation of powers system, particularly the interplay between the legislature and the president. Most specifically, the course will consider the implications of a separation of powers system on representation: can a system specifically created to check the government's ability to act meet the demands for representation of a diverse constituency? How should we think about representation in a separation of powers system? The course will focus on the US political system, but will have implications for the comparative study of these systems.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2823 - TOPICS IN COMPARATIVE POLITICS

Minimum Credits: 3
Maximum Credits: 3
This graduate course is devoted to the study of international and comparative political economy in developing and emerging countries. These countries tend to face very different sets of constraints than their wealthier counterparts. The aim of this course is to analyze the determinants of welfare in poorer countries. Its main focus is to study the political economy of income and examine how domestic and international incentives shape crucial economic policies (e.g. trade, monetary, or education policies). In the last part of the semester, we broaden our horizon to examine other important components of welfare, such as environmental quality. This course is resolutely focused on the macro level and limited to developing countries.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2824 - THEORY OF INTERNATIONAL RELATION

Minimum Credits: 3
Maximum Credits: 3
This course will survey a broad range of literature dealing with international relations theory. The course will view the literature in terms of

the critical question areas in international relations and will be designed to describe each approach and to evaluate the utility of the approach in terms of bringing understanding to some of these question areas.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2825 - CIVIL WARS

Minimum Credits: 3
Maximum Credits: 3
This course will introduce graduate students to the Civil Wars literature. In the first part of the course, we will examine theoretical debates about why groups sometimes resort to violence against the state or other domestic groups. We will consider grievances, opportunities, informational asymmetries, and commitment problems as plausible mechanisms explaining the onset of Civil Wars. We will also discuss terrorism as one of the strategies of political violence. In the second part of the course, we will discuss possible solutions to Civil Wars and evaluate the relative merits of these solutions. Mechanisms such as intervention, peacekeeping and power sharing will be emphasized.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2826 - BAYESIAN STATISTICS

Minimum Credits: 3
Maximum Credits: 3
This is a course in advanced methodology in political science. The class will focus on topics related to matrix algebra.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2827 - FORMAL POLITICAL THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This is the second course in the department's graduate formal theory sequence. We will survey game theoretic models in political science with two goals in mind: (1) students will become critical and competent consumers of formal theory and (2) they will be prepared to begin using formal theory in their research. Topics include bargaining, coalition formation, lobbying delegation, reputation, and signaling. We will also discuss the connection between formal models and empirical tests (both observational and experimental) as well as survey alternatives to rational choice (behavioral and experimental) as well as survey alternatives to rational choice (behavioral, computational, and evolutionary models). Students must be familiar with basic game theoretic concepts and analysis (at the level of PS 2701).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2828 - AUTOCRACY & DEMOCRACY

Minimum Credits: 3
Maximum Credits: 3
This course surveys important questions driving past and current research in the fields of regimes, regime change, and authoritarian governance. Students will be able to identify important research questions based on existing scholarship and execute sound research designs.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2829 - BEHAVIOR THEORY & EXPERIMENTS

Minimum Credits: 3
Maximum Credits: 3
This is a doctoral course that surveys theoretical models and corresponding experimental methods relevant to the study of political behavior. Topics will include voting, accountability, information processing, risk and social preferences, trust, cooperation, and leadership, drawing from rational choice, cognitive psychology, and behavioral economics. Class sessions will include seminar discussions, lectures, and workshops. Familiarity with formal models is helpful, but not required, we will review the basics as needed for the class.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2830 - POLITICAL PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the political beliefs, attitudes, values, and behaviors of citizens in modern democracies. Because most of the theories and models were initially designed to analyze U.S. citizens, we will primarily examine the literature in American political behavior, though we will also discuss the degree to which such theories and models 'travel' to other contexts, leading us to some of the comparative behavior literature, as well. Much attention will be paid to the structure and content of citizen belief systems; additionally, we will examine the sources of such beliefs, including the media, political elites, and other citizens.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2831 - TIME SERIES ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This is a course in advanced methodology in political science. The class will focus on topics related to time series.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2832 - ADVANCED METHODOLOGY TEXT AS DATA

Minimum Credits: 3
Maximum Credits: 3
Advanced Methodology Text as Data
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2833 - AMERICAN GOVERNMENT AND POLITICS

Minimum Credits: 3
Maximum Credits: 3
This seminar provides an opportunity to analyze selected aspects of government and politics in the United States through a program of intensive reading, seminar discussions, and written essays. Some prominent interpretations of American government and politics are identified and examined. Readings on and discussion of topics such as political leadership and mass behavior provide a basis for consideration of the seminar's major theme, leader-follower interaction.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2834 - THEORY & CONCEPTS COMP POLITICS

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on theories of the modern state, especially in capitalist societies. The relationship of the state concept to various ideo-analytic frameworks and assumptions will be explored at some length as a way of evaluating the state concept as an analytic tool. These explorations form the basis for examining alternative images of the state in relation to society, to the role of leadership and statecraft in guiding the modern state, to alternative modes of organizing the state and to making policy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2835 - ADVANCED METHODOLOGY: MAXIMUM LIKELIHOOD ESTIMATION

Minimum Credits: 3
Maximum Credits: 3
This is a course in advanced methodology in political science. The class will focus on topics related to maximum likelihood estimation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2836 - EXPERIMENTAL RESEARCH IN POLITICAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
This course is an advanced seminar focusing on how experimental methods can inform research in political behavior. The first part of the course will focus on experimental design. Students will learn how to design and implement lab experiments, survey experiments, and field experiments. We will cover various aspects of experimental design - including where to get funding, how to get IRB approval, subject recruitment, subject compensation, randomization, identifying an appropriate control group, internal and external validity, ethical considerations, deception, and methods for analyzing experimental results. Students will also learn how to program surveys and experiments in Z-tree, MTURK, and qualtrics. The second part of the course will focus on applied topics. We will study how experimental methods are useful for investigating special topics in political behavior, including voter mobilization, public opinion, racial attitudes, ethnic identity, group identity, gender issues, asking about sensitive topics, and methods for estimating both attitudinal and behavioral responses to experimental treatments. Students will propose and design their own experiments throughout the course, and will fully develop one experimental design as a final project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2837 - MEASUREMENT IN SOCIAL SCIENCE

Minimum Credits: 3
Maximum Credits: 3
A key part of social scientific research is measurement, i.e. creating independent or dependent variables from raw data to capture substantive concepts. This course provides an applied overview of a variety of popular techniques in social science and machine learning to perform measurement on large and complex datasets. It will cover a variety of "unsupervised" methods (e.g. dimensionality reduction, ideal point estimation, and latent variable methods) that are used to create interpretable and low-dimensional summaries of complex data. It will also cover "supervised measurement", i.e. using a small collection of training data to create measures that can be extrapolated reliably. Specific focus will be paid to methods used in cutting-edge social science including multilevel regression with post-stratification (MRP) and machine learning techniques including random forests, sparse methods, and ensembles. A key goal of this course is to give students the skills to use these methods in their own research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2838 - INTERNATIONAL INSTITUTIONS AND COOPERATION

Minimum Credits: 3
Maximum Credits: 3
This course examines the contemporary structures of governance within international policies as they are found at national, regional and international level, and the challenges and stresses to which such structures are vulnerable. It also considers major traditions and theorizing about sources of conflict, order and integration in international politics and reviews current evaluations of major international organizations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2840 - LATIN AMERICAN POLITICS

Minimum Credits: 3
Maximum Credits: 3
The course is a readings seminar designed to introduce graduate students to the basic international literature on political questions and problems in the Latin American context. The course will focus primarily on the topic of "regime transition" in Latin America.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2841 - POLITICAL PSYCHOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the political beliefs, attitudes, values, and behaviors of citizens in modern democracies. Because most of the theories and models were initially designed to analyze U.S. citizens, we will primarily examine the literature in American political behavior, though we will also discuss the degree to which such theories and models 'travel' to other contexts, leading us to some of the comparative behavior literature, as well. Much attention will be paid to the structure and content of citizen belief systems; additionally, we will examine the sources of such beliefs, including the media, political elites, and other citizens.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2842 - THEORY OF INTERNATIONAL RELATIONS

Minimum Credits: 3
Maximum Credits: 3
This course will survey a broad range of literature dealing with international relations theory. The course will view the literature in terms of the critical question areas in international relations and will be designed to describe each approach and to evaluate the utility of the approach in terms of bringing understanding to some of these question areas.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2843 - POLITICAL RESEARCH & ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course aims to provide the student with (1) the ability to read, interpret, and criticize virtually any piece of political science research using quantitative methods and (2) the ability to design and carry out original research applying quantitative methods to relevant data.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2844 - EUROPEAN POLITICS

Minimum Credits: 3
Maximum Credits: 3
This course will address many of the key areas related to study of modern Europe, including: institutions, political parties and party competition, populism, democratic backsliding, European integration, and immigration.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2845 - POLITICS, GROUPS AND IDENTITIES

Minimum Credits: 3
Maximum Credits: 3
This course will provide an overview of social identities and how they influence politics. First, we will discuss what is a group and the theoretical underpinnings of social identity. We will discuss how social identities work, whether they are socially constructed, if identity is optional, and how social identities intersect with one another. We will cover identities such as race, ethnicity, gender, class, religion, and national identity, and how these shape political behavior. While much of this course will focus on the American context, we will also discuss how these themes apply to comparative politics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2846 - SCIENTIFIC COMPUTATION FOR SOCIAL SCIENTISTS

Minimum Credits: 3
Maximum Credits: 3
This course covers scientific computation for social scientists.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2847 - POLITICAL ECONOMY AND GROWTH

Minimum Credits: 3
Maximum Credits: 3
This graduate course is devoted to the study of international and comparative political economy in developing and emerging countries. These countries tend to face very different sets of constraints than their wealthier counterparts. The aim of this course is to analyze the determinants of welfare in poorer countries. Its main focus is to study the political economy of income and examine how domestic and international incentives shape crucial economic policies (e.g. trade, monetary, or education policies). In the last part of the semester, we broaden our horizon to examine other important components of welfare, such as environmental quality. This course is resolutely focused on the macro level and limited to developing countries.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2848 - INTERNATIONAL INSTITUTIONS AND COOPERATION

Minimum Credits: 3
Maximum Credits: 3
This course examines the contemporary structures of governance within international policies as they are found at national, regional and international level, and the challenges and stresses to which such structures are vulnerable. It also considers major traditions and theorizing about sources of conflict, order and integration in international politics and reviews current evaluations of major international organizations.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PIA 2851 - MINORITY POLITICAL BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce students to the state of the discipline on the behavior of racial-ethnic minority groups in the United States. We will cover several theories that are relevant to minority political behaviors including modes of political participation, means of involvement, and bases for political engagement. Underlying these aspects of political behavior are concepts of group membership, identification and consciousness, political incorporation, integration, assimilation, and marginalization. Our discussion and analyses will be both in terms of the manifestations of individual and collective behavior, incorporation and acculturation/ assimilation, as well as the contributing factors in the political system. In addition to race and ethnicity, attention will be given to other intersecting "social" categories (i.e. religion, gender, citizenship status, etc.).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2852 - COMPARATIVE LEGISLATURES

Minimum Credits: 3
Maximum Credits: 3
This course focuses on theories that relate to legislative organization, executive-legislative relations, and legislator behavior, and party politics from a comparative perspective. We frequently use literature on the US congress to frame the discussions, but read and analyze literature on Western and eastern Europe, Latin America, Asia, and other parts of the world.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2896 - MPPM POLICY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This is the final required course for students in the executive degree program. Students prepare individual reports in policy analysis format on topics of their choice, approved by the instructor. Methods of policy analysis will be re viewed, and students will give an oral presentation as well as a final written paper.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3000 - INTERMEDIATE QUANTITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the fundamental techniques of regression analysis, focusing on the linear regression model. Emphasis is on applied econometrics, with the goals of the course being to enable students to interpret empirical results in social science work they read and to use statistical software to employ these techniques successfully in their own work.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3004 - SEMINAR IN RESEARCH DESIGN AND METHODS

Minimum Credits: 3
Maximum Credits: 3
This seminar provides knowledge and skills in designing quantitative and mixed methods research. The term research design refers to a strategy or plan for getting the best possible answers to research questions. When we want to conduct research that helps solve practical problems, these questions tend to be about causal inferences linking policy and management interventions to socially valued outcomes. In a policy and management context, research designs usually answer the question: 'what works?' Research in policy and management is often based on inadequate research designs, that is, research designs that fail to provide plausible answers to research questions. In an effort to address these inadequacies there has been a movement toward experimental and quasi-experimental research designs in areas of health, education, welfare, security, energy, and the environment. Indeed, in the past two decades we have seen a virtual explosion of experiments, quasi-experiments, and natural experiments in the social sciences and social professions. The term mixed methods refers to the concurrent use of quantitative and qualitative methods for collecting, analyzing, and interpreting data. 'Qualitative' methods do not refer merely to non-quantitative methods, for example, methods of case study analysis or small-n research. The term 'qualitative' properly refers to methods for making sense of, or interpreting, actions in terms of the meanings people bring to them. Ethnography is a qualitative method; case study research, when it fails to uncover the meanings of actions to persons other than ourselves as researchers, is qualitative only in the limited sense that it involves small nonrandom samples which prohibit the use of common quantitative procedures such as correlation and regression analysis. When genuine qualitative methods such as ethnographic interviews and focus groups are used in conjunction with quantitative modeling techniques we usually use the term 'mixed method.'
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3005 - FIELD SEMINAR IN PUBLIC ADMINISTRATION

Minimum Credits: 3
Maximum Credits: 3
This is the doctoral field course in public administration. This course reviews major developments in the field of public administration, beginning with its historical origins and then focusing on its current research frontiers. The purpose of the course is to prepare students to teach and conduct research in the field of public administration. To that end, students will be expected to turn in weekly reviews of the readings (3 to 4 pages each week) and a research paper of sufficient quality for submission to an academic journal. The format of the course will involve some lecturing (for about an hour) followed by discussion (for about an hour). Students are expected to read thoroughly before the seminar and to come prepared to critically discuss the readings. This course is open to doctoral students in any field. Master's students with sufficient background, as judged by the instructor, may enroll with the permission of the instructor.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 3012 - COMPARATIVE GOVERNANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 3013 - ENVIRONMENTAL ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This course will combine multi-disciplinary environmental topics in an introductory level course. The concept of environmental policy and its impact on environmental management will be introduced. It will focus on the various scientific, technical and social disciplines including the basic sciences as well as law, engineering, public health and economics. Attention will also be given to the effects of developing and changing environmental policy on selected industries as well as natural resources.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: MCSI - Sustainability Related

PIA 3019 - FIELD SEMINAR IN INTERNATIONAL AFFAIRS

Minimum Credits: 3
Maximum Credits: 3
This course will introduce SPIA Ph.D. students to the various approaches to the study of international affairs as well as a few broad areas of inquiry in the field. It covers 'great books' in the study of international affairs, concentrating each week on a classic or important new work. This approach will provide a stable platform from which international affairs students may delve deeper into the literature while apprising non-international affairs students of the general structure and large debates in the field. Given the vastness of the field, there are many topics that we will not be able to cover. However, familiarity with the arguments covered is essential for navigating and making sense of the sprawling literature. By the end of the semester, students will possess the theoretical frameworks and analytical toolkit necessary to identify, read, and assess the quality of divergent positions on the topics we do and do not cover.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 3020 - ADVANCED SEMINAR: EVIDENCE AND INFERENCE IN POLITICAL SCIENCE AND PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3
This seminar examines methodological disputes in the policy sciences. We will use a structural model of argument based in large part on the work of Stephen Toulmin, the English-born philosopher and applied philosopher of science who spent the latter part of his career working with well-known international relations and public policy specialists at the University of Southern California. Much of Toulmin's structural model of argument was built into the computer program we will use this term. The program is called rationale and it was developed by a Pitt philosophy of science Ph.D., Tim Van Gelder, who also gained significant expertise in computer science. He is at the Melbourne University in Australia. We will use rationale to study the methodology of the policy sciences. By using the structural model of argument to study methodology we will expand the range of research methods available to us as policy-oriented social scientists. Hopefully, this will protect us from the dogma that there is one set of 'approved' methods and from the despair that comes from believing that 'anything goes.' In addition, it will alert us to the dangers of winding up in one or another methodological cul-de-sac in which orthodoxy reigns.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3026 - PHD PROFESSIONAL DEVELOPMENT WORKSHOP

Minimum Credits: 1
Maximum Credits: 1
This one-credit course is meant for SPIA PhD students in the semester they enter the program, or as soon as possible thereafter. The course will feature guest lectures from SPIA faculty members on issues pertinent to professional development in a doctoral program. Topics will include, but are not limited to, journal submission, dissertation preparation, seeking and applying for grants, etc.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

PIA 3050 - QUALITATIVE RESEARCH DESIGN & METHODS

Minimum Credits: 3
Maximum Credits: 3
This course will aim to provide students with structure to start pushing forward research, especially the proposal and initial work on the second-year paper. This course is to be taken once students have a clear idea of their research topic and have taken doctoral-level methodological courses, but are in the process of developing/refining specific questions. The course will help students frame their research question, conduct productive literature reviews aimed at highlighting the contributions of their research, and establish a research plan. In addition, with the aim of preparing students to present their work, a major focus of the course will be regular writing and presentations as students build up their research idea, with peer and instructor feedback.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3096 - COMPREHENSIVE EXAMINATION PREPARATION

Minimum Credits: 1
Maximum Credits: 9
This course is an independent reading course for Ph.D. students who are actively preparing for their comprehensive exams. The student will work under the supervision of a faculty advisor. The advisor and student agree on bibliographies in advance, and the student is encouraged to discuss the readings on a regular basis with his or her advisor and other division faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3097 - INDEPENDENT STUDY PHD

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3098 - DOCTORAL TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
In an increasingly competitive academic job market, teaching experience can be a decisive factor in doctoral students' ability to secure an academic job after graduation. This practicum provides an opportunity for doctoral students to develop teaching skills by creating and delivering a course to members of the community. The practicum will begin with pedagogical and teaching policy training. Under the supervision of the course instructor, doctoral students will then be responsible for all elements of teaching a course in one of SPIA's doctoral fields (creating a syllabus, delivering lectures, leading class discussions, creating and evaluating course work). After every class delivery, doctoral students will have a rare and invaluable opportunity to receive instant feedback on their performance. At the end of the practicum, students will put together a teaching portfolio which includes a statement of teaching philosophy, the teaching materials developed during the practicum, student feedback and a reflection upon the feedback received.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3099 - DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 6

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3121 - POLICY THEORY

Minimum Credits: 3
Maximum Credits: 3
This course is broadly concerned with political science research on policy processes, including democratic theory, multiple streams, and punctuated equilibrium, among others. It will focus on these major theories of the policy process, explore major theories of policy change and examine important empirical contributions to the policy field. The course will examine micro-foundations of policy dynamics through models of individual to organizational decision-making, and explore policy agendas, formation of public policies, and the factors influencing change to agendas and policies over time. It will emphasize process approaches of policy change rather than substantive issues, although substance will be addressed in much of the extant literature. This course focuses primarily on American politics but will include select works on comparative policy process perspectives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 3303 - ADVANCED SEMINAR: IN SECURITY AND INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
This field seminar is designed to guide graduate students through the large and complex security studies literature. It is intended primarily to help prepare SPIA Ph.D. students for the foreign and security policy comprehensive exam, but other students are welcome. Students in this seminar will master the foundations of the academic literature on questions like theories of international relations, the balance of power and its effects, causes of war and peace, coercion, foreign policy decision making, nuclear and conventional warfighting, security institutions, terrorism, violent non-state actors, military and humanitarian intervention, the future of power, and intelligence studies. Due to the vast nature of the security and intelligence studies fields and the limited timeframe of a single semester, we will not be able to cover many of the topics and debates in the literature. By the end of the semester, however, students will have the theoretical frameworks and analytical toolkit necessary to identify, read, and assess the quality of divergent positions on security and intelligence topics we do not cover.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Russian & East European Studies

PIA 3394 - FIELD SEMINAR: PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3
This field seminar covers the literature of public policy. Taken in its entirety this literature is vast and unmanageably huge. Therefore, we will focus on key areas of this literature, which should be mastered at various levels of competency by students who wish to be academically qualified in the field.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3395 - SEMINAR IN INTERNATIONAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3396 - FIELD SEMINAR IN IA

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 3434 - CIVIL-MILITARY RELATIONS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

Public Health

PUBHLT 0422 - MOLECULES OF LIFE, SICKNESS, AND DEATH

Minimum Credits: 3
Maximum Credits: 3
Daily exposure to environmental molecules, chemicals, and elements in food, water, and air provide both benefits and hazards to health. The objectives of this course are to increase understanding of the mechanisms through which ingestion, inhalation, or absorption of environmental constituents and xenobiotics, promote health, disease, or even death. The course introduces basic concepts and principles of how environmental chemicals and elements impact health. The key tenet of toxicology, the dose makes the poison, will be reinforced through lectures and analysis of current case-studies that present the material in the context of pertinent, real world gene-by-environment interactions that promote human disease, as well as major environmental and public health concerns. Emphasis will be on assessing potential interventions that protect or improve individual and public health.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: Student must be Sophomore level or higher

PUBHLT 0447 - POLITICAL DETERMINANTS OF HEALTH

Minimum Credits: 2
Maximum Credits: 2
The principal aim of the course is to give students an appreciation of how political institutions related to voting and elections shape the electorate - impacting the representation of people with illness and disability, as well as those who are lower-income and reliant on the safety net. The differential ability to politically voice preferences and concerns related to health and health-promoting policies shapes political responsiveness and, in turn, policy formation with respect to such issues as public and private health insurance, abortion, safety net programs like SNAP and SSI, carceral health, social determinants of health, and broader intersections of race, class, and health. The course, which lies at the intersection of public health and political science, draws on interdisciplinary readings and political strategy memos to assess the intersection of political institutions, democratic representation among the sick, disabled, and otherwise marginalized, and health care delivery.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

PUBHLT 0901 - CAPSTONE: BIOETHICS CERTIFICATE

Minimum Credits: 2
Maximum Credits: 2
Capstone: Bioethics Certificate will include experiences and an in-depth ethical exploration. For the in-depth ethical exploration, students will have the option of completing either a practicum or an independent study. A practicum for the purposes of this class is considered any experience where the patient will be providing or observing patient care services in an individualized, community, public health, or research setting. The independent study is any project, directed research, or study abroad experience with focused end-result. Students will select the in-depth exploration most suitable for their area of interest/specialty in direct patient care, human subjects research, public health or community health initiatives. In addition to the hours required for the practicum or independent study, students will engage in a series of experiences that are skills based and authentic. Students are required to propose and obtain approval for their capstone plan prior to the registration of the capstone. Once a mutually agreeable plan has been made and deadlines clearly established, students will be issued a permission number to enroll in the course. Students should plan to schedule this meeting at least one month prior to registering for the semester in question.
Academic Career: Undergraduate
Course Component: Practicum
Grade Component: Letter Grade

PUBHLT 2002 - ESSAY-MMPH

Minimum Credits: 1
Maximum Credits: 2
The essay is designed to provide the student with an opportunity to integrate the major components of the public health learning experience.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PREQ: Multidisciplinary MPH

PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
The course provides Pitt Public Health students enrolled in MS, PhD, and MHA programs with an introduction and overview of the scope and history of public health, as well as core concepts in public health not covered in the core epidemiology and biostatistics courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: BCHS-PHD or (BIOST-MS or BIOST-PHD) or (EOH-MS or EOH-PHD) or (EPIDEM-MS or EPIDEM-PHD) or GNCSLG-MS or (HUGEN-MS or HUGEN-PHD) or HPM-MPH or HSRP-PHD or HSRP-MS or (IDM-MS or IDM-PHD) or GENBINF-MS

PUBHLT 2015 - PUBLIC HEALTH BIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This core course will provide an introduction to the biological foundations of many systems that are important in public health. The major determinants of human disease will be considered from an integrated ecological perspective that brings together molecular and population-based approaches to the study of infectious disease (with particular focus on HIV/AIDS, polio, emerging infections, and disease outbreaks following natural disasters) and genetically-determined diseases including "simple" genetic diseases such as cystic fibrosis and "complex" diseases such as hypertension). The host response to infection will be considered, as will the disorders that result from defects in this system, including allergy and asthma. Current developments in genomic science will be covered, including the ethical, legal and social implications of the increased capability to detect and predict disease outcome in individuals and populations. On completion of this course, students will have an understanding of the biological bases of many conditions that are important to public health, and that they will encounter as public health students and practitioners.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PUBHLT 2018 - OVERVIEW OF LESBIAN, GAY, BISEXUAL AND TRANSGENDER HEALTH DISPARITIES

Minimum Credits: 2
Maximum Credits: 2
Students will review the historical development of lesbian, gay, bisexual and transgender health focus area. The impact of stigma and disparity on the health of populations will be explored. An overview, by systems, of conditions of greater prevalence among lesbian, gay, bisexual and/or transgender populations will be presented and discussed. Students will develop a greater understanding of the health disparities among lesbian, gay, bisexual and transgender populations and develop critical thinking skills regarding the impact of marginalization on the health and wellbeing of subpopulations, using lesbian, gay, bisexual and transgender populations as a model. Course will include lectures and active participation in class discussions. This course will serve as the introductory overview course for the lesbian, gay, bisexual and transgender health and wellness certificate program.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110; PLAN: Graduate Sch of Public Health (CERT-4)

PUBHLT 2019 - PUBLIC HEALTH SPECIAL STUDIES

Minimum Credits: 1
Maximum Credits: 15
Properly qualified students may undertake advance study under the guidance of a faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: MultidisMPH or CommBasedPrticipRes&Prac or EnvrlHlthRiskAssmnt or EvalPHPromo&HlthEducProg or GlblHlth or LGBTHlth&Wllnss or MinrtyHlth&HlthDisparits or PHGentcs or PH Preparednss & Disaster Resp or Peace Corps or Peace Corps Master's Intl

PUBHLT 2020 - ADVANCED TOPICS IN LESBIAN, GAY, BISEXUAL, AND TRANSGENDER RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course will provide a critical overview of current cutting edge research topics in the field of lesbian, gay, bisexual and transgender (LGBT) health. Students will be expected to review the existing literature on these topics, summarize the strengths and weaknesses of individual papers, and then design a study or set of studies that would be expected to add to the evidence base on a given health topic.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PUBHLT 2018; PLAN: Epidemiology (PHD) and Graduate Sch of Public Health (CERT-4)

PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to socialize our students to the broader profession of public health through engaging them in substantive programs on a wide range of topics that reflect the breadth of public health. This course will enable them to interact with researchers and practitioners from other settings and universities around the world. The course will help to build their capacity to work in interdisciplinary teams to address challenging and complex public health problems. This course requires that all GSPH students (with the exceptions noted

below) participate in GSPH sponsored lectures, symposiums, and other events, outside of the classroom, during the first fall and spring terms for which they are enrolled and in residence in Pittsburgh. Two terms are required for graduation. Joint degree students, certificate only students and non-degree students are exempt from this requirement.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad SN Basis

PUBHLT 2025 - CONCEPTS AND METHODS IN GLOBAL HEALTH

Minimum Credits: 2
Maximum Credits: 2
This course is designed for students who plan to work in global health and is required for students enrolled in the GSPH global health certificate and peace corps master's international tracks. The course focuses on public health in low- and middle-income countries and also covers issues related to globalization. The course will provide students with the theoretical knowledge and practical skills needed to 1) identify, collect and interpret health and economic data, 2) produce a report on public health priorities at the country level, and 3) propose a course of action (including activities, partners, and measureable indicators) for a priority health issue.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN:Global Health (AC or CR4); or SUBPLAN: Peace Corps (PCORPS-TR)

PUBHLT 2026 - GLOBAL HEALTH PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
The practicum provides an opportunity for certificate students to integrate and apply knowledge in global health through a structured, supervised field experience. Learning objectives, assignments, and site are based on the learning needs and career goals of the student and determined in consultation with the certificate director.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

PUBHLT 2027 - TRANSFORMING GLOBAL HEALTH EDUCATION INTO ACTION

Minimum Credits: 2
Maximum Credits: 2
This course is a capstone experience for students in the global health certificate. It is designed to give students the opportunity to apply what they have learned in their training to the challenge of real-world problem-solving in collaboration with individuals and organizations in the developing world. Students will form two teams, and each team will collaborate with experts from a developing country on a significant health issue in that country. The final product will be a policy paper analyzing the problem and proposing relevant, timely and actionable interventions. This course is different from typical courses that follow a prescribed syllabus. It is a hands-on experience, and for the most part the activities and content of each week will be determined as the course goes along, as students, working in their groups, pursue the background research, consultation, and brainstorming necessary to produce their policy papers. Accordingly there is a great emphasis on independent work (in teams), self-motivation, and active learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PUBHLT 2025; PLAN: Global Health (AC)

PUBHLT 2028 - PEACE CORPS MASTERS INTERNATIONAL INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
This course is restricted to students in the school of public health peace corps masters international track and is to be used by students during the peace corps field experience portion of the PCMI program.

Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis
Course Requirements: SUBPLAN: Peace Corps (PCORPS-TR or PC-TR) or Peace Corps Master's Intl (PCMI-TR)

PUBHLT 2029 - MMPH PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
This course is designed to build and expand upon the experience of the individual student in the MMPH program. The practicum will blend the students existing clinical and/or professional work with additional practical experience with a major public health focus.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

Minimum Credits: 1
Maximum Credits: 1
This course provides an introduction to topics in research ethics and the responsible conduct of research particularly pertinent to basic and non-clinical, population-based research employing a variety of methods. Students will learn key concepts and methods of ethical reasoning and requirements of human subjects' protection and nonhuman animal research, and will analyze historical and contemporary examples of research misconduct, as well as ethical concerns arising in their own work. Using lecture and small group discussion of assigned readings and participants' research, the course will develop students' skills requisite to design and conduct ethical research, avoid research misconduct, and ethically negotiate the tasks and milestones of academic education and careers (e.g. issues of mentorship and publication). Students will be evaluated (by letter grade) on the basis of the quality of their discussion contributions and quiz/exam responses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PUBHLT 2031 - TECHNIQUES FOR PROFESSIONAL WRITING

Minimum Credits: 1
Maximum Credits: 1
This course offers practical experience in a variety of writing styles encountered by professionals. The focus is on communication with general professional and lay audiences rather than on scientific or academic writing. You will learn to recognize communication issues and challenges, understand how they may be addressed in writing, and improve your ability to write effectively within your profession. This course is intended for students who are native and/or confident English writers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PUBHLT 2032 - HEALTHCARE IN SUB-SAHARAN AFRICA

Minimum Credits: 2
Maximum Credits: 2
This course provides an in-depth look at health services and healthcare systems in Sub-Saharan Africa. Students will explore the WHO health systems building blocks consisting of leadership/governance, health care financing, health workforce, medical products, information technology and service delivery. Students will also examine health systems databases to assess performance and to better understand the challenges to attain high quality care at low cost, enhanced patient experience and improved outcomes. A variety of teaching modalities will be employed throughout the course including lecture, news headlines, case studies, class discussion, audio-visuals and student presentations. Guest speakers will be invited to share experience and expertise on various topics. A research paper with in-depth exploration of one of the six building blocks in a specific sub-Saharan country is required in addition to a global health case competition group presentation. Course enrollment is capped at 20. This course is a graduate-level course that is open to undergraduates.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH

Minimum Credits: 1
Maximum Credits: 1
This one-credit course is required during the first term for incoming MPH students and is aimed at introducing students to core foundational concepts of public health and providing them with an overview of notable PITT Public Health and Pittsburgh based successes. The course was designed so that students can learn on their own and at their own pace. Course content is divided into seven on-line modules containing brief video lectures and case example segments and organized in a recommended (though not required) sequencing. Students will be allowed seven weeks to progress through the content and assessments. The course will commence with a mandatory meeting at the beginning of the term. A resource list of relevant PITT Public Health courses will be included in each module in order to encourage additional exploration of the topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: PLAN: All Public Health MPH plans

PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS

Minimum Credits: 2
Maximum Credits: 2
This course provides hands-on training in the principles and practice of effective communication. The emphasis is on the types of communication used by public health professionals. Students will briefly cover fundamental principles of communication theory, learn to critically analyze examples of communication, and then have the opportunity to practice applying those principles to a wide variety of different types of communication, including health promotion, routine business communication, and scientific communication. Multiple media types will be discussed, including print, web, and video.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: All Public Health MPH plans

PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

Minimum Credits: 2
Maximum Credits: 2
This is the final course in the public health core curriculum. Students will apply a problem solving methodology to analyze current public health issues. Working in interdisciplinary groups in the classroom, students will develop and assess interventions to address specific problems.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041) and PUBHLT 2015 and BCHS 2509 and EOH 2013 and HPM 2001 and PUBHLT 2033 and PUBHLT 2034; PROG: School of Public Health

PUBHLT 2036 - FRED: AGENT BASED MODELING FOR SOCIAL DETERMINANTS OF HEALTH

Minimum Credits: 2
Maximum Credits: 2
This course is an introduction to agent-based models (ABMs) as a technique for understanding how the dynamics of social, biological, and other complex systems arise from the characteristics and behaviors of the agents making up these systems. Students will learn using the "FRED" (Framework for Reconstructing Epidemiological Dynamics) software platform developed at Pitt Public Health. Examples will emphasize the applications of FRED in public health, including infectious disease transmission and control measures; health behaviors such as vaccine refusal and drug and tobacco use. Emphasis will be on modeling the effects of the Social Determinants of Health. While this

course is intended primarily for students in public health, graduate students in other disciplines, including social sciences, engineering or computer science, are welcome to enroll.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PUBHLT 2037 - DEVELOPING A GLOBAL HEALTH CASE STUDY FOR COMPETITION

Minimum Credits: 1
Maximum Credits: 1
In this course, students will complete secondary research to select and develop a Global Health case study about a global public health problem in a specific country context. The course will run weekly during the first halve of the semester (7 sessions). Tasks and assignments will include, identifying an appropriate case and completing a robust literature review to develop a background/introduction to the health issue and the country profile, which will include relevant historical, demographic, political, economic and culture background. A multidisciplinary team of students will develop a problem statement, a call for strategies addressing the problem, and a judging rubric for proposed solutions. The final product will include a glossary of terms and a bibliography. By developing cases, students will gain valuable Global Health skills, background knowledge and perspective. Cases developed in this course will be suitable for use in future campus-wide learning activities for the Pitt Global Health Case Competition.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PUBHLT 2091 - MATERNAL AND CHILD HEALTH LEADERSHIP 1

Minimum Credits: 2
Maximum Credits: 2
In order to become a leader in Maternal and Child Health (MCH), what would you need to know? This seminar addresses specific knowledge, skills, personal characteristics, and values necessary for MCH leadership. The knowledge and skills addressed in this seminar are derived from the 12 MCH competencies developed by the Maternal and Child Health Bureau. The 12 competencies are: MCH knowledge base/context, self-reflection, ethics and professionalism, critical thinking, communication, negotiation and conflict resolution, cultural competency, family-professional partnerships, developing others through teaching and mentoring, interdisciplinary/interprofessional team building, working with communities and systems, and policy and advocacy. We will address these competencies through didactic material, presentations from MCH leaders, and reflective activities. The development of leadership competencies will be framed by the MCH categories of Self, Others, and the Wider Community.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

PUBHLT 2173 - TRANSFORMING GLOBAL HEALTH EDUCATION INTO ACTION

Minimum Credits: 3
Maximum Credits: 3
This course is a capstone experience for students in the Global Health Certificate. Students will apply what they have learned in prior Global Health training by undertaking real-world problem solving in collaboration with individuals and organizations working in Global Health. Students will work in teams to develop interventions, systems and solutions for resource-poor settings. The course is primarily project-based, where students' projects will focus on a unique and specific challenge identified by a partner in a low-resource setting. This course will run concurrently with BIOENG 2173 Medical Design for Low Resource Environments, and students from both courses will work together on teams to complete assignments and to develop final projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PUBLT 2025; PLAN: Global Health (GLBHLT-AC)

PUBHLT 2350 - NAVIGATING PUBLIC HEALTH COMPLEXITIES IN SURINAME: IMPLICATIONS FOR POPULATION HEALTH

Minimum Credits: 3
Maximum Credits: 3
This course features trans-disciplinary science, practice, and policy approaches to addressing public health issues affecting environmental and human health. We will examine key public health issues affecting the health of Suriname's ecosystem and its population, including the leading causes of morbidity and mortality. Through a series of lectures, fieldtrips and assignments, students will gain a comprehensive understanding of the complex dynamics between environmental and human health, while considering the One Health approach and the implications for policy. Each lecture is accompanied by required reading as designated in the syllabus and grading requirements are specified for the course. Fieldtrips are an integral part of the course to facilitate application on the public health practice frontline. A special area of focus will be the medicinal characteristics of plants. The course will also focus on the risks posed by environmental contamination, specifically those risks related to mercury released from some small-scale gold mining operations. Students will employ community-based participatory research strategies to assess, manage, and communicate those risks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PUBHLT 2500 - INTEGRATIVE SEMINAR IN HEALTH EQUITY

Minimum Credits: 1
Maximum Credits: 1
The goal of this course is to use knowledge about health disparities to achieve health equity. The seminar builds upon knowledge and experience gained from previous Health Equity Certificate core and elective courses. The seminar will provide students with an opportunity to assess health equity and disparities in depth and establish strategies to resolve these inequities/disparities. Additionally, we will discuss sources of knowledge and contemporary approaches to improve the health of populations and well-being employing health equity research applications. The student will tackle the disparity(ies)/inequity(ies) through data retrieval, literature review, and contact with community, not for profit, private or government agencies that address the disparity/disparities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BCHS 2554, BCHS 2524, or BCHS 2526

PUBHLT 2501 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS

Minimum Credits: 3
Maximum Credits: 3
This course is one of the series of courses required for the certificate in health equity, and will examine the challenges in, and methods for, health inequities research and interventions. It is intended to both complement and expand upon the knowledge gained in other BCHS courses and/or professional exposure by focusing on a wide range of populations that experience health inequities. Inequities that we will explore include (but not be limited to) those evidenced by gender, ethnicity, disability, socioeconomic status, sexual orientation, and rural/urban living. Through discussions, presentations, written assignments, and in-class activities, students will gain exposure to methods and resources for research in health inequities. This will include ethics and research in diverse communities; barriers and facilitators to engaging diverse populations in health research; advisory boards and coalitions; data bases and research designs utilized in equities research, and the application of research findings to program development. Students will work both in interdisciplinary teams and individually to effectively present their work in written and oral presentations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PUBHLT 3100 - GRANT AND THESIS PROPOSAL WRITING FOR PUBLIC HEALTH

Minimum Credits: 3
Maximum Credits: 3
In this course, students will develop a grant proposal on a topic relevant to their graduate research. Students will gain skills in organization, time management, advanced literature searching, peer feedback, and persuasive writing skills. Students will develop a National Institutes of Health (NIH) F31- or R21-style proposal including specific aims, significance/innovation, and approach sections. They will be introduced to different types of federal funding mechanisms (e.g., DHHS, DOD) and students will create an NIH-style biosketch. Weekly small group

discussions will support peer and mentor feedback and learning reflections.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: BCHS-PHD, BIOST-PHD, EOH-PHD, EPIDEM-PHD, HSRP-PHD, HUGEN-PHD, or IDM-PHD

Public Works & Engr Admin

PWEA 2996 - SPEC INVSTGTN FOR MPW STUDENTS

Minimum Credits: 1
Maximum Credits: 6
A special project course in which students may broaden their knowledge by studying approved topics or problems in public works engineering or administration under the guidance of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

PWEA 2997 - RESEARCH, M.P.W.

Minimum Credits: 1
Maximum Credits: 15
Non-thesis option research project under the guidance of the faculty advisor.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

PWEA 2999 - M.P.W. THESIS

Minimum Credits: 1
Maximum Credits: 15
Research for the M.P.W. Thesis under the guidance of the major advisor.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Quantv Methods-Operations Mgt

BQOM 2060 - INDEP STUDY QUANTITATIVE METHODS

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2061 - INDEP STUDY OPERATIONS MGMNT

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS

Minimum Credits: 1
Maximum Credits: 1
This course examines the advantages and complexities of ERP software within the context of global SCM and demonstrates how the system can improve processes and streamline operations. The course progresses through seven experience-based-learning Modules. Each Module includes both a synchronous class session, and asynchronous individual work. The synchronous sessions are focused on the execution of an ERP Simulation where teams of students complete with one another to operate a make-to-stock company that sells a product to a European market. The asynchronous portion of the class allows students to work at their own pace to learn the how ERP systems automate and integrate SCM business processes including hands-on execution of end-to-end business processes in the SAP ERP system; and completion of quizzes and exams.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BQOM 2139 - LEAN SIX SIGMA THEORY & PRACTICE

Minimum Credits: 3
Maximum Credits: 3
Lean Six Sigma is a disciplined, data-driven approach to process improvement aimed at the near-elimination of defects from every product, process, and transaction. Lean Six Sigma utilizes a five-phase problem solving methodology known by the acronym DMAIC, around which the course is organized. To integrate theory and practice, students will form teams and work under the mentorship of a Lean Six Sigma Black Belt on a client field project. The flow of the lecture topics will mirror the DMAIC methodology; providing just-in-time knowledge. Lectures will focus first on providing a high-level overview which frames the topic followed by deep dives into a small number of the most critical subject areas and tools within the higher-level topic. Where appropriate, class sessions will also include hands-on labs that allow the students to immediately apply the learning. Student with a final letter grade of "B" or better will be awarded a Lean Six Sigma Green Belt Certificate.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BQOM 2401

BQOM 2140 - SIX SIGMA THEORY & PRACTICE IN HEALTHCARE

Minimum Credits: 1
Maximum Credits: 1
In managing Healthcare today, many organizations have turned to Six Sigma for a disciplined, data-driven approach to improving the safety and efficacy of processes while simultaneously reducing costs. Faculty will guide students through the theory of Six Sigma, and its five-phase process improvement methodology known by the acronym DMAIC: 1. Define the problems (opportunities), the goals, and the deliverables to the customers (internal and external). Describe and quantify both the defect and the expected improvement. 2. Measure the current performance of the process. Validate the data to make sure it is credible and set the baseline. 3. Analyze the data to narrow the causal factors to the vital few. Determine the root cause(s) of defects. 4. Improve the process to eliminate defects. Optimize the vital few and their interrelationships. 5. Control the performance of the process. Lock down the gains. This experience-based learning course incorporates in-class labs, based on a fictitious company named Precision Delivery Incorporated (PDI), that allow teams of students to immediately put the theory of Six Sigma into practice. Further, students will develop critical thinking skills as they analyze and evaluate real-world Healthcare Six Sigma Projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BQOM 2141 - SIX SIGMA THEORY & PRACTICE FUNDAMENTALS

Minimum Credits: 1
Maximum Credits: 1
In managing business today, many organizations have turned to Six Sigma for a disciplined, data-driven approach to improving the safety and efficacy of processes while simultaneously reducing costs. Faculty will guide students through the theory of Six Sigma, and its five-phase process improvement methodology known by the acronym DMAIC: 1. Define the problems (opportunities), the goals, and the deliverables to the customers (internal and external). Describe and quantify both the defect and the expected improvement. 2. Measure the current performance of the process. Validate the data to make sure it is credible and set the baseline. 3. Analyze the data to narrow the causal factors to the vital few. Determine the root cause(s) of defects. 4. Improve the process to eliminate defects. Optimize the vital few and their interrelationships. 5. Control the performance of the process. Lock down the gains. This experience-based learning course incorporates in-class labs, based on a fictitious company named Precision Delivery Incorporated (PDI), that allow teams of students to immediately put the theory of Six Sigma into practice. Further, students will develop critical thinking skills as they analyze and evaluate real-world Six Sigma Projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BQOM 2401 - STATISTICAL ANALYSIS: UNCERT

Minimum Credits: 3
Maximum Credits: 3
This course provides students with a set of integrated statistical tools and methodologies useful in a managerial environment. The emphasis is on the use of real data for modeling and solving problems in the areas of marketing, finance, human resources and operations management. Topics covered include: data analysis and modeling, estimation, confidence intervals, hypothesis testing, simple and multiple regression, analysis and design of experiments and statistical quality control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2421 - DECISION TECH IN MFG & OPS MGT

Minimum Credits: 1
Maximum Credits: 1
This course provides a foundation in the use of decision technologies for solving complex management problems in a variety of functional areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: BQOM 2401; PROG: Katz Graduate School of Business

BQOM 2501 - ENTERPRISE SYSTEMS AND INTEGRATION OF BUSINESS PROCESSES

Minimum Credits: 3
Maximum Credits: 3
This course introduces concepts in ERP and integrated nature of business processes. Students are introduced to all the major components of SAP ERP. The course participants in enterprise systems and integration of business processes will gain extensive theoretical foundations of the enterprise resource planning (ERP) using the SAP ERP software. The theoretical knowledge is practically implemented and deepened during the course by the use of case studies and hands-on exercises using the SAP ERP system. After completion of the course, students have a comprehensive, theoretical and practical knowledge of the central SAP ERP modules. This includes the organizational and data structure and the integration of a variety of business processes and functional areas. This course is designed to prepare the student for the SAP ERP10 certification exam. The certification - as completion of the course - will be held at the University of Pittsburgh and is a three-hour, 80 multiple-choice questions based knowledge test. Passing the exam leads to a sap certification widely acknowledged in business: the SAP certified business associate with SAP ERP 6.0. The course addresses the following functional areas of the SAP ERP systems: logistics, finance, controlling and human capital management. Furthermore, the integration with the SAP systems SAP business intelligence (BI) and SAP strategic enterprise management (SEM) is presented.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2504 - FRUGAL ENGINEERING & VALUE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the principles of frugal design of products and processes. Foundational skills in Value Engineering/Analysis including tools such as Functional Analysis will be detailed. Additionally, topics such as Customer Needs Identification, Quality Engineering, Operational Excellence and Lean Process Engineering will be integrated into developing frugal product and process designs. With this course, students will have taken the first step towards certification as Value Methodology Associates (VMA) offered by the SAVE International.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS

Minimum Credits: 1
Maximum Credits: 1
Increasingly, due to shortening product life cycles and capital-intensive capacity decisions, companies are being forced to place greater emphasis on managing constrained, but perishable inventory and capacity. In this course, we study quantity and pricing strategies to improve profitability. The main goals of this course are to provide the insights and tools that will enable students to: (1) be able to identify pricing and revenue opportunities; (2) understand the critical differences among different types of opportunity and the approaches needed to address them; (3) understand key concepts including the impact of constrained capacity, opportunity costs, customer response, demand uncertainty, and market segmentation; and (4) be able to formulate and solve pricing and revenue optimization decisions as constrained optimization problems at the level necessary to estimate potential benefits. The focus of the course will be on imparting a broad understanding and grasp of basic techniques rather than the technical nuances of a particular algorithm.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BQOM 2401 and (BQOM 2421 or BQOM 2411); PROG: Joseph M. Katz Grad Sch Bus

BQOM 2512 - ADVANCED DECISION TECHNOLOGY

Minimum Credits: 1
Maximum Credits: 1
While contemporary decision technologies are increasingly important in today's competitive environment for dealing with complex problems, they can also yield wrong or misleading solutions. The course will consider current applications of these technologies in these areas and students will analyze a variety of cases in these areas using commercial software packages. Emphasis in the course will be given to the potential and limitations in using decision technologies and to alternative approaches to dealing with complex problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BQOM 2401 and (BQOM 2421 or 2411); PROG: Joseph M. Katz Grad Sch Bus (PKATZ)

BQOM 2521 - DECISION MAKING COMPLEX ENVRNMNT

Minimum Credits: 1
Maximum Credits: 1
Examines in detail the thought processes of the decision maker when faced with social, personal, business or contemporary political problems. Through the analytic hierarchy process, decision makers use a framework to organize thoughts in a consistent way and to compare elements and criteria which weigh most heavily in arriving at the best alternative among given options.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2523 - PROCESS ENGINEERING

Minimum Credits: 1
Maximum Credits: 1
This course studies the design and engineering of the business processes - the way businesses organize "work" in service as well as manufacturing operations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BQOM 2411 or 2421; PROG: Katz Graduate School of Business

BQOM 2524 - PROD MGT & PROCESS IMPROVEMENT

Minimum Credits: 1
Maximum Credits: 1
This course is concerned with the continuous improvement principles involved in the production of goods and services.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BQOM 2523; PROG: Katz Graduate School of Business

BQOM 2531 - GLOBAL SUPPLY CHAIN MANAGEMENT

Minimum Credits: 1
Maximum Credits: 1
A continuation of distribution networks (BQOM 2530).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BQOM 2411; PROG: Katz Graduate School of Business

BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course will consider multi-facility supply and demand network management from all three perspectives: operational, tactical and strategic. We will emphasize the creation and maintenance of value in the supply network, an activity critical to the survival of all organizations. Value creation can be accomplished by increasing revenue (e.g., by improving delivery and logistics flexibility, and enhancing customer experience and responsiveness) and/or by decreasing cost (e.g., by eliminating unnecessary activities, and efficiently managing others). Topics covered will include supply chain strategy, integration, and coordination; supply chain finance; network design and logistics optimization; inter-organizational partnerships for effective inventory control; demand-driven sales and operations planning; quick response through product and supply chain design for improved customer experience; strategic outsourcing and contracting; supply chain risk management; new technologies for supply chains 4.0; and sustainability. Using real-life case studies and software packages, we will examine these intricacies of supply and demand network management, learning about the underlying tools, methodologies and decision support systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ: BQOM 2411 or 2421; PROG: Katz Graduate School of Business

BQOM 2534 - STRATEGIC PROCUREMENT AND SOURCING MANAGEMENT

Minimum Credits: 1
Maximum Credits: 1
The course provides a special emphasis on the development and management of strategic sourcing relationships and promotes an understanding of the strategic role of supply management in effective supply/demand/value chain operations. Purchasing and supply management play an essential role in the ability of the firm to operate efficiently and be competitive in the contemporary global business environment. Included in these processes are activities involved in identifying potential suppliers, creating relationships with selected suppliers, obtaining the needed materials in the most efficient quantities at the highest quality levels, and developing strategies designed to ensure an uninterrupted flow of goods and materials. The objective of this course is to make students aware of the demands placed upon purchasing professionals, and to understand the impact of purchasing on the competitive success and profitability of the firm. They must also have an understanding of legal and ethical considerations which affect purchasing decision-making.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2535 - HEALTHCARE OPERATIONS AND SUPPLY CHAIN MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course allows students to engage in experiential learning through a project course that specializes in a topic that may touch one or several of these areas: supply chain management, value chain management, supplier diversity and global sourcing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BQOM 2537 - FORECASTING

Minimum Credits: 1
Maximum Credits: 1
This course will cover traditional forecasting methodologies along with an overview of the state-of-the-art of forecasting with methodologies ranging from judgmental to statistical knowledge sources.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BQOM 2401; PROG: Katz Graduate School of Business

BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS

Minimum Credits: 1
Maximum Credits: 1
This course gives students a perspective on what is project management and how different project management techniques are used in practice. Time/Quality/Cost trade-offs are considered in addition to discussing how to manage renewable resources and level resource. Most of the course materials are presented in the context of practical business situations from a variety of fields such as corporate finance, investment management, manufacturing/production, distribution/logistics, purchasing, and human resources. Students master commercial software such as Microsoft Project and Excel add-ins, and through applications learn how to facilitate project management using these packages.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BQOM 2411 or 2421; PROG: Joseph M. Katz Grad Sch Bus

BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2559 - APPLIED SIMULATION AND OPTIMIZATION

Minimum Credits: 1
Maximum Credits: 1
The purpose of this course is to enhance the problem-solving skills of Pitt Business students to the level necessary for them to deal with complex decision problems using optimization and simulation. It is an introduction to predictive analytics which can be roughly divided into two approaches: pattern recognition and simulation. In this course we focus on simulation, where you start by using human knowledge of cause and effect to create a model of the system in which the problem operates. You then connect the data you have available with that model to obtain a future projection. Simulation, integrates signals missing in the data and has relatively low data acquisition and processing costs while giving highly reliable predictions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BQOM 2512

BQOM 2578 - DATA MINING

Minimum Credits: 3
Maximum Credits: 3
Data mining is the process of extracting useful information and knowledge from a set of data. Mining is typically done on data sets too large to be analyzed by hand, but the same techniques are applicable to small, complex data. This course is an introduction to the most popular methods used in managerial data mining, and provides you with experience in using commercial software to explore real data sets. Models considered include those from statistics, machine learning, and artificial intelligence, such as discriminant analysis, logistic regression, clustering, neural nets, tree/rule induction, and association rule modeling. The course is methods oriented, as opposed to being methodology oriented, so you will learn about when and how to use techniques and how to interpret their output rather than the details about how those techniques work. A laptop computer is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BQOM 2557; PROG: Katz Graduate School of Business

BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Minimum Credits: 1
Maximum Credits: 1
Business Analytics: Strategic Essentials explores the growing use of Advanced Analytics ("AA"; predictive/prescriptive analytics) as a critical element for business strategy development and managerial priorities. Students will develop a fundamental understanding of how AA is being used to drive strategic change, market leadership, and functional priorities. Students will: Understand why AA is viewed as a strategic imperative for organizations, Establish a framework to apply AA to various levels of strategic and functional priorities, Develop an overall fluency in matters that directly impact the success of AA implementations The course uses a mixture of lectures, readings, case discussions, and written case analyses. The focus is helping students build an overall framework that will assist in achieving target returns on investment related to AA-driven initiatives that students will lead in their careers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BQOM 2580 - BUSINESS ANALYTICS: STRATEGIC ESSENTIALS

Minimum Credits: 1.5
Maximum Credits: 1.5
Business Analytics: Strategic Essentials explores the growing use of Advanced Analytics ("AA"; predictive/prescriptive analytics) as a critical element for business strategy development and managerial priorities. Students will develop a fundamental understanding of how AA is being used to drive strategic change, market leadership, and functional priorities. Students will: Understand why AA is viewed as a strategic imperative for organizations, Establish a framework to apply AA to various levels of strategic and functional priorities, Develop an overall fluency in matters that directly impact the success of AA implementations The course uses a mixture of lectures, readings, case discussions, and written case analyses. The focus is helping students build an overall framework that will assist in achieving target returns on investment related to AA-driven initiatives that students will lead in their careers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BQOM 2585 - RESOLVING CONFLICTS WITH THE ANALYTIC HIERARCHY PROCESS

Minimum Credits: 1
Maximum Credits: 1
This course will study the evolution of conflicts, theories used in the study of conflicts, and our approach to conflict resolution based on the Analytic Hierarchy Process (AHP). The main objective of the course is to learn how to use relative measurement to study conflicts, develop hierarchies of benefits, costs, perceived benefits and perceived costs and compute gain-loss ratios for pairs of tradeoffs used to construct a fair and equitable agreement. The course consists of seven sessions. The first six sessions provide the background for the last session in which the Conflict Resolution (CR) process based on the AHP is applied. This course will be coordinated with a Global Issue Workshop (GIW) course to be designed around the conflict studied in this class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BQOM 2585 - RESOLVING CONFLICTS WITH THE ANALYTIC HIERARCHY PROCESS

Minimum Credits: 1.5
Maximum Credits: 1.5
This course will study the evolution of conflicts, theories used in the study of conflicts, and our approach to conflict resolution based on the Analytic Hierarchy Process (AHP). The main objective of the course is to learn how to use relative measurement to study conflicts, develop hierarchies of benefits, costs, perceived benefits and perceived costs and compute gain-loss ratios for pairs of tradeoffs used to construct a fair and equitable agreement. The course consists of seven sessions. The first six sessions provide the background for the last session in which the Conflict Resolution (CR) process based on the AHP is applied. This course will be coordinated with a Global Issue Workshop (GIW) course to be designed around the conflict studied in this class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BQOM 2801 - STATSTCL ANAL: UNCERT

Minimum Credits: 3
Maximum Credits: 3
Provides students with a set of integrated statistical tools and methodologies useful in a managerial environment. The emphasis is on the use of real data for modeling and solving problems in the areas of marketing, finance, human resources and operations management. Topics covered include data analysis and modeling, simple and multiple regression (estimation, testing and prediction), analysis and design of experiments, nonparametric statistics and statistical quality control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2811 - DCSN TECHNLGY IN MFG & OPERATNS

Minimum Credits: 3
Maximum Credits: 3
This course provides a foundation in the use of decision technologies for solving complex management problems in a variety of functional areas. Emphasis is given to the utilization of optimization and simulation. Particular attention is devoted to problems in manufacturing and operations management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2821 - HEALTH INSURANCE AND FUNDING U.S. HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
This course provides a broad overview of the organization, financing, and delivery of health care via health insurance. The course is organized as follows. In the first module, we will examine the history of the development of health insurance and health care delivery systems in the 20th century; including health insurance markets and the public and private providers of health insurance in the United States. In the second module, we will examine reimbursement for medical care, including incentive structures and risk adjustment. In the third module, we will assess efforts currently underway in the U.S. with respect to improving access to and quality of health care while reducing costs. In the fourth module, the class will focus on major challenges facing the U.S. health care system with case studies of high healthcare prices and social determinants of health as key challenges. This course focuses mainly on the U.S. system, with health systems in other comparable countries briefly discussed for comparison. Students are evaluated based on discussion form participation, 2 individual problem sets, one group problem set, and a take-home final exam/assignment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: EMBA Healthcare- Business Administration

BQOM 2904 - PROBLEM SOLVING AND CREATIVITY

Minimum Credits: 1
Maximum Credits: 1
The focus of this course is on creativity and associated design thinking techniques. We will examine the role of creativity in the innovation process, and explore the benefits of knowledge diversity. We will explore how to draw insight from different knowledge domains to identify important questions whose answers can be a source of value, and to develop novel approaches to problem solving. In addition to practical exercises to understand the tools and techniques that foster value-added creativity and innovation, we will discuss recent research from a number of academic domains. Among others, we will explore the role of leadership and team work in the creative endeavor, as well as the fundamental elements of design thinking. Since the course includes several experiential components, it is not feasible to take this course without committing to attending all classes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 3010 - INDEP STUDY OPERATIONS RESEARCH

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BQOM 3020 - SIMULATION

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to give an up-to-date treatment of the important aspects of simulation methodology. The topics covered include: modeling and generating stochastic inputs, output data analysis, variance reduction techniques, experimental design and model validation. Application of the simulation techniques in manufacturing, finance, marketing and other functional areas will be explored. An overview of the simulation languages including arena will be given.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 3023 - DATA MINING SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This course is a primarily methodological and secondarily computational treatment of data mining topics of recent, current, and developing interest in the management science literature. Three subsets of the literature will be covered in depth: (1) data mining papers that have appeared in the KGSB a-journal list; (2) ensemble methods; and (3) optimization-based approaches to data mining. Grading in the course will be based on presentations and a term project. Familiarity with data mining topics and tools at least to the level of BQOM 2578 or equivalent or permission.
Academic Career: GRAD
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BQOM 3024 - OPERATIONS MANAGEMENT FOUNDATIONS AND EMERGING TOPICS

Minimum Credits: 3
Maximum Credits: 3
Operations Management (OM) focuses on designing, operating, and continuously improving a firm's processes for producing and delivering goods and services. Foundational OM research has traditionally emphasized scientific methods for planning, scheduling, inventory control, and quality improvement, drawing on modeling and quantitative frameworks. With the growing emphasis on multi-stakeholder perspectives, increased data availability, improved computational capabilities, and emerging technologies, the scope of OM research has evolved. This course surveys diverse OM research, spanning various models and methodologies, including economic modeling, optimization, dynamic programming, stochastic processes, statistical methods, and artificial intelligence. The goal of the course is to (1) familiarize students with OM research topics, models, and methods, (2) enable them to define new and impactful research directions, (3) prepare them to review papers and write analytical reports, and (4) provide opportunities to practice discussing and presenting research papers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BQOM 3025 - MARKET DESIGN

Minimum Credits: 3
Maximum Credits: 3
In this course we will examine how prices can coordinate markets. There is a deep literature on how to set prices, rooted traditionally in Economics but which has expanded across multiple fields including Operations Management, Marketing, Industrial Engineering, and Computer Science. The course will be divided into two halves. In the first half of this course, we will explore some foundational models of pricing in operations management, with an emphasis on practical and computational aspects of setting prices. In the second half of the course, we will examine some emerging research, with an emphasis on recent papers related to how changing price structures can affect market outcomes.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BQOM 3099 - READINGS IN OPERATIONS RESEARCH

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BQOM 3581 - SUPPLY CHAIN AND OPERATIONS MANAGEMENT RESEARCH

Minimum Credits: 1
Maximum Credits: 1
The Operations Management and the Supply Chain Management functions form the core of any organization, be it a service organization like a hospital, an insurance company or a university, or a manufacturing organization that makes automobiles, smartphones or airplanes. Even before the pandemic, the importance of supply chains was well-known, but the pandemic really brought the importance of supply chain management to the forefront. Poorly designed operations and supply chains resulted in product shortages, customer dissatisfaction, lost revenues, and higher costs. In this course, we will review research related to both operations (the processes within an organization) and supply chain management (the processes across firms). These activities enhance value for a firm by both increasing revenue and lowering costs. But, multiple markets, multiple products, interactions with other business functions, coordination across units, and uncertainty in supply and demand, ever-changing technologies, and decisions that span operational to strategic, make operations and supply chain management complex. Since operations and supply chains have an end-to-end perspective, and consider operational, tactical and strategic decisions, they span a wide gamut of topics. In this course, we focus on the following principal topics: (i) Primary goals of operations and supply chains, (ii) Interfunctional and interorganizational channel coordination/integration, (iii) Supply chain finance, (iv) Capacity and Variability, (v) Procurement and global offshoring, (vi) Sales and operations planning, (vii) Inventory management in multi-facility networks, (viii) Risk management in the supply chain, and (ix) Sustainability, and new technologies that are disrupting supply chains.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

Quechua/Kichwa

QUECH 2909 - SPECIAL TOPICS IN QUECHUA

Minimum Credits: 3
Maximum Credits: 3
This course will be a topics course, meaning that the specific content of the course will change each time the course is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Radiology

RAD 5330 - IMAGING CLERKSHIP (3 WEEKS)

Minimum Credits: 0
Maximum Credits: 0
Three-week course designed to increase experience in radiology and imaging. Will be accomplished by lectures, seminars and student case presentations. All lectures are at a senior medical student level emphasizing clinical applicability. By course end students are expected to understand basic uses and limitations of anatomic and physiologic imaging modalities in diag. rad., nuc. med., and MRI. Students will be expected to acquire basic understanding of common radiographic studies and understand indications and limitations of different imaging methods used in evaluating common clinical problems.
Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

RAD 5368 - RADIOLOGY IN MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Radiology in Medicine is a self-paced 2-week elective designed for students who are not intending a career in Radiology but wish to enhance their understanding of radiologic techniques. Students will be required to complete 19 online radiology modules from Aquifer Radiology. Students will then take the Aquifer Radiology National Examination (also online). There will be optional opportunities for reading room observation. Students will also have the opportunity to attend departmental conferences, including the daily noon conference and morning conference for radiology residents. A Satisfactory grade will require completion of the modules and a minimum score on the examination. Honors grades are not offered in this 2-week elective.
Academic Career: Medical School
Course Component: Workshop
Grade Component: S/U Basis

RAD 5384 - EXPERIMENTAL RADIATION ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
Students undertaking this elective may join ongoing basic research projects in the laboratory or, with permission, initiate their own projects. Students will be expected to participate in all aspects of their segment of the ongoing research; experimental design, data collection, data analysis and reporting.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

RAD 5386 - RADIOLOGY: ADVANCED ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
Radiology: Advanced Elective is an intensive elective designed for students who are planning a career in Radiology. Students will be assigned to a reading room and will have responsibilities similar to that of a first-year radiology resident. Students will independently review imaging examinations and then present the cases to an attending radiologist. Students are not permitted to independently generate dictated reports but will listen to the attending dictate the case after discussing the findings. Later in the rotation, some attendings may require the student to send completed dictations by email or DM for inclusion in the medical record. Students will be expected to attend 7am and noon teaching conferences, as well as numerous weekly multi-disciplinary conferences. Students will observe image-guided procedures, favoring situations where there are no other trainees in the procedure room. This rotation runs M-F, 7am-5pm. Some conferences may require that the student remain past 5pm. There are no overnight or weekend responsibilities. Grading will be similar to evaluation of first-year radiology residents, and will reflect attendance, interpersonal relations, knowledge base, and presentation/dictation skills. Honors and High Pass grades are available.
Academic Career: Medical School
Course Component: Workshop
Grade Component: H/HS/S/LS/U

RAD 5421 - DIAGNOSTIC RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0
A four-week elective in diagnostic radiology offered to those who wish to gain additional exposure to the field. Students may choose a broad based curriculum which will expose the individual to all areas of radiology or may choose to do a focused radiology elective in angio/interventional radiology, ultrasound, or neuroradiology.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5422 - ADVANCED RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0
A four-week intensive elective course in advanced diagnostic radiology for fourth year medical students. The course will include didactic lectures and demonstrations that will be presented by members of the radiology faculty. Students will also gain clinical exposure to radiology in some of the following assignments: thoracic imaging/musculoskeletal imaging/pediatric radiology/abdominal imaging/nuclear medicine/women's imaging/neuroradiology. Students will also have access to the radiology learning lab, teaching files, and other educational materials for individual study. Participants are required to present a comprehensive clinical case with an emphasis on the radiology features pertinent to their case presentation. The case should be of a patient the student encountered in prior clinical rotations. A written examination will be required at the end of the elective.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5425 - VASCULAR/INTERVENTION RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0
A four-week clinical elective. Service covers all aspects of angiographic and interventional procedures below the neck. Diagnostic procedures and common interventional procedures are performed. The medical student will scrub into interventional cases with radiology staff, fellows and residents, attend daily case review sessions, and perform clinical rounds on patients being followed by the interventional radiology service.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5430 - NUCLEAR MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Nuclear medicine involves the formulation and use of radioactive substances used as tracers of metabolic processes. They may be used in vitro or in vivo in patients for therapy or for diagnosis where radioactivity is quantified and displayed by various instruments. Students are brought into the service for hands-on demos of the various procedures exemplified by clinical material. The principle routine clinical studies include functional imaging of brain, heart, bones, kidneys, liver, thyroid, adrenal and various neoplasms by means of monoclonal antibodies.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5435 - CLINICAL RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0
A four-week elective designed to increase understanding of diagnostic radiology. Students will be assigned to one-week rotations in four different areas: thoracic imaging, musculoskeletal imaging, pediatric radiology, abdominal imaging, nuclear medicine, women's imaging, and neuroradiology.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5440 - INDEPENDENT STUDY IN RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0
Elective (4 weeks) is available to senior students with a particular interest in a subspecialty area of radiology. Student will design an intensive, independent study elective with a staff radiologist in the interest area. A written proposal is required to be submitted to the director of undergraduate medical education in radiology outlining the goals and objectives of the elective which has been approved by the faculty advisor. The prospectus is required a minimum of one month in advance of beginning project for credit.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5620 - CLINICAL RADIATION ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four week elective offers the student instruction and experience in clinical radiation oncology and an intro to radiotherapy physics at the joint radiation oncology center. Facilities will be at the university medical center, Magee Women's Hospital and Shadyside Hospital. The student will spend time with faculty members in consult, exam, treatment and follow-up of the particular subgroups of malignant disease managed by the individual physician. Student will attend department conference, treatment planning sessions, operative radioactive isotope insertion, etc.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5630 - INTRODUCTION TO CLINICAL RADIATION ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four-week clinical elective offers the student instruction and experience in clinical radiation oncology and an introduction to radiobiology and radiation therapy physics in the Department of Radiation Oncology. The student will spend time with faculty members in consultation, examination, treatment, management and follow-up of the particular subgroups of malignant disease managed by the individual physician. The student will attend departmental conferences, treatment planning sessions, radiosurgery planning and treatment, operative radioactive isotope insertions, etc. The student will be introduced to the physics aspects of radiation therapy. The elective is planned so that each student will have the opportunity to obtain an overall view of the field of radiation oncology.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5826 - EXPERIMENTAL RADIATION ONCOLOGY RESEARCH MONTH

Minimum Credits: 0
Maximum Credits: 0
Students undertaking this four week elective may join ongoing basic research projects in the lab or with permission, initiate their own related projects. This lab is involved in evaluating the role of biologic response modifiers on hematopoietic recovery after treatment of tumors in mice. In addition, we are inserting genes into hematopoietic stem cells that contain them. Objectives are experimental design, cell collection and counting, sizing and culture and DNA isolation. Involvement expected in ongoing research, experimental design, data collection, analysis and report.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5827 - EXPERIMENTAL DIAGNOSTIC RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0
This 4 week elective is designed for the student interested in a career in radiology and who wishes to pursue a research project. The student needs to find a radiology faculty member who is willing to collaborate in a research project. These research projects can vary according to the combined interest of the student and the faculty preceptor. The student and faculty preceptor need to submit a written research proposal before this elective can be approved.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5840 - RADIATION ONCOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
This elective provides research project opportunities in radiation oncology to interested and motivated students. Project areas include clinical studies, prospective or retrospective clinical studies, creating a database, evaluating outcomes of solid tumors. The objective is to teach the basic approach to research in the specialty.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U

RAD 5841 - RESEARCH IN RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0
This elective is available to interested and motivated students. This elective provides opportunities to learn basic research methodology which may include approach to experimental design, protocol development, data analysis and evaluation of results. Student may participate in ongoing research in the lab and on patients.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5842 - VIRTUAL RADIATION ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0

Students will spend time learning more about the field, its technical basis and sub-disciplines through prerecorded lectures. The student will then participate in the virtual clinical work-up of patients in preparation for radiation therapy as well as in the treatment and follow up of those already treated patients. Students will rotate with individual attendings and residents through their clinic virtually seeing and assessing patients. Students will spend time learning to contour on several cases that will be reviewed and discussed with radiation oncology residents and attendings. A small research project or discussion on a subset of radiation oncology will be completed during the fourth week with the course closing via a mini-presentation and final exam. All elements can be conducted remotely through online platform. For students who have already rotated in person or virtual, this course can provide additional depth and can be customized.
Academic Career: Medical School
Course Component: Practicum
Grade Component: H/HS/S/LS/U

RAD 5899 - INDEPENDENT STUDY IN RADIATION ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5900 - EXTRAMURAL RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in radiology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

RAD 5901 - EXTRAMURAL RADIATION ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in radiation oncology may be arranged at an institution other than the university of Pittsburgh school of medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Rehabilitation Science

REHSCI 1000 - PRINCIPLES OF RESEARCH METHOLOGY

Minimum Credits: 3
Maximum Credits: 3
The study of the nature of research and the applications of the scientific approach in the research procedures. The course focuses on concepts, design techniques and interpretations, as well as limiting factors and ethical considerations.
Academic Career: Undergraduate

Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: (STAT 0200 or 1000 or 1020 or 1131) or (PSY 0201 or 0270); MIN GRADE: 'C-' for listed courses; PLAN: Rehabilitation Science (BS, BSH, BPH)

REHSCI 1200 - HUMAN ANATOMY

Minimum Credits: 3
Maximum Credits: 3
This course uses lecture and laboratory experiences to teach the anatomical structures of the human body. Content focuses on gross human anatomy with particular reference to the musculoskeletal, nervous, cardiovascular and respiratory systems. Emphasis has been laid on application of knowledge of human anatomy in diagnostics of commonly encountered diseases/injuries. Students are encouraged to use their knowledge of anatomical structures learned in class to create such clinical scenarios as a part of learning.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: [(BIOSC 0150 or 0170 or 0716)or(BIOL 0110)orBIOENG 1070] and [(BIOSC 0050or0057or0058or0070 or0715) or (BIOENG 1070) or (BIOL 0101or0111)] or BIOSC 0190; MIN GRADE: 'C-' ; PLAN: REHSCI or AT (BS, BSH, BPH); CREQ: REHSCI 1201

REHSCI 1201 - HUMAN ANATOMY LAB

Minimum Credits: 1
Maximum Credits: 1
This course uses lecture and laboratory experiences to teach the anatomical structures of the human body. Content focuses on gross human anatomy with particular reference to the musculoskeletal, nervous, cardiovascular and respiratory systems. Emphasis has been laid on application of knowledge of human anatomy in diagnostics of commonly encountered diseases/injuries. Students are encouraged to use their knowledge of anatomical structures learned in class to create such clinical scenarios as a part of learning.
Academic Career: Undergraduate
Course Component: Credit Lab
Grade Component: Letter Grade
Course Requirements: CREQ: REHSCI 1200

REHSCI 1205 - HUMAN PHYSIOLOGY

Minimum Credits: 4
Maximum Credits: 4
This basic human physiology course covers general physiological processes, muscles, blood and lymph, body fluids, renal function, respiration, metabolism, and the nervous, gastrointestinal, cardiovascular and endocrine systems. Problem-based formats will be introduced with particular reference to those problems seen in clinical settings.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: [(BIOSC 0150 or 0170 or 0715) or (BIOL 0110) or (BIOENG 1070)] and [(BIOSC 0050 or 0057 or 0058 or 0070)] or (BIOENG 1070) or (BIOL 0101 or 0111)]; MIN GRADE: 'C-' for listed courses. PLAN: REHSCI (BS, BPH) or AT (BS, BS-H, BPH)

REHSCI 1215 - EXERCISE PHYSIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course focuses on the effects of exercise in preventing and treating disability, in optimizing the rehabilitation process, and in maintaining the health of those with disabilities. The course emphasizes the effects of exercise on the various body systems, including the cardiovascular, neuromuscular, and musculosketetal, in individuals with disabilities.
Academic Career: Undergraduate

Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: (REHSCI 1205) or (BIOSC 1250 or 1070) or (NROSCI 1250) or (NUR 0013 and 0003); MIN GRADE: 'C-' for listed courses; COREQ REHSCI 1216; PLAN: Rehabilitation Science (BS, BPH) or Athletic Training (BS, BS-H, BPH)

REHSCI 1216 - EXERCISE PHYSIOLOGY LAB

Minimum Credits: 1
Maximum Credits: 1
Required lab component for REHSCI 1215 Exercise Physiology: This course focuses on the effects of exercise in preventing and treating disability, in optimizing the rehabilitation process, and in maintaining the health of those with disabilities. The course emphasizes the effects of exercise on the various body systems, including the cardiovascular, neuromuscular, and musculosketetal, in individuals with disabilities.
Academic Career: Undergraduate
Course Component: Credit Laboratory
Grade Component: Letter Grade
Course Requirements: PREQ: (REHSCI 1205) or (BIOSC 1250 or 1070) or (NROSCI 1250 or 1070) or (NUR 0013 and 0003); or HRS 1023 MIN GRADE C- for listed courses; COREQ: REHSCI 1215; PLAN: REHSCI (BS, BS-H, BPH)

REHSCI 1220 - KINESIOLOGY AND BIOMECHANICS

Minimum Credits: 2
Maximum Credits: 2
Course will cover the functional anatomy and biomechanics of the major joints of the human body and the application of mechanics to describe and analyze normal and pathological human movement. Students will be analyzing muscle function and joint motions involved in an exercise or functional activity, palpating muscle groups and bony landmarks, testing the strength of a muscle group, and demonstrating exercises to stretch or strengthen various muscles.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: REHSCI 1200 and (PHYS 0101 or 0110 or 0140 or 0150 or 0174); MIN GRADE "C-" for all listed courses; CREQ: REHSCI 1221

REHSCI 1221 - KINESIOLOGY AND BIOMECHANICS LAB

Minimum Credits: 1
Maximum Credits: 1
Required lab component for rehsci 1220 kinesiology and biomechanics: course will cover the functional anatomy and biomechanics of the major joints of the human body and the application of mechanics to describe and analyze normal and pathological human movement. Students will be analyzing muscle function and joint motions involved in an exercise or functional activity, palpating muscle groups and bony landmarks, testing the strength of a muscle group, and demonstrating exercises to stretch or strengthen various muscles.
Academic Career: Undergraduate
Course Component: Credit Lab
Grade Component: Letter Grade
Course Requirements: PREQ: REHSCI 1200 and (PHYS 0101 or 0110 or 0140 or 0150 or 0174); MIN GRADE C- for all listed courses; CREQ: REHSCI 1220 PLAN: Rehabilitation Science (BS, BSH, BPH) SUBPLAN: Pre-Athletic Training (BSPATH-SP)

REHSCI 1235 - MEDICAL TERMINOLOGY

Minimum Credits: 1
Maximum Credits: 1
This course is designed to introduce students to the fundamentals of medical terminology. It includes word structure of basic medical and surgical terms and procedures, body parts and organs, body systems, selected medical specialties, and commonly used medical abbreviations and symbols. This course is a self-directed learning course, using a programmed text, with online quizzes (through Blackboard) and a final exam administered in a classroom.

Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

REHSCI 1265 - PHARMACOLOGY IN REHABILITATION

Minimum Credits: 3
Maximum Credits: 3
This course serves as a foundation to general pharmacology, and begins with lectures on the general principles affecting drug response: drug absorption, distribution, metabolism and excretion. The major drug categories will then be discussed, with an emphasis on drug classification, mechanism of action, side effects (especially those that are predictable), and significant drug interactions. At the completion of this course, the student will be able to recognize and describe the action of prototype drugs in each major drug category, compare and contrast their action with other drugs in each category, and explain the role of those drugs in the mitigation, treatment, cure or prevention of disease in humans.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: REHSCI 1205 or (BIOSC 1250 or 1070) or NROSCI 1250 or (NUR 0013 and 0003); MIN GRADE "C-" for all listed courses; PLAN: Rehabilitation Science (BS, BSH, BPH) or Athletic Training (BS, BSH, BPH)

Rehabilitation Technology

RT 2101 - FUNDAMENTALS OF REHABILITATION & ASSISTIVE TECHNOLOGY APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the fundamental principles and practices related to multiple areas of assistive technology. This includes: wheelchair seating and mobility, adaptive sports and recreation, augmentative communication, environmental control and home automation, computer and SmartPhone access, cognitive aids, low vision and hearing loss devices, adaptive driving, vehicle modifications, transportation safety, environmental accessibility as well as prosthetics and orthotics. In addition, common terminology, disability etiquette, ethics, and the service delivery process are discussed throughout. The course also includes various hands-on labs to further learn the applications of various assistive technologies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2102 - FUNDAMENTALS OF REHABILITATION & ASSISTIVE TECHNOLOGY DESIGN

Minimum Credits: 4
Maximum Credits: 4
This course is the first course in a two-course sequence on Rehabilitation Engineering Design. RT 1102/2102 is in the Fall, and 1207/2207 is in the Spring. RT 1102/2102 covers the fundamentals of product design and development with a particular emphasis on assistive and rehabilitative technologies. The goal of this course is for students to learn both the design process and the tools necessary to develop high-quality designs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2103 - INDIVIDUAL & SOCIAL EXPERIENCE OF DISABILITY

Minimum Credits: 3
Maximum Credits: 3

This course investigates psychological and sociological issues of impairment regarding views of disability not as solely located within the individual, but instead as the outcome of interaction between the individual with the impairment and society. Course focuses on the experience of being disabled and includes interactions with a wide variety of disciplinary perspectives on individual, social and cultural experience of disability, gaining familiarity with key debates in these fields. Foundations of stigmatization and discrimination towards people with disabilities and their pervasiveness and effect throughout all domains of life will be examined.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2104 - FUNCTIONAL & MEDICAL ASPECTS OF DISABILITY RELATED TO ASSISTIVE TECHNOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide a general overview of the pre-disposing factors and direct causes of disease, as well as their effects on the human body. It will also include a systemic approach to the basic disease process in terms of etiology, symptomatology, general pathological changes, diagnostic procedures. Students will examine major chronic illnesses, diseases, and disabilities in order to obtain a practical understanding of the implications of these conditions on all areas of functioning and participation to prepare for clinical rehabilitation technology applications. Case scenarios will be utilized to enhance student learning and interaction with individuals with varying types of disabilities. Students will prepare a paper and present on a specific disease or disability focusing on both the pathophysiology and the functional considerations that may be affected by use of rehabilitation and assistive technology. This course will also cover a basic introduction to medical terminology and universal precautions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2105 - INTRODUCTION TO EVIDENCE-BASED PRACTICE & RESEARCH METHODOLOGIES

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to all elements of designing a research project from developing a researchable question to ethical issues. Lectures focus on basics of different research designs and key concepts of evidence-based practice. Through hands-on class exercises and journal club activities, students will gain ability to interpret and critique literature and become critical consumers of research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2206 - REHABILITATION & ASSISTIVE TECHNOLOGY PRACTICES

Minimum Credits: 3
Maximum Credits: 3
Develop the clinical skills needed to apply assistive technology and rehabilitation engineering solutions to help individuals with disabilities achieve their goals in the area of productivity, education, employment, communication, and environmental access. Students will match knowledge of assistive technology products gained in RT 2101 to the needs of real life "model clients". Taught using a service delivery model for assessing the individual, the context, the technology-user interface and an interdisciplinary team approach.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: RT 2101 to be the pre-req for RT 2206 - Rehabilitation and Assistive Technology Practices

RT 2207 - CLIENT CENTERED REHABILITATION & ASSISTIVE TECHNOLOGY DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course is the second course in a two-course sequence on Rehabilitation Engineering Design. HRS 1102/2102 is in the Fall, and 1207/2207 is in the Spring. This course is a project-based design course in which students use design methods and tools learned in 1102/2102, follow an iterative design and testing process with clients and experts, and develop assistive technology device prototypes for their clients.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2208 - ETHICAL ISSUES IN HEALTHCARE

Minimum Credits: 3
Maximum Credits: 3
This course examines a variety of complex ethical issues which confront health-care practitioners and researchers as they work with clients and colleagues within the health-care system and society. By analyzing actual cases, health-care workers are enabled to make informed choices when faced with these issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2209 - CLINICAL APPLICATIONS OF SEATING AND MOBILITY

Minimum Credits: 3
Maximum Credits: 3
Course for students to develop knowledge and skill in the process and strategies to find and acquire assistive technology devices and services for people with disabilities as well as understand the underlying policies that govern funding. Course focus on funding sources, legislative policy, clinical assessment, documentation procedures, use of evidence, strategies for preparing letters of necessity and advocacy efforts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2210 - ASSISTIVE TECHNOLOGY FUNDING, POLICY, & MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course is focused on the components necessary for people with disabilities to access Assistive Technology and Assistive Technology Services. Students will be able to apply experience from previous coursework and experience with AT devices from a context of policy (legislative and non-legislative), funding, and organizational management that surrounds services. Content will focus on funding sources, legislative policy, clinical assessment, documentation procedures, use of evidence, and advocacy efforts. Examples of systems change activities and current topics will also be reviewed and discussed. Advocacy and procedures for due process and policy change will also be reviewed for situations when funding sources and policies are limited. The management portion will focus on the essential components of a service delivery program or business model that includes strategic planning, human resource/organizational behavior, policies and procedures, accreditation, budgets, quality improvement, business planning and resource management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2311 - CLINICAL INTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
Supervised practical experience, usually in a clinical facility or agency, permitting the student to observe and participate in existing specialized programs and to develop, apply, and evaluate new clinical procedures.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2312 - SCHOLARLY PAPER

Minimum Credits: 1
Maximum Credits: 6
A research oriented paper based on work the student has done in his or her area of study. Students will be encouraged to submit honors papers for publication or presentation at a national or state professional meeting. The adviser and an appropriate faculty reader will supervise the student's work on the scholarly paper.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2413 - GRADUATE RESEARCH PROPOSAL

Minimum Credits: 1
Maximum Credits: 6
Graduate student writes thesis proposal, receives committee approval and institutional review board (IRB) approval for thesis study.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2414 - GRADUATE RESEARCH

Minimum Credits: 1
Maximum Credits: 6
An original in-depth investigative study of a selected area of professional interest. A research report suitable in format and content for publication is required.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2415 - SOFT TISSUE BIOMECHANICS

Minimum Credits: 2
Maximum Credits: 2
Soft tissue responses to external mechanical loading are of interest in the prevention and treatment of pressure-related tissue injuries. These injuries include ulcers occurring on the plantar surface of diabetic feet, wounds at the inter face between a PROSTHeses and a residual limb and pressure ulcers over the bony prominences of immobile individuals with neuromuscular impairments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2416 - WHEELCHAIR BIOMECHANICS

Minimum Credits: 2
Maximum Credits: 2
Discuss all areas of wheelchair biomechanics including stability of wheelchairs and propulsion biomechanics. Students will use kinetic and kinematic analysis to determine the forces and moments occurring in upper extremity joints during the propulsive stroke. Clinical correlates to the biomechanical studies will be presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2417 - PRESSURE INJURY SCIENCE

Minimum Credits: 2
Maximum Credits: 2
Pressure injury science is a journal club style course covering historical and contemporary research on intrinsic and extrinsic factors leading to pressure injury development, effectiveness of interventions for prevention, risk assessment tools, techniques used to evaluate and study tissue integrity related pressure injury development and the evidence for the three primary theories of pressure injury etiology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2719 - FUNCTIONAL AND MEDICAL ASPECTS OF DISABILITY

Minimum Credits: 2
Maximum Credits: 2
NOTE: Only register for the 2-credit course if you are a new student in Fall 2020, taking the 35-credit MRT program. This course is designed to prepare professionals to become skillful interpreters and users of medical information and terminology. Students examine major chronic illnesses and disabilities in order to obtain a practical and theoretical understanding of the implications of these conditions on all areas of functioning and participation, including interpersonal relationships, sexuality, education, employment, and independent living.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2922 - TEACHING INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
Supervised experience in a health-related educational program permitting the student to develop and present instructional materials, to experiment with innovative methods of instruction, and to evaluate the effectiveness of the presentations.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

RT 2999 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
Provides students an opportunity to explore in depth an area of particular interest to them. It is the student's responsibility to find a faculty member willing to undertake such a tutorial.

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

Restorative Dentistry

RESTD 5111 - DENTAL ANATOMY AND MORPHOLOGY

Minimum Credits: 2
Maximum Credits: 2
In this course, students will develop a practical understanding of tooth anatomy, structure, function, and related terminology; the relevance of these anatomic features to the practice of clinical dentistry will be emphasized. This course includes lectures and class discussions. The accompanying laboratory course, RESTD 5115, provides an opportunity for hands-on experiences in a preclinical setting.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

RESTD 5118 - DENTAL ANATOMY AND MORPHOLOGY LAB

Minimum Credits: 2
Maximum Credits: 2
In this course, students will be presented with the anatomy of the primary and permanent teeth on a practical level, focusing particularly on the size, shape, contours, and anatomic features of the individual permanent teeth, and teaches the student how to visualize and reproduce the contours clinically. The primary goal of this course is for the student to be able to identify the primary and permanent teeth, and to be able to visualize the size, shape, contours, and anatomic features of the individual permanent teeth. A secondary goal is to develop and practice manual dexterity skills that are essential to later courses and in the profession of dentistry. This course includes small group lab sessions.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

RESTD 5282 - OPERATIVE TECHNIQUES REVIEW

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

RESTD 5375 - ESTHETIC RESTORATIVE DENTISTRY

Minimum Credits: 1
Maximum Credits: 1
According to a report published in the Journal of Health Affairs, consumer spending in dentistry, which was $60 billion in 2002, surpassed $84 billion in 2005, and government actuaries predict annual increases of 6.3 to 6.9% in expenditures to reach $146.9 billion by 2014. It is now estimated that nearly 70% of the total consumer spending in dentistry is spent on esthetic dentistry. New concepts in esthetic dentistry involve more than merely providing porcelain veneers, they encompass a broad approach to the total esthetic needs of patients. "Esthetic Restorative Dentistry" builds on the sound principals of restorative dentistry presented through the student's first three years. This course introduces the student to the basic knowledge, materials, armamentarium, and clinical procedures that constitute the modalities of esthetic restorative dentistry. Students will understand how in combination each modality builds the foundation for interdisciplinary patient management. Students graduating from dental school in 2014 and beyond must have the opportunity to learn and explore the special methods of esthetic restorative dentistry as today's esthetic dentistry is supported by new developments, innovative techniques, and a wealth of new scientific data.

Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

RESTD 5379 - CLINICAL RESTORATIVE DENTISTRY 1

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of restorative dentistry for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in restorative dentistry for dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in restorative dentistry.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

RESTD 5449 - CLINICAL RESTORATIVE DENTISTRY 2

Minimum Credits: 2
Maximum Credits: 2
This course is designed to provide clinical experiences in the area of restorative dentistry for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in restorative dentistry for dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in restorative dentistry.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

RESTD 5810 - ADVANCED GENERAL DENTISTRY CLINIC

Minimum Credits: 1
Maximum Credits: 1
This clinical course is designed to immerse students in a real-world dental practice environment by allowing them to treat multiple patients within a single session. Students will perform comprehensive care that may include restorative procedures and hygiene checks during the same clinical period, simulating the flow and responsibilities of a daily office schedule.¿ Emphasis is placed on maintaining the standards and guidelines established for the comprehensive care modules, while also fostering skills in clinical efficiency, time management, and patient care coordination. Through this experience, students will learn to balance multiple responsibilities, prioritize tasks, and deliver high-quality treatment within realistic time constraints.¿ This course prepares students to transition smoothly into professional settings, equipping them with both the technical expertise and organizational strategies necessary for success.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

RESTD 5870 - ORAL APPLIANCES COMMONLY USED IN THE GENERAL DENTISTRY PRACTICE

Minimum Credits: 1
Maximum Credits: 1
To empower students to recommend, fabricate (or oversee fabrication), deliver, and follow-up with patients for several Oral Appliances that are common in daily General Dentistry Practice. Students will fabricate hard/soft nightguard and whitening trays. Fluoride trays, athletic mouth guards, snoring and sleep apnea appliances will also be discussed.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

RESTD 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This course provides the student with the opportunity to independently originate, organize and complete a scientific investigation on a topic in restorative dentistry.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

RESTD 5924 - ADVANCED COMPOSITE TECHNIQUES

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

RESTD 5941 - ADVANCED ENDODONTICS

Minimum Credits: 3
Maximum Credits: 3
This course includes lectures, seminars and clinical practice. The lectures include advanced techniques in instrumentation and obturation of endodontic treatment of complex cases. Endodontic surgery techniques are reviewed.
Academic Career: DMED
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

Russian

RUSS 2104 - DEVELOPING ENHANCED RUSSIAN READING PROFICIENCY 1

Minimum Credits: 3
Maximum Credits: 3
Through guided intensive reading of authentic primary and secondary texts in Russian culture, enrolled graduate students will further develop their ability to read such texts comfortably and use them effectively in their academic and professional careers.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

RUSS 2105 - DEVELOPING ENHANCED RUSSIAN READING PROFICIENCY 2

Minimum Credits: 3
Maximum Credits: 3
Through guided intensive reading of authentic primary and secondary texts in Russian culture, enrolled graduate students will further develop their ability to read such texts comfortably and use them effectively in their academic and professional careers. This is the second course in the sequence.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

RUSS 2110 - INTRODUCTION TO LITERARY AND CULTURAL THEORY: LANGUAGE, GENDER, HISTORY

Minimum Credits: 3
Maximum Credits: 3
How do language arts and practices live within a social and cultural context? What is the place of the critic and scholar of literature in the Humanities both as researcher and pedagogue? What kind of theoretical, wider perspective, can help us frame the context and different meanings of a work of art? Focused on the relation between language arts and historicity, the class will address issues concerning representation, gender, politics, education, and the psychology of language rules and infractions. Among the thinkers helping us in our discussions, we will study pragmatic linguists such as Emile Benveniste, social critics of hegemony such as Antonio Gramsci, psychoanalytic approaches to language and power in Jacques Lacan and Franz Fanon, the social critique of literary elitism in Pierre Bourdieu, the redefinition of cultural agency in postcolonial critics such as Gayatri Spivak and Achille Mbembe, the contemporary critique of gendered discourse in the works of Judith Butler, Sara Ahmed and Paul Preciado, and the ecocriticism of Stephanie Posthumus. The class will be organized thematically rather than according to a strict chronology of different approaches. The professor will try to insert workshopping exercises in the classroom, in order to alleviate and share the burden of understanding the contemporary tenets of our field. Seminar taught in English.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

RUSS 2111 - FOURTH-YEAR RUSSIAN 1

Minimum Credits: 3
Maximum Credits: 3
The course provides an extensive practice in oral communication at the advanced level. It includes discussions of readings on topics of general sociocultural interest, analysis of interviews with native speakers, and discussions of audio- and video-recordings. Home essays, oral presentations, and mock interviews are designed to emphasize students' management of the Russian discourse.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2112 - FOURTH-YEAR RUSSIAN 2

Minimum Credits: 3
Maximum Credits: 3
This proficiency-based and culture-based course provides extensive practice in oral and written communication at the advanced level for the students at the mid and high intermediate levels and higher. It is organized around a topic on the personal, community, national, or international interest that students will explore via readings, listening, and viewing activities. Students will improve their fluency and accuracy in conversational activities designed to strengthen their command of informal and formal Russian incorporating the presentational, interpersonal, and interpretive modes of communication. Students will also analyze and respond to culturally-relevant texts (both written and spoken) through the essay format, presentations, and/or digital projects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2113 - BAKHTINIAN CRITICISM

Minimum Credits: 3
Maximum Credits: 3
Aimed at graduate students with an interest in literature. Literary criticism and theory, communication, and philosophy, this course introduces them not only to Bakhtin's major works on language and the novel, but also to contemporary Bakhtinian readings of well-known Russian works of fiction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2230 - HISTORICAL GRAMMAR

Minimum Credits: 3
Maximum Credits: 3
This course traces the history of Russian grammatical structure from its state in common Slavic to the present day, concentrating particularly on the development of the verbal and nominal inflectional systems, and on the phonological system. To the extent possible, the course traces dialectical differences among the East Slavic languages, and among the major dialects of Russian.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2300 - PUSHKIN

Minimum Credits: 3
Maximum Credits: 3
This course studies the biography and all major works of the greatest Russian author (1799-1837). This graduate seminar is conducted in Russian.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2307 - ANTON CHEKHOV & WORLD LITERATURE

Minimum Credits: 3
Maximum Credits: 3
The course surveys Anton Chekhov's career as a playwright, short story writer, and a medical doctor in a rigorously articulated literary, critical, and historical context. While contemplating Russian, Western, and global mythologies about the "Chekhovian" trend in literary production, the course places Chekhov's works in conversation with a range of literary and critical texts to investigate world literature as a comparative angle and a conceptual paradigm as well as to think about the aims and methods of humanistic knowledge making in the 21st century. Each time the course is offered a unique set of additional readings is drawn from a wide range of authors, including such writers as Samuel Beckett, David Bezmozgis, William Boyd, Raymond Carver, Fyodor Dostoevsky, Inua Ellams, William Faulkner, Mavis Gallant, Maksim Gorkii, Henrik Ibsen, Nikolai Leskov, Yiyun Li, Audre Lorde, Guy de Maupassant, Alice Munro, R. K. Narayan, Joyce Carol Oates, Lyudmila Petrushevskaya, Vladimir Sorokin, Lev Tolstoi, Reza de Wet, Eudora Welty, Oscar Wilde, Tennessee Williams, and Virginia Woolf, among others.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2410 - LATE 17TH AND 18TH CENTURY LITERATURE

Minimum Credits: 3
Maximum Credits: 3
This course covers the history of Russian literature, beginning with the prepetrine reforms and ending with the reign of Alexander I. Includes discussion of the problems of Russian baroque, sentimentalism, classicism, and pre-romanticism. This is a graduate course conducted in Russian.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

RUSS 2418 - REPRESENTATION AND THE AGE OF REASON: POLITICS AND AESTHETICS IN THE REIGN OF CATHERINE II

Minimum Credits: 3
Maximum Credits: 3
This course considers the long reign of Catherine II (1762-1796) with particular attention paid to the interplay between the era's shifting

political cultures and the attendant possibilities for cultural production. Topics of interest include enlightened absolutism; Russia's Age of Reason; normative aesthetics; cultural imports; representations of imperial statehood and court life in multiple media; royal patronage and the arts; and the evolution of the Russian literary language as both an aesthetic and political process. The course begins with an examination of Catherine II's predecessors in Russia's century of female rule and surveys the cultural milieux generated during the reigns of Anna Ioannovna and Elizaveta Petrovna. Following a sustained examination of Catherine II's reign, the course concludes with historical appraisals of the Age of Catherine in subsequent periods. Students will become better-acquainted with such literary movements as Russian Neoclassicism, Sentimentalism, and early Romanticism in a comparative and intermedial context, and will have an opportunity to deepen their understanding of such generic forms as the ode, elegy, friendly epistle, tragedy, comedy, and travelog.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

RUSS 2464 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2473 - EMPIRE AND NATION

Minimum Credits: 3
Maximum Credits: 3
Empire and nation examines selected literary and visual texts over four centuries with a concern for their engagement with social crises, specifically multiple collapse of the imperial structure and the so-called emergence of the nation state. Secondary texts include Gellner, Hroch, Anderson and Jameson.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2474 - NEOLIBERALISM AND CULTURAL PRODUCTION

Minimum Credits: 3
Maximum Credits: 3
We will examine this contested term as it circulates in debates about cultural practice since the late 1970s. Course segments are likely to include contrastive models of the concept; their ascripted affinities to Marxist and Weberian traditions; distinctive concepts ("shock doctrine," "thought collective," Comaroff's "occult"); key historical figures and institutions (Kojève, Polanyi, Schumpeter, Hayek, Mont Pelerin); and the term's contradictory symptoms under different ideological systems, such as post-socialist modernity. The intent is to move beyond two tendencies in current debates: 1.) The deployment of the term exclusively as moral judgment; and 2.) Its explanatory capacity for All the Things. Core texts will include Morowski, Harvey, and Klein, as well as critiques of Harvey (Abercrombie, Hindess). The course will ask participants to bring their fields of expertise (both regional and disciplinary) to these debates, situating their own departmental investments in relation not only to textual content, but also to production, distribution, and exhibition. While cinema (e.g. Jia Zhangke, Ken Loach, Aleksei Balabanov) may be a core cultural emphasis, the course welcomes contributions from the fields of art history, literature, music, as well as sociology, history, and anthropology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2621 - RUSSIAN DRAMA

Minimum Credits: 3
Maximum Credits: 3
Covers the history and development of Russian drama from the 17th century to symbolism, including analysis of the best Russian plays of Pushkin, Gogol, Chekhov et al.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

RUSS 2638 - RUSSIAN AND SOVIET CINEMA: LUMIERE TO LENIN

Minimum Credits: 3
Maximum Credits: 3
Although the Russian film industry did not begin to take shape until 1907, moving images were first introduced to the Russian Empire in May 1896, when films by the Lumiere brothers were screened in St. Petersburg and the coronation of Tsar Nikolai II was shot. This course focuses on the cinema of the Russian Empire and early Soviet cinema. It discusses various connections between the motion picture industry and Russian / Soviet literature, culture, and political life of the time. We will investigate both major and neglected genres, screenwriting, acting and editing strategies. We will also talk about the early motion picture theatres, first viewers, and how they impacted the industry. Films by major film directors (such as Evgeny Bauer, Yakov Protazanov, and Sergei Eisenstein) will be screened and discussed within the course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

RUSS 2639 - CINEMA IN THE AGE OF STALIN

Minimum Credits: 3
Maximum Credits: 3
This course examines Soviet cinema during the Stalinist period, from the late 1920s to the early 1950s. While we will address the impact of censorship and state propaganda on filmmaking during these decades, the course also explores how cinema remained a site of avantgarde experiment and popular entertainment despite political constraints. Alongside the celebrated masterpieces of Sergei Eisenstein and other canonical directors, we will examine a wide range of films rarely discussed in surveys of Soviet cinema, including early Soviet spy films, thrillers, animated films, and children's cinema produced during the Stalin era. The course situates cinema within the broader cultural landscape of the time, engaging with developments in architecture, literature, music, and fashion. Through discussions of works by artists such as Vsevolod Meyerhold, Dmitri Shostakovich, and Vera Mukhina, students will explore how film both reflected and shaped the cultural dynamics of Stalinist society.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies, Russian & East European Studies

RUSS 2640 - POST STALINIST CINEMA

Minimum Credits: 3
Maximum Credits: 3
Stalin's death (1953) and the start of Khrushchev's destalinization campaign (1956) not only disrupted the stability of the pre-existing interdependence between the ruling political elite and the national film industry, but also fundamentally altered the interrelationship between the film industry and the Russo-Soviet viewing public. The course will examine the changes in this triangular model through the four major periods in Russo-Soviet history since the death of Stalin: 1953-64 (the thaw), 1964-1985 (stagnation), 1986-1991 (perestroika), and post-1991 (the re-emergence of the Russian national state). Films to be screened include Kalatozov's The Cranes are Flying (1957), Chukhrai's Ballad of a Soldier (1959), Tarkovskii's Ivan's Childhood (1962), Askol'Dov's Commissar (1967; 1987), Pichul's Little Vera (1988), Lungin's Taxi Blues (1990), Mikhalkov's Burnt by the Sun (1994), and Balabanov's Cargo 200 (2007).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies, Russian & East European Studies

RUSS 2641 - CENTRAL ASIAN CINEMA

Minimum Credits: 3
Maximum Credits: 3
This course will examine central Asian cinema between 1990 and the present. Although the course will examine films and the film industry in all five central Asian republics (Kazakhstan, Kryguzia, Tadzikistan, and Uzbekistan), the focus will be on the underlying aesthetics of regional cinema, rather than on a series of national cinemas.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Film Studies, Russian & East European Studies

RUSS 2643 - MOVIE VANISHES: CENSORED SOVIET FILMS IN HISTORICAL CONTEXT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on Soviet films that were not released upon production due to censorship issues but played a significant role in film history. We will start with the pre-revolutionary period, move to the 1920s when censorship was relatively mild, and discuss the ups and downs of the state control over cinema of the later period. The course will cover both canonical masterpieces such as Sergei Eisenstein's ~Ivan the Terrible~ (Part 2) and lesser-known films like Margarita Barskaya's ~Father and Son~ (1941). These films represent a wide range of genres including melodramas, comedies, animated films, and adaptations. We will talk about them in the context of other films of the period that were not banned by censorship.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

RUSS 2645 - NEW EAST SYMPOSIUM

Minimum Credits: 3
Maximum Credits: 3
Participants collaborate over four months to stage a post-semester, multi-day media event with two simultaneous components. First, the Cinema component trains participants in film rights acquisition, event introductions, screenings, and discussions; film writing (program notes, press releases, poster design); social-media dissemination; and logistics. Second, the Academic component, focusing on the REEES region (Russia, East Europe, and Eurasia), combines relevant theory assignments with a CFP (selection, shaping, implementation) to design the event's two research panels, comprising national and international presenters, supported in part by major partner universities. By the semester's end, participants are trained to organize an intellectual multi-day event in potential collaboration with Pittsburgh's annual cycle of three local festivals (New East in May; ScreenShot Asia in October; Europe's Moving Images in February). Weekly readings in cultural politics and relevant artistic texts are part of the seminar.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Attributes: Russian & East European Studies

RUSS 2650 - EISENSTEIN

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the life and work of Sergei Eisenstein, one of the greatest avant-garde film directors. We will discuss in detail all his major films, from ~Strike~ and ~Battleship Potemkin~ to ~Ivan the Terrible~, including the lost ~Bezhin Meadow~ and the unfinished ~Que Viva Mexico~. Eisenstein's canonical films will be investigated in the context of his work in theater, art, film theory, and -- to a certain extent -- science. Delving into the roots of Eisenstein's films and theoretical works we will trace their connections to American, British, Chinese, German, Japanese, Mexican, and other cultures.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

RUSS 2655 - RADICAL BODIES IN SOVIET & POST-SOVIET CULTURE

Minimum Credits: 3
Maximum Credits: 3
The class examines how the arts of the Soviet world tested the limits of the bodily. The Soviet world inherited the West's neoclassical fixation on idealized, ruined bodies as symbols of nostalgic longing for a lost utopia. Through disembodiment and transhumanism, the Soviet avant-garde turned this legacy towards reckless utopianism, entangling the body with technology, challenging gender identity and the limits of sensory expansion, all for the radical prospect of new and better selves. A parallel and dominant Soviet legacy embraced bodily nostalgia, re-assembling the neoclassical ideal in the figure of the "Great Leader." Both legacies remain alive in the culture of the Post-Soviet world, in regime propaganda and protest art alike. This course will explore the legacy of these experiments with the bodily in the Soviet and Post-Soviet world through a wide variety of artistic, literary, cinematic, and philosophical sources.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

RUSS 2670 - COLD WAR AND ITS REVENANTS

Minimum Credits: 3
Maximum Credits: 3
This course will look at the Russo-Soviet cultures of the Cold War, both during its original four decades (1945-1985) and during its contested revisitation (arguably 2007-2022). Texts are likely to include policy and journalistic writings, short stories, films, postage stamps, television shows, photographs, maps, and posters, as well as holidays, art exhibits, film festivals, and commemorative practices. What is at stake in the contemporary debates about a "new cold war"? How would we claim to know and who benefits from this debate? Are we witnessing the redivision of space between two superpowers and three "worlds"? What new financial instruments shape the process this time round? The seminar welcomes students from diverse disciplines.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

RUSS 2700 - MEDIEVAL RUS'

Minimum Credits: 3
Maximum Credits: 3
This graduate course is a survey of old Russian literature beginning with the primary chronicle and concluding in the late 16th and early 17th centuries. Readings will include both primary materials and modern Russian translations of old Russian texts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Medieval & Renaissance Studies, Russian & East European Studies

RUSS 2710 - CULT & CULT CINEMA

Minimum Credits: 3
Maximum Credits: 3
While "cult" is usually a term of religious opprobrium, "cult cinema" suggests the opposite: exaggerated enthusiasm for films that may-despite initial failure-gain long-lasting recognition. What defines the cult film? Its passionate audience? Its thematic transgression? Its exclusion from mainstream distribution (through censorship or ridicule)? Its circulation as a set of citations? Its exhibition practices? Its inscrutability? Its responsiveness to a social context? With screenings of US, British, Iranian, Russian, Armenian-Georgian, and French films, we will examine several theories of cult texts, with underlying curiosity about what the category could mean beyond cinema (in relation to painting, statuary, literature, and other cultural artifacts).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

RUSS 2780 - STALINISM: HISTORY, IDEOLOGY, CULTURE

Minimum Credits: 3
Maximum Credits: 3
This course will examine Stalinism as a complex historical, ideological, and cultural phenomenon that crucially shaped Russia's destiny through the twentieth century and up to the present moment. Giving due attention to its dark sides, we will aim beyond popular stereotypes about this dramatic period (blood-thirsty tyrant; miserable and terrorized population; total propaganda; ersatz art). We will consider major issues in the historiography of Stalinism; the role and nature of ideology in Stalinist society; the doctrine of socialist realism; landmark phenomena and artefacts of Stalinist culture (both official and popular).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

RUSS 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
This course enables graduate students to conduct research under the direction of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

RUSS 2970 - TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Hands-on teaching practicum course for graduate students to learn about university-level foreign language teaching.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

RUSS 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: Russian & East European Studies

RUSS 2995 - PHD RUSSIAN READING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

RUSS 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Thesis Research

Grade Component: Grad SN Basis
Course Attributes: Russian & East European Studies

Slavic

SLAV 1050 - DIGITAL METHODS FOR HUMANISTIC RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Texts hide secrets from us humans that are manifestly obvious to computers: all we need to do is crack the code. This course teaches students with zero coding experience to use computers to reveal hidden insights from digitized texts. Students will learn to make those texts "speak" by transforming them into dynamic visuals and interactive websites: in this manner, Hamlet becomes a chart of gender-coded language; a history of Rome becomes a map of the empire's most frequently referenced battles; and much more. Over the course of the semester, students will apply digital methods to a research project of their own choosing. In addition to adding a valuable tool to their research repertoire, students will leave with coding and web design skills highly sought after in other career contexts.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

SLAV 2050 - COMPUTATIONAL METHODS IN HUMANITIES

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the use of computational modeling and programming to conduct text-based research in the humanities. Course goals include 1) learning how to identify research questions in the humanities that are amenable to computational analysis and processing and 2) designing and implementing xml-based computational systems to explore those questions. No prior programming experience or knowledge of foreign languages required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SLAV 2210 - OLD CHURCH SLAVIC

Minimum Credits: 3
Maximum Credits: 3
This course is intended to enable the student to read old church literature which had a particularly great influence on the Russian literary language. The course embraces the relationship of old church Slavic, to Protoslavic, external history and sources of old church Slavic, its phonology, morphology and syntax. The classes will be devoted to reading, translation, and analysis of the texts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

SLAV 2802 - IMAGINATIVE GEOGRAPHIES

Minimum Credits: 3
Maximum Credits: 3
Traced from Said's orientalism (part two, chapter one), this term alternates in academic discourse with "imagined geographies" and "imaginary geographies." Relatively indifferent to these distinctions, the seminar moves from Said, to (in all likelihood) in Derek Gregory (geographical imaginations), O.R. Dathorne (imagining the world), Michel de Certeau ("walking in the city"), Michel Foucault (on heterotopias), then to Samuel Huntington (clash of civilizations) and Halford Mackinder ("the geographical pivot of history"). Some primary/secondary readings will be specific to Slavic (the Petersburg text; Iurii Lotman's semiosphere); other primary/secondary readings will be tailored to the participants' disciplinary expertise. The seminar's key questions concern the ways in which apparently inert and straightforward accounts of geography are marshalled for projects of social coordination, ideological division, and narratives of belonging.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SLAV 2902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

SLAV 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: Russian & East European Studies

SLAV 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Attributes: Russian & East European Studies

SLAV 3902 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

Slovak

SLOVAK 2902 - DIRECTED STUDY

Minimum Credits: 3
Maximum Credits: 3
This course enables graduate students to study the Slovak language under the direction of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Social Welfare

SWWEL 2020 - CHILD AND FAMILY ADVOCACY

Minimum Credits: 3
Maximum Credits: 3
This is a practical skills course in legal advocacy for non-lawyers. The emphasis is on practical techniques and courtroom skills to enhance the professional effectiveness of social workers in the courtroom setting. Typical areas of discussion include rules of evidence, legal procedure, expert witnesses, interview techniques, cross-examination, law reform, case review and readings and the legal rights of children.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWRES 2021 and SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWWEL 2035 - GLOBAL PERSPECTIVES SOCIAL WORK

Minimum Credits: 3
Maximum Credits: 3
This seminar-style course is designed to provide students an opportunity to engage in an introductory exploration of global social issues/problems/developments and to global approaches to address these issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWBEH 2063, SWWEL 2081, and SWGEN 2098

SWWEL 2039 - SOCIAL POLICY AND GERONTOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is designed to examine the dynamics and procedural steps in social policy making and implementation first in a general context and then more specifically in relation to the older population. The last half of the course is devoted to the identification of major issues in social policy for the aged and intensive analysis of selected policy decisions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWWEL 2081

SWWEL 2050 - POLICY ANALYSIS AND PRACTICE: HEALTH AND AGING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
This advanced social policy course is designed for social work students with an interest in healthcare and/or gerontology. This course examines social work practice and policy at the intersection of integrated healthcare and aging. Students explore biopsychosocial-spiritual approaches to health across the continuum of care while analyzing policy structures that influence the well-being, equity, and access to healthcare at all ages. The course fosters competence in person-centered, anti-oppressive, and collaborative care that supports the dignity, health, and inclusion of older adults and their caregivers. Students will understand how social determinants of health influenced by social policy can affect the health and well-being of individuals across the lifespan. Students will apply a human rights perspective to critically evaluate existing social policies affecting healthcare and aging social work practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SWWEL 2051 - ECONOMICS AND SOCIAL WORK

Minimum Credits: 3
Maximum Credits: 3

This course provides an understanding of basic economic theory, and discusses its application to social welfare policy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWRES 2021 and SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWWEL 2056 - HEALTH SYSTEMS AND PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3
This course builds on Generalist Social Welfare by providing an in-depth study of the evolution of health care policy in the United States. Linking policy to practice, students examine the disparate impact of health care policy on diverse populations through the lens of social determinants of health and the structural competency framework. Students identify relevant health issues and apply advocacy skills to address them.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWWEL 2081

SWWEL 2057 - MENTAL HEALTH AND PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3
This course builds on generalist Social Welfare to focus on public policies related to mental health services, the treatment and support of individuals with mental health conditions, and relevant civil and criminal laws. It situates the study of policy within a structural competency framework and introduces key concepts and skills essential to policy practice. Students learn the history of mental health policy in the United States and the primary systems through which these policies are administered. They identify relevant mental health issues and apply advocacy skills to address them.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWWEL 2081

SWWEL 2059 - CHILD AND FAMILY POLICY

Minimum Credits: 3
Maximum Credits: 3
This course builds on Generalist Social Welfare to examine the interaction between public child welfare policies and other child- and family-oriented policies. Students learn the history of services for children and families, including federal and state legislation, court decisions, and regulations related to child protection, child welfare, and juvenile justice. The course focuses on racial disparities and other issues faced by social workers in child-serving systems. Students will identify relevant child and family issues and apply advocacy skills to address them.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWWEL 2081

SWWEL 2081 - SOCIAL WELFARE

Minimum Credits: 3
Maximum Credits: 3
This course examines the historical development of the contemporary social welfare system in the United States, including the professional social work response to societal needs. It covers the concepts used to discuss and explain the policies and programs of social welfare institutions, the mechanisms and structures for delivering social services, existing mandated public welfare policies, proposed reforms, and the implications of current policies for program implementation and recipients. The course also explores factors that have constrained or

facilitated the attainment of social and economic justice, with particular attention to the historical and contemporary experiences of marginalized populations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWWEL 2087 - ORGANIZATIONS AND PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3
Introduced as a new course in the COSA concentration in community practice, this seminar emphasizes and examines relationships between public policy and organizational behavior. Particularly attentive to the influence of political and economic variables on human service institutions. The course examines selected historical phenomena in order to better understand future prospects.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWWEL 2081

SWWEL 3030 - EVAL OF AMERICAN SOCIAL WELFARE

Minimum Credits: 3
Maximum Credits: 3
Emphasizes a conceptual and analytical approach to the study of American social welfare. Extending from the Elizabethan poor laws to the 1930s new deal, and to the present, it deals with social welfare in relation to a number of central themes in American society, including the interaction among the ideologies of individualism, voluntarism, and collectivism; the conflict between opportunity-mobility and security objectives; and the nature of the social reform and social control processes in a pluralistic society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: School of Social Work students only.

SWWEL 3037 - SOCIAL POLICY ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course provides students with a basic understanding of the dimensions of public social policy and the acquisition of the skill required to use a conceptual model to analyze policy. Particular attention is paid to the value and ideological dimensions of social welfare policy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Social Work students only.

SWWEL 3060 - CHILD AND YOUTH POLICY

Minimum Credits: 3
Maximum Credits: 3
This course addresses key issues in child and youth policy through the critical analysis and application of social, cultural, philosophical, psychological, and biological theory. Starting from work of John Rawls, students will develop an understanding of various philosophical frameworks pertaining to issues of equality, distribution, and liberty and will use these principles to articulate a conception of social justice to guide child and youth policy. The class will then move to consider the role of psychological and biological theories and their relationship to and meaning for child and youth policy. Following this discussion, the class will turn to critical social and cultural theories and will debate the implications of these perspectives for the ways in which we think about and treat young people.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Social Work Continuing Educ

SWCED 2004 - INTRODUCTION TO INTERGENERATIONAL PROGRAMS

Minimum Credits: 2
Maximum Credits: 2
This course is an on-line, interactive experience based on the 13-year success of generations together intergenerational training program at the University of Pittsburgh. The on-line course is designed to help you develop the skills needed for success in the intergenerational field. Students read course materials, do on-line assignments, discuss the content with fellow students and instructors, and follow step-by-step procedures to complete the individual units. After you have completed the course, you will have a better understanding of skills needed to develop intergenerational programs and how to apply them and be able to: explain the rationale for intergenerational programs as a social intervention model. Formulate a design/plan for an intergenerational program. Develop a process to engage community support for intergenerational programming. Develop the basic skills to implement intergenerational program components. Recruit, train, and manage participants and staff in intergenerational programming. Evaluate an intergenerational program.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: School of Social Work students only.

Social Work General

SWGEN 2005 - POVERTY AND INCOME INEQUALITY: SOCIAL RESPONSES

Minimum Credits: 3
Maximum Credits: 3
The course focuses on the nature and extent of poverty and income inequality in the United States including its causes and consequences as well as the resulting political and public policy debates and governmental efforts to combat it. The course provides a broad social science approach to understanding the intersection of gender, race, and class with poverty and income inequality. Competing theories of poverty are discussed and their relationship to different polices are assessed. The course continues with the analysis of a range of social policy debates and reform options that might further reduce poverty and income inequality. The course concludes with a discussion about the nature of social and economic justice and the role social workers and professional social work currently play and could play in taking a social action role to addressing poverty and income inequality
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

SWGEN 2007 - SOCIAL WORK AND THE LAW

Minimum Credits: 3
Maximum Credits: 3
This course will provide students with a basic understanding of the law, legal processes, and legal systems as they relate to social work practice and an introduction to the field of forensic social work. The course will challenge students to think about the variety of ways that social work practice, social policy, and law intersect. In particular, it will focus on specific aspects of the intersection between law, policy, and practice, including: the significance of courts and case law to issues of social justice, the intersection of social work and law on issues of significance to social workers, models of legal reasoning/decision making, the role of social workers in legal proceedings, the role of social workers in using the law for social reform or protection of civil rights, the use of social science by courts, legal regulations and case law that influence social work practice, and tensions between the law and social work values and ethics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWGEN 2010 - SOCIAL WORK WITH SERVICE MEMBERS, VETERANS, AND THEIR FAMILIES

Minimum Credits: 3
Maximum Credits: 3
This generalist practice course is for social work students and other helping professional students interested in working with service members, veterans, and their families.Â It will provide an overview of the policies and programs, resources, culture, treatment issues, and special needs of these populations, especially at this time and in the wake of our military conflicts.Â This course will address the following areas identified in the NASW Standards for Social Work Practice with Service Members, Veterans, and their Families: social work policies and programs; social work values, ethics, and cultural competencies, treatment and practice issues; families and children issues; community, organizational, and policy advocacy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWGEN 2034 - SOCIAL WORK PRACTICE WITH DIVERSE POPULATIONS

Minimum Credits: 3
Maximum Credits: 3
This course introduces and explores issues of power, oppression, and privilege within the context of social work practice, examining their impact on micro, mezzo, and macro structures and processes. It prepares students to become responsive social work professionals who can work respectfully, humbly, and with growing competence with diverse populations. Diversity is approached from an intersectional framework, recognizing that race, ethnicity, age, class, disability, gender, sexuality, nationality, immigration status, and religion/spirituality (among other factors) are all relevant dimensions of people's identities and social locations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWGEN 2058 - FEMINIST SOCIAL WORK

Minimum Credits: 3
Maximum Credits: 3
This course focuses on gender and social work, beginning with a critical examination of the concept of feminist practice, with attention to oppression, power, and privilege in helping relationships and in women's lives more broadly. It explores meanings of gender as it intersects with race/ethnicity, class, sexuality, age, and ability in the lives of women in general and specifically as social workers and clients. Taught in a seminar format, this course examines topics such as work, welfare, family, violence, justice system involvement, health, mental health, and women as agents of change and is appropriate for students concentrating in micro or macro levels of practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081
Course Attributes: Gender, Sexuality & Women's St

SWGEN 2062 - ADVOCACY AND LOBBYING

Minimum Credits: 3
Maximum Credits: 3
This course will provide an overview of how a nonprofit organization can engage in effective public policy advocacy and lobbying on behalf of its mission and the people it serves. Advocacy includes a broad range of activities, which attempt to influence a specific policy, legislative, regulatory or implementation outcome. Social workers play critical roles in the advocacy process, policy analysis, issue development, public education, constituency organizing, lobbying, voter engagement, and creating an entire advocacy campaign. This course will focus on the best practices to deepen your understanding of advocacy tools, processes, and models.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWGEN 2080 - RACE AND SOCIAL PROBLEMS

Minimum Credits: 3
Maximum Credits: 3
This course develops awareness and consciousness of the history and contemporary manifestations of race-related social problems in America, with particular, though not exclusive, attention to Black-White race relations. It addresses race in relation to disparities in economics, education, mental health, family structures, and criminal justice. Students explore promising solutions to address both the causes and consequences of structural racism.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SWGEN 2088 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 3
Given the changing nature of social work practice and social welfare policy, the MSW program occasionally offers courses in new and/or unique content. When offered, this course is designed to provide skill and knowledge content not covered in other MSW courses.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

SWGEN 2097 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
A student-initiated educational experience, guided by a faculty member that significantly supplements the social work curriculum and conforms to academic course content expectations.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

SWGEN 2098 - GENERALIST SOCIAL WORK PRACTICE

Minimum Credits: 3
Maximum Credits: 3
This course builds students' knowledge, skills, and understanding of generalist social work practice with individuals, families, groups, organizations, and communities. It emphasizes the importance of cultural humility, a strengths-based person-in-environment perspective, and advocacy for human rights and social and economic justice. Students begin to develop generalist practice skills, including identifying areas of concern, engaging, gathering information, interviewing, conducting multidimensional assessments, planning and intervention, and evaluation and termination. The course also highlights the importance of research and evidence-informed practice, effective writing and documentation, and understanding the organizational context of practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWGEN 2099 - GENERALIST FIELDWORK

Minimum Credits: 1
Maximum Credits: 6

This practicum will provide students with opportunities to develop an awareness of self in process of intervention; gain experience in application of knowledge, value and ethics, and practice skills; use oral and written communication consistent with language of the profession; and use professional supervision to enhance learning.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: CREQ: SWGEN 2098

SWGEN 3025 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6
A doctoral course in which the student defines the topic area and obtains approval for it from a member of the faculty who serves as his/her mentor.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWGEN 3039 - COMPREHENSIVE STUDY

Minimum Credits: 1
Maximum Credits: 9
This would be limited to students who have completed all courses but have not yet passed the exam, or have two or fewer courses to take and need to be full-time. Students may register for up to nine credits, and may register twice at most. The advisor will serve as faculty of record.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Social Work students only.

SWGEN 3044 - THEORY 1

Minimum Credits: 3
Maximum Credits: 3
The general issues involved in applicability of social science theory provides a framework for an exploration of selected social psychological theories. Concepts from role theory, interrelated with socialization and behavioral theories, are presented and analyzed. Students will then apply selected theoretical concepts to a social problem area of their choice, in order to assess the theory's contribution to an understanding of the problem.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Social Work students only.

SWGEN 3053 - THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This course covers macro social science perspectives relevant to social work: economic, organizational and social control aspects of society. Classical theories (Marx, Weber, and Durkheim) are studied and applied to particular social problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Social Work students only.

SWGEN 3066 - SEMINAR IN SOCIAL WORK EDUCATION

Minimum Credits: 3
Maximum Credits: 3
History of social work education, accreditation, and design of foundation curriculum. Selecting educational objectives, teaching methods, evaluation of student performance, and careers in social work education.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWGEN 3088 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
The Ph.D. program occasionally offers courses/seminars on research, theory, and/or policy in specific substantive areas. These are areas in which there is significant current research and practice energy that extends beyond the regular curriculum. Typically, these offerings reflect the research and scholarship program of the faculty sponsor.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

Social Work Research

SWRES 2021 - GENERALIST SOCIAL WORK RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the basic concepts and procedures of social work research. Students will use these concepts to understand and critically assess research relevant to generalist social work practice and will develop foundational skills to evaluate practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Social Work students only.

SWRES 2023 - DIRECTED STUDY IN RESEARCH

Minimum Credits: 3
Maximum Credits: 3
A supervised experience in designing, implementing, and reporting an individually defined empirical research project. This course provides research experience for advanced research students.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

SWRES 2033 - EVALUATIVE RESEARCH SOCL SERVS

Minimum Credits: 3
Maximum Credits: 3
This course explores major issues and knowledge needed for evaluating the effects of social programs. Links to practice issues of accountability, program monitoring, and program planning will be emphasized.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWRES 2040 or 2041; PROG: School of Social Work

SWRES 2040 - ADVANCED APPLIED RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course builds on Generalist Social Work Research. Class focuses on deepening student knowledge of research methods by applying them to a project in an agency setting. We will discuss the relationship of applied research to program planning, monitoring and implementation, and consider the strengths and weaknesses of the various research designs used to conduct applied research. Attention is also given to uses and misuses of evidence, and to the threats and costs, as well as the potential benefits, to organizations and individuals posed by evaluation and research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: SWRES 2021 (Min Grade "B-")

SWRES 2041 - COSA ADVANCED APPLIED RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course builds on Generalist Social Work Research. Students who are in the COSA specialization track who are completing this course will be equipped to understand frameworks, goals, methods, approaches, and principles of applied research. They will gain knowledge and skills to conduct and consume research that employs quantitative, qualitative, and/or mixed methods. The course will provide deeper knowledge and understanding of Program Evaluation and CBPR frameworks and processes to conduct applied research that engages stakeholders, research partners, and participants to produce information designed to impact knowledge, practice, decision making, and policy. The course objectives are the following: Build on knowledge and skills as a researcher and consumer of research. Deepen understanding of a range of epistemologic and ontologic orientations of research and the need for reflexivity of the researcher. Understand how to evaluate "fit" between core questions and methods, including focus on the potential contributions of quantitative, qualitative, and mixed method approaches. Understand dynamics of working in research partnerships and be cognizant of power dynamics that may undermine research integrity and reproduce oppressive processes and structures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: SWRES 2021 (Min Grade "B-")

SWRES 2045 - QUALITATIVE RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to selected methods of qualitative research. These methods are applicable to investigating questions which arise in social work practice situations and can be used to evaluate interpersonal practice. Qualitative designs, data acquisition strategies, and analytic techniques, including the use of computers, will be examined through both formal descriptions and studies that exemplify their use.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWRES 2040 or 2041; PROG: School of Social Work

SWRES 2047 - COMMUNITY BASED PARTICIPATORY RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course is intended for students primarily focused on community organizing who want to better understand theories, principles and

methods of applied, action research with communities and community partners, as well as how Community-based Participatory Research (CBPR) is used in community planning and organizing to address local issues and social needs. This course is proposed to be coordinated with COSA field placements in the east end of Pittsburgh, especially Homewood, and will serve as an integrated field seminar for these students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWRES 2040 or 2041; PROG: School of Social Work

SWRES 2051 - SINGLE SUBJECT RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course examines the feasibility of using single-subject methodology to evaluate effectiveness in social work practice. Single-subject research designs are examined in terms of self-monitoring and external monitoring approaches. Different social work contexts are illustrated in order to demonstrate contextual situations to which single-subject designs may be applied. Each student is expected to carry out a self-monitoring project or use single-subject research in work with a client.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: SWRES 2040 or 2041; PROG: School of Social Work

SWRES 3020 - RESEARCH METHODS 1

Minimum Credits: 3
Maximum Credits: 3
Basic design issues are explored and related to specific survey research skills, such as sampling, questionnaire construction, and measurement, issues, and data collection. Alternative research designs will also be explored. The relationship of research design and methods of casual inference will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Social Work students only.

SWRES 3021 - MULTIVARIATE ANALYSIS

Minimum Credits: 4
Maximum Credits: 4
A class research project will be designed and implemented. Alternative data analysis strategies will be learned and applied to the project data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Social Work students only.

SWRES 3022 - RESEARCH METHODS: CAPSTONE SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1
Research Capstone 1 involves instruction in the developmental process and refining of a research question and conceptualization attached to data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Social Work students only.

SWRES 3023 - RESEARCH METHODS: CAPSTONE SEMINAR 2

Minimum Credits: 3
Maximum Credits: 3
In the Spring term of the capstone sequence, the student will complete the data analysis and write the method, results, and discussion sections of the manuscript. Included in this will be instruction in the preparation of tables and figures in APA style and format. Some lecture time may be devoted to statistical and psychometric procedures. Some instruction will be individualized to address the specific methodological and analytic issues raised within each student's study purpose. Each section of the manuscript will be reviewed and evaluated with feedback guiding subsequent drafts resulting in a submission-ready paper. The goal of Capstone 2 is to have a final paper ready for submission to a peer-review journal by the end of the term.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWRES 3024 - DIRECTED STUDY-RESEARCH PRACTCM

Minimum Credits: 3
Maximum Credits: 3
Provides students an opportunity to work with faculty on research projects carrying out specific research skills leading to publication of findings.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWRES 3029 - INFERNTL STAT SOCL WORKERS

Minimum Credits: 3
Maximum Credits: 3
This course deals with bivariate statistical procedures (e.g. t-tests, one-way analysis of variance, correlation and regression) applied to social work and social research problems. Solutions to the research/statistical problems are achieved by use of both mainframe computer (primarily SPSSX) and microcomputer programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Social Work students only.

SWRES 3040 - DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 9
The doctoral dissertation represents a new, creative effort at a level higher than that expected in the competency paper. A doctoral student may register for dissertation research credits after successful completion of the competency, during any semester in which he/she is working on a dissertation and has completed course requirements.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Social Work students only.

Social Work

SOCWRK 2086 - MANAGING FINANCIAL AND HUMAN RESOURCES

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of the knowledge, values, and skills for human service management and leadership roles. The course reviews a macro framework for systems as well as organizational theories key to social administration, organizational management, and leadership as they apply in a nonprofit agency. It prepares students to develop, manage, and lead organizations that address community human service needs, advocate for community change, and revitalize communities. Social work values provide a critical framework for leadership and mission in human service organizations, and the class will draw upon the NASW Code of Ethics among others as they guide macro systems and organizations. This course explores critical issues in personal, professional, and organizational contexts, especially the nonprofit context historically associated with the human services arena.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Sociology

SOC 1309 - SOCIOLOGY OF ORGANIZATION

Minimum Credits: 3
Maximum Credits: 3
This course stresses the sociological approach to the study of organizations. Some topics covered are organizations' nature, internal dynamics, environments. Case study analysis is used extensively.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

SOC 1440 - EXPERIENCING GLOBALIZATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

SOC 2035 - RACE & ETHNICITY

Minimum Credits: 3
Maximum Credits: 3
This course introduces graduate students to race and ethnicity. Students will be exposed to theories and empirical research in the field. The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2036 - BODY AND SOCIETY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

SOC 2101 - SOCIOLOGICAL THEORY CLASSICAL

Minimum Credits: 3
Maximum Credits: 3
The course provides an opportunity for in-depth study of selected writings of Karl Marx, Max Weber, Emile Durkheim and at least one other of the "classical originators" of the sociological discipline (Georg Simmel or Alexis de Tocqueville, for example). With appropriate flexibility depending on the "fourth figure" selected, the primary issues chosen for comparative examination are conceptions of the nature of knowledge, modes of theoretical reasoning, and principal substantive concerns addressed by these writers over the course of their lives.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2102 - SOCIOLGCL THRY POST CLASSICAL

Minimum Credits: 3
Maximum Credits: 3
This course surveys the major works of post-classical and contemporary sociological theory. These are discussed from the standpoint of how they built upon, revised and extended the classics and how they are relevant to us today. Relevant selections from classical sociological theory are also covered.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Sociology (MA or PHD)

SOC 2201 - INTRODUCTION TO SOCIAL STATISTICS

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to social statistics. Topics include descriptive statistics, frequency distributions, hypothesis tests, bivariate associations, and data visualization. This course emphasizes the application of statistics to the social sciences and requires no prior knowledge of statistics. Students will leave the course with a broader understanding of how statistics can be utilized in social scientific research.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2202 - QUANTITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
Complementing courses on qualitative methods, computer methods and statistics, this course will provide an overview of quantitative research methods in the social sciences. Topics will include specification of research able questions, experimental and quasi-experimental research designs, and will concentrate on survey research issues such as sampling, measurement, questionnaire construction and item writing, and collection and organization of data. The issues will be illustrated by sociological literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Sociology (MA or PHD)

SOC 2203 - QUALITATIVE METHODS

Minimum Credits: 3
Maximum Credits: 3
This course deals with the methods of qualitative social inquiry. Students study specific qualitative techniques, such as the interview. Participant observation, analysis of documents, and unstructured observation, problems of doing research in natural settings are also considered.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Sociology (MA or PHD)

SOC 2204 - APPLIED REGRESSION ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course studies the set of statistical methods called regression analysis. It solidifies and extends students quantitative and statistical data analysis skills. The course focuses primarily on linear regression, including modeling techniques for continuous, binary, ordinal, and count data. Students will leave the course with the tools necessary to analyze a variety of social science data. This course assumes some knowledge of statistics (descriptive statistics, frequency distributions, hypothesis tests, and bivariate associations). To register, students must have taken Introduction to Social Statistics (SOC 2201) or an equivalent class.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2205 - RESEARCH DESIGN

Minimum Credits: 3
Maximum Credits: 3
Sociology uses many forms of research methods. These range from large scale quantitative surveys to in depth qualitative participant observation studies. Designing a research project involves selecting methods appropriate for the research problem, taking account of resources, what is already known, and other factors. This course will cover the conceptual, philosophical, and technical issues that sociologists must deal with to design a research project.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2240 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
SOC Graduate Level Special Topics course. The course topic will/could change with each semester
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SOC 2251 - THEORIES OF GENDER AND SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
This course will provide an overview of important tendencies and controversies in gender and sexuality studies, emphasizing emerging directions in scholarship as well as foundational readings. Gender and sexuality studies are interdisciplinary fields in conversation with feminist theory and queer theory as well as a host of academic disciplines. Drawing on readings from a variety of disciplines (including anthropology, history, law, economics, philosophy, and literary studies) and sampling a range of methodologies, this course will work through some of the key movements and problems that have shaped and continue to shape contemporary thinking about gender and sexuality. Readings are likely to include works by Lila Abu-Lughod, Judith Butler, Nancy Chodorow, Patricia Hill Collins, R.W. Connell, Michel Foucault, Nancy Fraser, Linda Gordon, Judith Halberstam, Chandra Mohanty, Uma Narayan, and Joan Scott.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Attributes: Gender, Sexuality & Women's St

SOC 2301 - ENVIRONMENTAL SOCIOLOGY

Minimum Credits: 3
Maximum Credits: 3
The course seeks an understanding of the evolution of human societies in their physical environments and resource bases. The ways in which humans use energy and matter is crucial. The time frame for the course is that of human history. Harsh and benign environments will be considered as well as the rise and fall of civilizations. Throughout, the role of technology will be kept central in an understanding of the interface between a society and its environment.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2303 - POLITICAL SOCIOLOGY

Minimum Credits: 3
Maximum Credits: 3
The variety of political arrangements in the twenty-first century presents a number of puzzles that will make up the subject matter of this course. Are differing forms of government to be explained by levels of economic development, institutional histories, the actions of social movements, transnational constraints or slow-changing national political cultures? Is the state an autonomous actor or the creature of other social forces? Is "legitimacy" a useful concept? Why has it been difficult to agree on what "democracy" is? Are regime changes consequences of some sort of "structural" change, effective actions by regime opponents, or simply consequences of rulers' blunders?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

SOC 2306 - SOCIOLOGY OF REVOLUTION

Minimum Credits: 3
Maximum Credits: 3
An inquiry into various theories, frameworks and models elaborated by social scientists to explain the origins, dynamics and outcomes of this most complex matrix of social change.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies, Russian & East European Studies

SOC 2309 - CULTURE AND POWER

Minimum Credits: 3
Maximum Credits: 3
This graduate seminar will explore the power of culture and the culture of power through different theoretical perspectives. We are especially interested in issues of cultural resistance, transformation, domination, hierarchy, and colonialism. We will also explore how culture and power shape collective and individual identities especially in societies undergoing radical transition. Our discussion will include cases from Japan, India, Germany, England, and others.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2311 - POLITICS AND CULTURE

Minimum Credits: 3
Maximum Credits: 3
This course introduces graduate students to politics and culture. Students will be exposed to theories and empirical research in the field.

The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2314 - SOCIOLOGY OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course surveys the classic and contemporary literature on schools and socialization. The relevance of sociological theory and research to education policy debate is also highlighted. Students will increase their understanding of the forces shaping learning and development that are beyond the classroom and are embedded in the larger social context.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SOC 2341 - SOCIAL MOVEMENTS

Minimum Credits: 3
Maximum Credits: 3
Various theories and models to study social movements are examined. Emphasis is placed on structural conditions that contributed to the emergency of the movements, their development over time and what changes, if any, are brought about to the social system in which the movements occurred.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, Russian & East European Studies

SOC 2342 - CULTURAL SOCIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course involves discussion of the main trends in the sociological consideration of systems and patterns of beliefs, values and symbols and the social vehicles in terms of which culture is produced, sustained and interrupted. It is particularly concerned with the theoretical issue of the place of culture in sociological analysis, on the one hand, and interpretations of contemporary cultural phenomena, on the other. Thus the course has both theoretical and empirical components.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2350 - GENDER AND POLITICS

Minimum Credits: 3
Maximum Credits: 3
This course introduces graduate students to the study of gender and politics. Students will be exposed to theories and empirical research in the field. The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Gender, Sexuality & Women's St

SOC 2402 - ORGANIZATIONS

Minimum Credits: 3
Maximum Credits: 3
This course introduces graduate students to organizations. Students will be exposed to theories and empirical research in the field. The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2403 - KNOWLEDGE AND SOCIETY: SEX, GENDER, SEXUALITY, AND THE BRAIN SCIENCES

Minimum Credits: 3
Maximum Credits: 3
This course surveys scientific theories of biological sex, sex/gender/sexual difference, and their intersections with feminist and queer approaches to gender and sexual diversity, with specific application to the biomedical and behavioral brain sciences. We will attend closely to the interplay of diverse bodies, scientific approaches, and social institutions with regards to concepts, methods, theories, and empirical findings. In addition to some historical background, we will explore debates over sex/gender and sexual differences and diversity as conceived, discovered, imaged, explained, and treated in late-20th and early-21st century neurosciences and their discontents.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2429 - SOCIOLOGY OF GENDER

Minimum Credits: 3
Maximum Credits: 3
This graduate seminar surveys the Sociology of Gender as terrain of study, research, and theory.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

SOC 2432 - GENDER EQUALITY AND THE UNITED NATIONS

Minimum Credits: 1
Maximum Credits: 1
In this year-long transdisciplinary course, students will collaborate directly with the United Nations Development Program (UNDP) and other partner institutions on policy-relevant research on gender inequality in public institutions worldwide. Students will develop their skills in data collection, analysis, and reporting. Students' research will feed into an ongoing Pitt-UNDP collaboration and support gender equality as part of the United Nations 2030 Agenda for Sustainable Development. Students will have professional opportunities to interact with policymakers and practitioners at international and national levels, and are expected to present their research at the UN Secretariat in New York City during the spring semester. This course operates in conjunction with an internship program that places select students as junior researchers in partner institutions during the summer following the course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

SOC 2465 - SOCIOLOGY OF GLOBALIZATION

Minimum Credits: 3
Maximum Credits: 3
The course is designed as a broad overview of sociological analysis that extends beyond traditionally accepted national and local boundaries. It provides a perspective on the discipline that portrays human society as a nested collection of interdependent societies. In particular, the course draws from world-systems analysis, world society, and other relevant approaches'as well as from related disciplines such as anthropology, geography, and political science'to consider how the 'development project' of the 20th century has evolved over time.

The impacts of global economic integration on cultural and institutional change, gender relations, inequality, climate change, and on changing identities and forms of collective action (including social movements) are phenomena we explore in the course. The course is designed for students who simply want to learn how globalization and global institutions like the world bank, IMF, and united nations are impacting the experiences of people around the world as well as for those who expect to do further research in the field.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 2902 - DIRECTED STUDY FOR MA STUDENTS

Minimum Credits: 1
Maximum Credits: 12
Registration is limited to students in good academic standing who wish to study or carry out a project in an area not normally available in a regular course. The work must be under the direct supervision of a faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

SOC 2971 - GRADUATE WRITING FOR PUBLICATION

Minimum Credits: 3
Maximum Credits: 3
This graduate course will focus on practical advice for successfully turning master's thesis, seminar papers, and dissertations into journal articles and books. Students enrolled in the course will learn skills for writing and revision and gain understanding of the publishing process for academic journals and presses, as well as ideas for developing a successful work process and setting achievable writing goals. Course will be organized to allow students to work intensively on a writing project, with the goal of having a publishable article or manuscript by end of term.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Sociology(MA)

SOC 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 15
All graduate study not associated with regular classes including work on milestones, research, targeted reading, publications, and grant applications. Must be approved by the student's formally validated committee chairperson at the time of registration.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

SOC 3191 - SOCIAL STRATIFICIATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 3291 - TOPICS IN POLITICS AND CULTURE

Minimum Credits: 3
Maximum Credits: 3

This course explores selected topics in politics and culture. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 3292 - TRADITIONS AND SOCIAL CHANGE

Minimum Credits: 3
Maximum Credits: 3
The course explores one of the least explored areas of social theory, namely the idea of "tradition" from a global and comparative perspective. It combines both theoretical and empirical materials from different societies and different time periods. It asks questions about how dynamics of social changes are affected by specific traditions; the extent to which traditions are real or imagined social realities; how "traditional" people debate their own traditions; the factors that make something new appear tolerable; and the way by which trajectories of social change are affected by various traditions. The goal is to contribute to a comparative global understanding of modernization processes, as well as explore factors that are tied to what we call novelty, creativity, and innovation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 3398 - TOPICS IN SOCIAL MOVEMENTS

Minimum Credits: 3
Maximum Credits: 3
The specific content of this course will vary from term to term. This course will focus on intensive study of important areas of social movement research and theory. Examples of such content are strategic action in social movements; the structure-agency debate in social movements; new theorizing in social movements; gender and social movements; and race and social movements. Background requirements, if any, will be announced with each offering of the course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 3400 - QUANTITATIVE ANALYSIS FOR PUBLICATION

Minimum Credits: 3
Maximum Credits: 3
This course is a research practicum, where students work intensively on a research project using quantitative methods. Students may enter the class with their own research question and data to analyze, or they may work with other students and/or the instructor on a collaborative project. This course is designed to advance students' skills in research design, data analysis, and writing up quantitative results. The course goal is for students to develop a sole- or co-authored manuscript for publication.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 3493 - TOPICS IN SOCIOLOGY OF RACE & ETHNICITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 3591 - TOPICS IN SOCIOLOGY OF GENDER

Minimum Credits: 3
Maximum Credits: 3
This course explores selected topics in sociology of gender. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Gender, Sexuality & Women's St

SOC 3593 - TOPICS IN GLOBAL & TRANSNATIONAL SOCIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course explores selected topics in global and transnational sociology. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 3595 - TOPICS IN ORGANIZATIONAL SOCIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course explores selected topics in organizational sociology. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 3597 - TOPICS IN URBAN SOCIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course explores selected topics in urban sociology. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SOC 3902 - DIRECTED STUDY FOR PHD STUDENTS

Minimum Credits: 1
Maximum Credits: 12
Registration is limited to students in good academic standing who wish to study or carry out a project in an area not normally available in a regular course. The work must be under the directed supervision of a faculty member. The student is required to fill out departmental form out lining the study program and have it approved by the appropriate faculty person.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

SOC 3903 - CMPRHNSV EXAMINATION PREPARATION

Minimum Credits: 1
Maximum Credits: 6

Comprehensive examination preparation.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

SOC 3905 - PROSEMINAR

Minimum Credits: 1
Maximum Credits: 3
Proseminar is a professionalization seminar for Sociology doctoral students. It is required for all first year Sociology doctoral students, and open to all Pitt Sociology doctoral students. Proseminar offers crucial graduate programming and career development training. Class sessions include: (a) Instruction on various aspects of professional development, including publication, conference participation, CVs, teaching portfolios, and awards. (b) Regular Work-In-Progress sessions. (c) Training in developing fellowship applications. (d) Training and preparation for job market participation. Course assignments include actual professional development materials, including fellowship applications; job market materials; conference, publication and award submissions; etc. All enrolled students receive workshopping opportunities, plentiful opportunities for questions and discussion, and ongoing feedback and support from the instructor in developing professional materials. For each class session, readings prepare students for seminar and augment in-class presentations.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

Spanish

SPAN 1433 - ECCENTRIC PANORAMA OF PIONEERING WOMEN IN LATIN AMERICA

Minimum Credits: 3
Maximum Credits: 3
We will study a collection of 20th and 21st century Latin American women, artists and writers who have defended their autonomy by constituting themselves as islands within the Hispanic and secular Catholic patriarchal culture. Our approach will be both cultural and psychological, exploring analytically cases of creative women working in a range of genres. The eccentricity of this panorama is double, not only because Latin American women of genius have had a paradoxical place as a condition of existence in the masculinist social contexts in which they have excelled, but also because our syllabus is a strange set, an eccentric archive of personal styles and projects that have surprised their countries and, sometimes, the world. We will study the painter Frida Kahlo, and the journalist Elena Poniatowska (Mexico), the essayist and theatre writer Elisa Lerner, and the gender-queer painter & poet Blanca Haddad, (Venezuela), the folk music composer Violeta Parra and the filmmaker Maite Alberdi (Chile), the indigenous leader Rigoberta Menchu (Guatemala),the narrator and journalist Mariana Enriquez and the short story writer Silvina Ocampo (Argentina), and the novelist Pilar Quintana (Colombia). To promote the acquisition of Spanish fluency, conversation will be stimulated in a class envisioned as a permanent colloquium, with attentive listening to different voices and psyches that dialogue through protest songs, intimate diaries, testimony, reportage, biographies, lyrical narratives, conceptual artifacts, disruptive performative art, and other reflections on the anomalous daily life of the woman of genius and her struggle for autonomy against a castrating and silencing political power in Latin America.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: SPAN 1250

SPAN 2224 - SPECIAL TOPICS IN CULTURAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course allows students to do in-depth research in various aspects of contemporary culture.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2225 - SEMINAR:SPECIAL TOPICS CULTURAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course provides students with the opportunity to do in depth research in various aspects of contemporary culture and to present it both orally and in written form.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SPAN 2226 - READINGS IN CRITICAL THEORY

Minimum Credits: 3
Maximum Credits: 3
Readings in critical theory concerns contemporary discourses about ideology, rhetoric, cultural institutions, power/ knowledge, desire and the subject. Each year a different area or topic is chosen.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, Latin American Studies, West European Studies

SPAN 2300 - PROFESSIONAL WRITING: PROSPECTUS, PAPERS, GRANTS

Minimum Credits: 3
Maximum Credits: 3
This seminar focuses on the formulation of individual research problems in preparation for thesis research. Course requirements center around the development of a dissertation prospectus, and will include research design, review of area and theoretical literature, and significance of the proposed project. Additionally, the preparation of conference papers and articles for publication, as well as how to prepare grant proposals for funding agencies will be explored
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SPAN 2307 - TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Hands-on teaching practicum course for graduate students to learn about university-level foreign language teaching.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2404 - PRE-COLUMBIAN TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course deals with specific topics on various aspects of the Mayan, Aztec and Quechuan cultures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2410 - DISCOVERY AND CONQUEST

Minimum Credits: 3
Maximum Credits: 3
This course offers an introductory survey of the Spanish and Latin American literature of the sixteenth and early seventeenth centuries through some of the main texts of the period.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2422 - COLONIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course deals with the basic texts of the Cronistas and other writers of the Colonia, concentrating on an in-depth study of their ideological points of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2428 - LATIN AMERICAN 19THC TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course deals with various topics ranging from romanticism to positivism to modernism, in an attempt to develop a concept of the changing cultural and economic climates in which literature was produced in the second half of the nineteenth century.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2429 - SEM LATIN AMERICAN 19THC TOPICS

Minimum Credits: 3
Maximum Credits: 3
This seminar offers students the opportunity to do original research in the various areas of romanticism, positivism and modernism, in an attempt to develop a better understanding of the various ideological currents in which Latin American literature developed in the second half of the nineteenth century.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SPAN 2445 - SEMINAR: VANGUARD

Minimum Credits: 3
Maximum Credits: 3
This course offers students the opportunity to do research in various aspects of vanguard literature and thought.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SPAN 2450 - CONTEM LATIN AMERICAN NARRATIVE

Minimum Credits: 3
Maximum Credits: 3
This course deals with Latin American narrative since 1945, treating in depth the narrative production of the boom and the post-boom periods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2452 - CONTEM LATIN AMERICAN FILM

Minimum Credits: 3
Maximum Credits: 3
This course surveys a representative sampling of recent Latin American film, primarily feature films made for commercial distribution, but also socio-political documentary.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SPAN 2460 - LATIN AMERICAN DRAMA

Minimum Credits: 3
Maximum Credits: 3
This course studies representative examples of contemporary Latin American drama from a literary as well as a sociocultural point of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SPAN 2461 - LATIN AMERICAN NOVEL

Minimum Credits: 3
Maximum Credits: 3
This course deals with the theory and development of the novel as seen through various exemplary texts of several periods, with emphasis on the boom and post-boom periods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2462 - LATIN AMERICAN POETRY

Minimum Credits: 3
Maximum Credits: 3
This course will deal with representative contemporary poets of various Latin American countries as well as specific movements and tendencies of the twentieth century.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2463 - LATIN AMERICAN SHORT STORY

Minimum Credits: 3
Maximum Credits: 3

This course focuses on the origins and development of the short story in Latin American literature through the analysis of selected texts from romanticism to the post boom.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SPAN 2464 - LATIN AMERICAN 20THC TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course will deal with specific topics of contemporary Latin American culture, using primarily literary but also other types of texts, including periodicals, film and television productions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2465 - SEMINAR: 20TH CENTURY TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course will allow students to do research in topics of interest to them, involving primarily literary texts but not necessarily restricted to these types of documents.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SPAN 2585 - BEYOND THE REVOLUTION: ARTS, LITERATURE AND PERFORMANCE IN POST-REVOLUTIONARY CUBA 1959-PRESENT

Minimum Credits: 3
Maximum Credits: 3
This course will analyze the development of the Cuban cultural field under the Revolution's socio-political project. The analysis will focus on the dialogue established between fundamental literary texts, visual art, and performance, and the specific historical circumstances.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SPAN 2634 - BAROQUE TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course deals in-depth with various Baroque topics and builds on a prior survey of baroque literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies, West European Studies

SPAN 2635 - SEMINAR: BAROQUE

Minimum Credits: 3
Maximum Credits: 3
This seminar deals in-depth with various Baroque topics.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SPAN 2657 - 19TH CENTURY TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course deals with various nineteenth century topics, including romanticism, positivism and early modernism, with special emphasis on national and continental movements and tendencies.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SPAN 2695 - SEMINAR: 20TH CENTURY

Minimum Credits: 3
Maximum Credits: 3
This seminar deals in depth with various topics of the literature and culture of the Franco and post-Franco periods.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SPAN 2704 - SPEC TOPICS LITERARY CRITICISM

Minimum Credits: 3
Maximum Credits: 3
This course deals with specific critical approaches such as structuralism, reader-response criticism and various post-structuralist and post-modern critical approaches.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SPAN 2705 - SEMINAR: LITERARY CRITICISM

Minimum Credits: 3
Maximum Credits: 3
This seminar deals in-depth with specific critical approaches such as structuralism, reader-response criticism and various post-structuralist and post-modern critical approaches.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

SPAN 2902 - MA DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Students work individually with faculty members on projects or areas defined by them in consultation with their director.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

SPAN 2910 - COMPREHENSIVE EXAMINATION MA

Minimum Credits: 3
Maximum Credits: 3
This course is intended for students taking the ma comprehensive/Ph.D. preliminary examination.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

SPAN 2950 - SPANISH TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
This practicum provides graduate students in the department of Hispanic languages and literatures the opportunity to gain teaching experience at another institution of education. In addition to teaching, the student will evaluate the approach/method used at the institution in question and meet at regular intervals with the Spanish language coordinator at the University of Pittsburgh to discuss his/her experiences and observations.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

SPAN 2990 - MA COMPREHENSIVE INDEPENDENT

Minimum Credits: 1
Maximum Credits: 3
Students work independently on projects or areas of their own definition in preparation for the ma comprehensive examination and the PhD preliminary examination.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: West European Studies

SPAN 3000 - PHD DISSERTATION

Minimum Credits: 1
Maximum Credits: 12
Students work individually under the guidance of their dissertation director in preparation for and during the writing of the dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Attributes: West European Studies

SPAN 3902 - PHD DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Students work individually with faculty members on projects or areas defined by them in consultation with their director.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

SPAN 3905 - TEACHING APPRENTICESHIP

Minimum Credits: 1
Maximum Credits: 12

Available to Ph.D. students who will work with a faculty member in teaching an upper level literature, language or civilization course.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

SPAN 3910 - COMPREHENSIVE EXAMINATION, PH.D

Minimum Credits: 1
Maximum Credits: 6
This course is intended for Ph.D. candidates the term they present themselves for their Ph.D. comprehensive examination.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: West European Studies

SPAN 3990 - PHD INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
Students work independently on projects or areas of their own definition to develop their dissertation topic and in preparation for the dissertation overview.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: West European Studies

Sports Medicine

SPMED 2000 - ANATOMICAL BASIS SPORTS MEDICINE

Minimum Credits: 3
Maximum Credits: 3
Course will include dissection of the human cadaver and will emphasize the musculoskeletal, articular, nervous, and vascular systems. Dissection experiences will be supplemented with classroom lectures. The role of anatomical structures as they relate to athletic injury mechanism, evaluation, and rehabilitation will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: SBPLAN: Sports Medicine (Health and Rehabilitation Scs-MS)

SPMED 2010 - PATHOKIN ORTHOPADC/ATHL INJURIES

Minimum Credits: 3
Maximum Credits: 3
Course will provide a detailed and sequential approach to the assessment and treatment procedures utilized for management of orthopedic related athletic injuries. Course is divided into regional techniques appropriate for management of specific athletic injuries. Course will present techniques which should be utilized to functionally assess the athlete's readiness to return to preinjury activities following rehab of the orthopaedic injury.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plan: SPRTMED-MS

SPMED 2020 - MUSCULOSKELETAL ASSESSMENT AND INJURY PREVENTION

Minimum Credits: 3
Maximum Credits: 3
The first part of the course will present the assessment and evaluation techniques necessary to accurately diagnose and prevent musculoskeletal injury. The student will be presented with the necessary information regarding the tissue(s) involved (anatomy/functional anatomy); the signs and symptoms in relation to the injury and tissue(s); and the evidence for determining the most sensitive and specific assessment evaluation and assessment techniques/tools. The second part of the course will include lecture/demonstrations by the students enrolled in the course. Students will select a specific condition or pathology and lead a lecture and lab demonstration providing an overview of the objectives related to the course content.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plan: SPRTMED-MS

SPMED 2030 - INJURY EPIDEMIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This introductory course in injury epidemiology will address injury epidemiology, and concepts in basic epidemiology and biostatistics related to injury surveillance, prevention and control. The epidemiological perspective of injuries will address the concepts in the Haddon's matrix and classic epidemiologic triad; current injury epidemiology research needs and injury as a public health issue. Topics addressed will include epidemiology of injuries in developed and developing countries, and injuries in vulnerable populations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: SPRTMED-MS

SPMED 2040 - SEMINAR IN SPORTS MEDICINE

Minimum Credits: 3
Maximum Credits: 3
Course designed to address a variety of current issues and technical advancements in sports medicine. Course divided into three units including a medical, legal, and ethical issues in sports medicine unit. The second unit will focus on the unique and newly developed technical advances in the field supported by the current research. Final unit will address the research and clinical application of isokinetic testing devices.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: SPRTMED-MS

SPMED 2626 - SPECIAL TOPICS IN EATING BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
This class will introduce students to a range of eating behaviors, eating disturbances and body weight issues in the general populations. A primary aim of the course is expose students to the many factors that influence eating behaviors including lifestyle, environment, sport, and pathology. A second aim is to enable students to synthesize and evaluate current research on disordered eating in the general population, and in athletes, with the goal of coming to understand the role of the scientific literature in evidence-based practice. A third aim of this course is to empower students to develop, implement and evaluate presentations and programs on special topics related to eating behavior.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

SPMED 2628 - NUTRITION AND PERFORMANCE

Minimum Credits: 3
Maximum Credits: 3
A lecture and laboratory class in which the principles of nutrition are applied to sports performance and exercise. Topics presented include energy release and substrate utilization, energy metabolism during exercise, fluid intake and athletic performance, body composition, vitamins and minerals, nutrition for training and competition, sports specific considerations, fitness and nutrition assessment in athletes, and special issues, such as vegetarian diets, and environmental obstacles.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

SPMED 2650 - EXERCISE PHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide graduate students, within the field of rehabilitation science, the knowledge of theoretical and applied aspects of exercise physiology. An in-depth understanding of how the body responds when exposed to acute and chronic bouts of exercise will be provided through lectures and laboratories. Topics discussed will include physiological responses and adaptations of the cardiovascular, respiratory, metabolic, and neuromuscular systems to exercise; assessing cardiorespiratory fitness, body composition, anaerobic performance and muscular fitness; designing exercise programs for health and wellness and special populations; sport performance; environmental considerations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

SPMED 2900 - GRADUATE RESEARCH

Minimum Credits: 1
Maximum Credits: 6
Graduate Research
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

SPMED 2910 - SCHOLARLY PAPER

Minimum Credits: 1
Maximum Credits: 6
Scholarly Paper
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

SPMED 3000 - RESEARCH SEMINAR SPORTS MEDICINE

Minimum Credits: 3
Maximum Credits: 3
Course is designed to introduce student to critical review of research in sports medicine. Students will critique research problems, methodology, analysis and clinical application of published manuscripts. Course will provide student with an opportunity to present and discuss paradigms and specific research proposals that are being developed for completion of thesis and dissertation requirements.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: HRS-MS (MSSPM-SP), HRS-MS (MSSPSC-SP) Restricted to MS-Sports Medicine and MS-Sports Science students only.

SPMED 3010 - LABORATORY TECHNIQUES 1

Minimum Credits: 3
Maximum Credits: 3
Course is designed to provide an overview of clinical research paradigms within sports medicine. Student will be introduced to lab testing techniques related to neuromuscular mechanisms associated with sport and orthopedic injuries and develop lab proficiency with components on neuromuscular profiling. Will provide student with acquire data management and analysis techniques and develop research related writing skills necessary to complete thesis and dissertation requirements as well as provide a basis for future scholarly activities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: HRS-MS (MSSPM-SP), HRS-MS (MSSPSC-SP), SPRTSCI-MS or SPRTMED-MS Restricted to MS-Sports Medicine and MS-Sports Science students only.

SPMED 3020 - LABORATORY TECHNIQUES 2

Minimum Credits: 3
Maximum Credits: 3
Advance graduate level course into the mechanical, neuromuscular and anatomical bases of human movement. Course is to expand the prerequisite knowledge in basic biomechanics as applied to sports medicine. Students will learn quantitative techniques in kinematics, inverse dynamics, and energetic of human movement. Students will also expand on their basic knowledge of programming so as to be able to process data in an autonomous manner.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

Sports Science

SPSCI 2020 - MUSCULOSKELETAL ASSESSMENT AND INJURY PREVENTION

Minimum Credits: 3
Maximum Credits: 3
The first part of the course will present the assessment and evaluation techniques necessary to accurately diagnose and prevent musculoskeletal injury. The student will be presented with the necessary information regarding the tissue(s) involved (anatomy/functional anatomy); the signs and symptoms in relation to the injury and tissue(s); and the evidence for determining the most sensitive and specific assessment evaluation and assessment techniques/tools. The second part of the course will include lecture/demonstrations by the students enrolled in the course. Students will select a specific condition or pathology and lead a lecture and lab demonstration providing an overview of the objectives related to the course content.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

SPSCI 2030 - INJURY EPIDEMIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This introductory course in injury epidemiology will address injury epidemiology, and concepts in basic epidemiology and biostatistics

related to injury surveillance, prevention and control. The epidemiological perspective of injuries will address the concepts in the Haddon's matrix and classic epidemiologic triad; current injury epidemiology research needs and injury as a public health issue. Topics addressed will include epidemiology of injuries in developed and developing countries, and injuries in vulnerable populations.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

SPSCI 2100 - ADVANCED HUMAN PERFORMANCE AND TESTING

Minimum Credits: 3
Maximum Credits: 3
This course will provide students with advanced knowledge in the field of human performance training and evaluation through classroom lectures and laboratory/filed experiences. Topics include developing and testing strength, speed, power, agility, endurance, stability, and flexibility.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Sports Science (SPRTSCI-MS)

SPSCI 2110 - SPORTS SCIENCE PRACTICUM 1

Minimum Credits: 3
Maximum Credits: 3
In this course, the initial skills required of a sports scientist will be mastered, including, but not limited to sport/athlete assessment, performance testing, developing a training plan, athlete monitoring/tracking, data management, and research. During this course, the student will begin to develop and construct their Capstone project. This project will give each student the opportunity to work independently on a sports science or performance outcome with their internship site. The Capstone project should focus on an area that is relevant to the field of sports science or the site's Sports Science/Performance Departmentas goals. This is a three-term project that will continue into SPSCI 2120: Sports Science Practicum II and SPSCI 2130: Sports Science Practicum III.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

SPSCI 2120 - SPORTS SCIENCE PRACTICUM 2

Minimum Credits: 3
Maximum Credits: 3
This course is the second of three courses which will provide supervised practical experience in the area of sports science. It provides the students with the opportunity to apply their knowledge of sports science, performance, and testing/monitoring in an athletic setting. This involves planned learning experiences with an athletic team at various stages of the training program and season. Students will have the opportunity to observe and then model the functions of a performance specialist. Through the combination of planned learning activities and professional interaction, the students will demonstrate an increasing level of proficiency in providing and evaluating comprehensive training to athletes and teams within the athletic setting. Students will be assigned to their same primary site as the fall term; however, selected rotations outside of the primary site may be necessary to provide appropriate learning activities. This course will build on skills mastered in SPSCI 2110 and will provide the students with supervised practical experiences to develop and master new skills including interpreting athlete/team data, implementing training plans, and evaluating outcomes. During this course, the student will continue to develop their Capstone project. This project will give each student the opportunity to work independently on a sports science or performance outcome with their practicum site. The project should focus on an area that is relevant to the site's Sports Science/Performance Department and/or the field of sports science.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Sports Science (SPRTSCI-MS)

SPSCI 2130 - SPORTS SCIENCE PRACTICUM 3

Minimum Credits: 3
Maximum Credits: 3
This course is the third of three courses which will provide supervised practical experience in the area of sports science. It provides the students with the opportunity to apply their knowledge of sports science, performance, and testing/monitoring in an athletic setting. This involves planned learning experiences with an athletic team at various stages of the training program and season. Students will have the opportunity to observe and then model the functions of a performance specialist. Through the combination of planned learning activities and professional interaction, the students will demonstrate an increasing level of proficiency in providing and evaluating comprehensive training to athletes and teams within the athletic setting. Students will be assigned to their same primary site as the fall and spring term; however, selected rotations outside of the primary site may be necessary to provide appropriate learning activities. This course will build on skills mastered in SPSCI 2110 and SPSCI 2120 and will provide the students with supervised practical experiences to develop and master new skills including interpreting athlete/team data, implementing training plans, and evaluating outcomes. During this course, the student will complete their Capstone project. This project will give each student the opportunity to work independently on a sports science or performance outcome with their practicum site. The project should focus on an area that is relevant to the site's Sports Science/Performance Department and/or the field of sports science. This is a three- term project that will build on the project content from SPSCI 2110 and SPSCI 2120.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

SPSCI 2140 - SPORTS SCIENCE DATA ANALYTICS

Minimum Credits: 3
Maximum Credits: 3
This course provides students with tools to organize, analyze, and visualize athlete performance data while introducing them to statistical methods and computer programming that are essential for data scientists. Students will learn how to use three of the most widely used statistical programming tools in data science: Excel, R, Tableau, Python. Prior experience in R, Tableau, and Python is not expected in this course, however, familiarity with basic statistical concepts and modern programming language will be very useful. The approach of this course is practical, hands-on, and project oriented. The goal of the course is to provide students with skills to solve various problems in sport informatics using different statistical packages.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Sports Science (SPRTSCI-MS)

SPSCI 2150 - APPLIED SPORTS SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of sports science and the role of a sports scientist in the applied setting. Topics covered will include training theory, needs analysis, athlete monitoring/assessment, managing data/analytics, and communicating information.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SPSCI 2151 - ADVANCED ASSESSMENT OF ATHLETIC PERFORMANCE

Minimum Credits: 3
Maximum Credits: 3
This course will provide both theoretical knowledge and practical skills required for the evaluation of progress in athletic performance in both laboratory and field-based settings. Students will participate in data collection through assessments of muscular strength, power, change of direction ability, speed, anaerobic capacity, body composition, etc. Emphasis will be placed on the practical application of performance assessments, benchmarking, and athlete profiling. After the completion of this course, students should have a thorough

understanding of how to perform a literature review and ask good questions, performance assessment, data hygiene, analysis, and visualization, as well as communication within a high-performance environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SPSCI 2160 - SPORTS NUTRITION

Minimum Credits: 3
Maximum Credits: 3
A lecture and laboratory class in which the principles of nutrition are applied to sports performance and exercise. Topics presented include energy release and substrate utilization, energy metabolism during exercise, fluid intake and athletic performance, body composition, vitamins and minerals, nutrition for training and competition, sports specific considerations, fitness and nutrition assessment in athletes, and special issues such as vegetarian diets, environmental obstacles. Teaching approaches for the course include lectures, assigned readings, discussions, and problem-based learning through written and lab assignments (both in-class and online).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SPSCI 2170 - CURRENT TOPICS IN SPORTS SCIENCE AND DATA ANALYTICS RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course will present a focused discussion of current topics in the field of sports science and data analytics. The goal of the course is for each student to be able to effectively obtain, read, synthesize, write, discuss, critique, present, and apply scientific research related to sports science, data analytics, and athlete monitoring. Topics of discussion will vary based on student interest and Capstone research focus. Example modules may include: external and internal training load, neuromuscular readiness, subjective wellness, biomarkers, and recovery monitoring.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Plan: SPRTSCI-MS

SPSCI 2200 - ADVANCED STRENGTH & CONDITIONING I

Minimum Credits: 3
Maximum Credits: 3
This course will provide students with advanced knowledge in the field of human performance training and evaluation through classroom lectures and laboratory/field experiences. Topics include developing and testing in strength, speed, power, agility, endurance, stability, and flexibility. At the conclusion of this course, it is expected the student will be able to: Identify performance requirements for various sports throughout stages of their competition season, understand the anatomic and physiological structures and functions needed for components of fitness and wellness, such as: warm up and cool down, strength, speed, power and plyometrics, and agility and reaction time.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SPSCI 2210 - ADVANCED STRENGTH AND CONDITIONING 2

Minimum Credits: 3
Maximum Credits: 3
This course will examine strength and conditioning training principles and how they can be applied to different methods of aerobic and anaerobic training. A variety of periodization and programming considerations related to resistance, endurance, sprint, concurrent, change of direction, and advanced training will be discussed as they relate to the spectrum of athletes. This course will focus on both short- and long-term programming considerations and how to incorporate different methods of training within an annual plan.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

SPSCI 2250 - COACHING THEORY AND PHILOSOPHY

Minimum Credits: 3
Maximum Credits: 3
This course aims to develop strength and conditioning coaches by providing an overview of the practical nature of coaching, professional development tools, sport psychology considerations with athletes, and leadership skills. There are many aspects to coaching, and this course will explore some of the important challenges facing the coach and the coaching profession in the 21st Century.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: SPRTSCI-MS

SPSCI 2270 - CURRENT TOPICS IN STRENGTH AND CONDITIONING RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course will present a focused discussion of current topics in the field of strength and conditioning. The goal of the course is for each student to be able to effectively obtain, read, synthesize, write, discuss, critique, present, and apply scientific research related to strength and conditioning. Topics of discussion will vary based on student interest and Capstone research focus. Example modules may include: eccentric training, periodization, variable resistance training, postactivation potentiation, and weightlifting movements and derivatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: SPRTSCI-MS

SPSCI 2650 - EXERCISE PHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide students the knowledge of theoretical and applied aspects of exercise physiology. An in-depth understanding of how the body responds when exposed to acute and chronic bouts of exercise will be provided through lectures and laboratory. Topics discussed will include physiological responses and adaptations of the cardiovascular, respiratory, metabolic, and neuromuscular systems to exercise; assessing cardiorespiratory fitness, bone health, body composition, and anaerobic performance; environmental considerations and exercise in special populations; and the role of the endocrine system in sport and exercise performance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

SPSCI 3010 - LABORATORY TECHNIQUES 1

Minimum Credits: 3
Maximum Credits: 3
Course is designed to provide an overview of clinical research paradigms within sports medicine. Student will be introduced to lab testing techniques related to neuromuscular mechanisms associated with sport and orthopedic injuries and develop lab proficiency with components on neuromuscular profiling. Will provide student with acquire data management and analysis techniques and develop research related writing skills necessary to complete thesis and dissertation requirements as well as provide a basis for future scholarly activities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: HRS-MS (MSSPM-SP), HRS-MS (MSSPSC-SP), SPRTSCI-MS or SPRTMED-MS Restricted to MS-Sports Medicine and MS-Sports Science students only.

SPSCI 3010 - LABORATORY TECHNIQUES 1

Minimum Credits: 3
Maximum Credits: 3
Course is designed to provide an overview of clinical research paradigms within sports medicine. Student will be introduced to lab testing techniques related to neuromuscular mechanisms associated with sport and orthopedic injuries and develop lab proficiency with components on neuromuscular profiling. Will provide student with acquire data management and analysis techniques and develop research related writing skills necessary to complete thesis and dissertation requirements as well as provide a basis for future scholarly activities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

Statistics

STAT 0200 - BASIC APPLIED STATISTICS

Minimum Credits: 4
Maximum Credits: 4
This course teaches methods of descriptive and inferential statistics. Topics include data collection and description, hypothesis testing, correlation and regression the analysis of variance, and contingency tables. Students will learn how to use a statistical computer package.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

STAT 1000 - APPLIED STATISTICAL METHODS

Minimum Credits: 4
Maximum Credits: 4
This course is an intensive introduction to statistical methods. It is designed for students who want to do data analysis and to study further ideas in applied statistics beyond this course. The topics covered include descriptive statistics, elementary probability, random sampling, controlled experiments, hypothesis testing, regression and the analysis of variance. Emphasis will be placed on the statistical reasoning underlying the methods. Students will also become proficient at the use of a statistical software package.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

STAT 1060 - DATA SCIENCE FOUNDATIONS

Minimum Credits: 4
Maximum Credits: 4
This course is a general introduction to the rapidly growing field of data science. The topics covered include descriptive statistics, probability, sampling, hypothesis testing, and ANOVA. Broader topics such as regression analysis, model selection, model diagnostics, etc. will also be discussed if time permits. The course will be very hands-on with students actively carrying out the techniques/procedures to foster the ability to reason with data. As part of this process, students will learn the basics of programming in R, and these skills will be reinforced through weekly labs. In developing the core concepts, students will also be exposed to ancillary topics such as data ethics, simulation, and best practices in programming. No previous coding experience nor background in statistics will be assumed.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

STAT 1151 - INTRODUCTION TO PROBABILITY

Minimum Credits: 3
Maximum Credits: 3
This course presents at both a theoretical and applied level the basic probability concepts required for statistical inference. Topics include set theory and basic probability, independence and Bayes' theorem, discrete random variables and their distributions--Bernoulli, Binomial, Poisson, and geometric, continuous random variables and their distributions--uniform, exponential, gamma, beta, and normal, transformation of random variables, moment and moment generating functions, multivariate discrete distribution, marginal and conditional distribution and independent variables.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: MATH 0230 or 0235 or 0240 or 0245

STAT 1152 - INTRODUCTION TO MATHEMATICAL STATISTICS

Minimum Credits: 3
Maximum Credits: 3
This course introduces the elementary concepts of statistical inference. Topics include functions of random variable, sampling distributions, decision criterion, estimation, hypothesis testing, regression, analysis of variance, and non-parametric methods.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis
Course Requirements: PREQ: STAT 1151

STAT 2001 - RESEARCH AND THESIS FOR MS DEGREE

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

STAT 2020 - TEACHING SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

STAT 2131 - APPLIED STATISTICAL METHODS 1

Minimum Credits: 3
Maximum Credits: 3
This introductory graduate level course on applied statistics covers a wide variety of problems. We begin with simple data description and go on to standard estimation and testing problems. We then study various types of linear models. We make extensive use of the computer; the student will learn BMDP and Minitab.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2132 - APPLIED STATISTICAL METHODS 2

Minimum Credits: 3
Maximum Credits: 3

This course is a continuation of STAT 2131.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: STAT 2131

STAT 2200 - APPLIED NONPARAMETRIC STATISTICS

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course will be to prepare students to use standard nonparametric tests for problems that frequently occur in applications. The Wilcoxon, Fisher (sign), Ansari-Bradley, Miller (jackknife), Kruskal-Wallis, Kendall, and Kolmogorov-Smirnov tests will be discussed. Minitab subroutines will be used to facilitate computation. Students will additionally be doing data and other projects utilizing course techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2210 - APPLIED CATEGORICAL DATA ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to provide contingency table techniques for research workers in the social sciences, medical sciences and other areas where it is necessary to investigate relationships between qualitative variables. Course deals with the Chi-square test and standard 2x2 and RXC contingency tables, as well as log-linear and other special types of contingency tables analysis. Students will additionally be doing data and other projects utilizing course techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2220 - APPLIED REGRESSION

Minimum Credits: 3
Maximum Credits: 3
This course covers simple linear regression (one variable) and one way analysis of variance followed by more complicated regression models. More complex ANOVA models are treated if time permits. Some computer applications will usually be considered. Students will additionally be doing data and other projects utilizing course techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2221 - ADVANCED APPLIED MULTIVARIATE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course is concerned with statistical methods for describing and analyzing multivariate data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2230 - APPLIED EXPERIMENTAL DESIGN

Minimum Credits: 3
Maximum Credits: 3

This course teaches students to design valid statistical experiments and to analyze them. Among the designs considered are: completely randomized designs, randomized block designs, Latin lemmas, factorial designs, and complete block designs. Students will additionally be doing data and other projects utilizing course techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: STAT 0200 or 1000 or 1100 or 1152; MIN GRADE: STAT 0200 B-

STAT 2240 - APPLIED SAMPLING

Minimum Credits: 3
Maximum Credits: 3
This course considers basic applied principles and approaches for conducting a sample survey. The following will be discussed: how to design a survey, how to analyze a survey with attention paid to different types of survey techniques and corresponding statistical methods. The course will provide survey skills for the social sciences, psychology, economics, marketing and management, and health sciences. Students will additionally be doing data and other projects utilizing course techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2250 - STATISTICAL QUALITY CONTROL

Minimum Credits: 3
Maximum Credits: 3
This course teaches students to design valid statistical experiments and to analyze them. Among the designs considered are: completely randomized designs, randomized block designs, Latin lemmas, factorial designs, and complete block designs. Students will additionally be doing data and other projects utilizing course techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: STAT 0200 or 1000 or 1100 or 1152; MIN GRADE: STAT 0200 B-

STAT 2250 - STATISTICAL QUALITY CONTROL

Minimum Credits: 3
Maximum Credits: 3
This course is involved with statistical methods for quality and process control. It is intended for all students who will use statistics in an industrial setting. Introductory topics include probability models and statistical estimation for quality. The main focus will be on control charts and tolerances. Acceptance sampling will also be discussed. A final but quite important topic will be Taguchi methods. Students will additionally be doing data and other projects utilizing course techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2260 - PRINCIPLES OF DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course is a gentle introduction to data science. Data science is an emerging interdisciplinary field stemming from statistics, mathematics and computer science. At its core, data science involves using automated methods to analyze massive amounts of data and to extract knowledge from them. The objective of this course is to provide students with a principled introduction to data science that properly combines inferential thinking and computational thinking. Students will learn the fundamental pipeline of data science, ranging from data acquisition, data clean-up, data exploration and visualization, modeling and inference, to professional reporting.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Graduate students in statistics or applied statistics.

STAT 2261 - SURVIVAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course in the analysis of time-to-event data where censoring and truncation may be present. It will focus on both theories and applications. Upon completion of this course, students will be able to: Distinguish different types of survival data (e.g., complete, right/left censored, right/left truncated); Identify basic quantities and survival models; Conduct basic nonparametric, semiparametric, and parametric inferences (e.g., Kaplan-Meier estimator, Log-rank test, Cox proportional hazards model, Accelerated failure-time and Log-linear models, etc.); Be familiar with model assumptions and diagnosis; and Use R to analyze various datasets and produce well-documented reports.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

STAT 2270 - DATA MINING

Minimum Credits: 3
Maximum Credits: 3
Data mining is a collection of tools to discover patterns and relationships in data, often large observational databases. This course covers some of the main methods of data mining.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2280 - DATA SCIENCE WITH PYTHON

Minimum Credits: 3
Maximum Credits: 3
This course introduces core concepts, tools, and techniques in modern data science. Students will learn how to import, tidy, transform, visualize, and merge data, as well as how to build, tune, and evaluate a range of machine learning models. Throughout the course, Python and a suite of powerful open-source libraries will be used to solve real-world data science problems. Tools covered include Jupyter Notebook for creating reproducible reports; NumPy for data structures; pandas for data wrangling; matplotlib and seaborn for data visualization; scikit-learn for data preprocessing and machine learning; and SciPy, TensorFlow, and Keras for advanced modeling. By the end of the course, students will have hands-on experience working through the full data analysis pipeline and producing polished, reproducible results.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2281 - APPLIED AI AND DEEP LEARNING WITH PYTHON

Minimum Credits: 3
Maximum Credits: 3
This course introduces the fundamentals of neural networks, including key architectures such as multilayer perceptron (MLP), convolutional neural network (CNN), and recurrent neural network (RNN), along with reinforcement learning and generative models. Through hands-on work with real-world datasets, students learn to build, train, and evaluate deep learning models while developing a strong understanding of their applications in computer vision, natural language processing, time series forecasting, and text and image generation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2292 - TOPICS IN APPLIED STATISTICS 3

Minimum Credits: 3
Maximum Credits: 3
Various topics concerning the applications of statistics will be taught on an irregular basis depending on faculty interests and students' needs. Example of possible topics include re-sampling techniques in statistics; statistical graphics; cluster analysis; and classification methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2293 - TOPICS IN APPLIED STATISTICS 4

Minimum Credits: 3
Maximum Credits: 3
This course is a gentle introduction to the field of data science and machine learning. Major topics include data import, data wrangling, data visualization, training, tuning, and testing various machine learning models, and generating reproducible reports. Python basics and a collection of packages, such as Jupyter Notebook, NumPy, Pandas, Matplotlib, and Scikit-Learn, will be studied within the context of solving data science problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

STAT 2300 - STATISTICAL PACKAGES

Minimum Credits: 3
Maximum Credits: 3
This course introduces three widely used statistical software packages: R, Python, and SAS. Students will learn how to manage and manipulate data, select appropriate analytical methods, conduct statistical analyses, and interpret results accurately and effectively. By the end of the course, students will be able to apply these tools to real data sets and communicate their findings using proper statistical reasoning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2301 - STATISTICAL COMPUTING AND INTRODUCTION TO DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course is an introduction to the basics of statistical programming. Students will be introduced to basic machine learning topics as well as the basics of optimization. Examples from data science will be used throughout the course for demonstration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2310 - APPLIED MULTIVARIATE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
We start with the basic concepts of regression and correlation. After developing the necessary linear algebra, we will study the multivariate normal and then go on to do one or more of the following: cluster analysis, discriminant analysis, directional data, and factor analysis. We will make use of the Minitab and BMDP computer packages. Students will additionally be doing data and other projects utilizing course techniques.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2320 - APPLIED TIME SERIES

Minimum Credits: 3
Maximum Credits: 3
The objective of the course is to present at the elementary level, a unified and reasonably complete exposition of statistical methods used in time series analysis. Serious consideration is given to both time and frequency domain approaches. Real data from a number of subject fields will be analyzed as they occur in the exposition. Students will additionally be doing data and other projects utilizing course techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: STAT 2220

STAT 2321 - APPLIED ADVANCED TIME SERIES

Minimum Credits: 3
Maximum Credits: 3
This course is an attempt to provide a uniform coverage of both time domain and frequency domain time series methods which can be easily understood by students with varied backgrounds.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2360 - STATISTICAL LEARNING AND DATA SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide a broad introduction to the field of data science and to expose students to many of the statistical tools most commonly used by modern data scientists. We will explore a wide variety of models and algorithms in a data-driven fashion. Topics will include modeling techniques ranging from classic statistical modeling (e.g. linear and logistic regression) to modern statistical learning (e.g. regularization and lasso)to fundamental machine learning (e.g. random forests and support vector machines). Particular attention will be given to the sorts of scientific questions that can be asked and answered within the different frameworks. Students will have the opportunity to utilize modern, interesting datasets to both provide data-driven analytical solutions and also to formally assess the uncertainty in making such determinations. The R language will be used extensively for statistical computing. Some prior knowledge or experience with R or related programming languages is helpful but not essential.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2381 - SUPERVISED STATISTICAL CONSULTING

Minimum Credits: 1
Maximum Credits: 6
In this course students will consult with clients in the consulting center. The consulting will be under the supervision of experienced consultants. Students will be taught how to provide statistical methods in conjunction with real problems and how to analyze and report the results.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: STAT 2132
Course Attributes: Undergraduate Research

STAT 2391 - ADVANCES IN APPLIED STATISTICS 1

Minimum Credits: 3
Maximum Credits: 3
Foundations as well as recent developments in applied statistics will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2392 - ADVANCES IN APPLIED STATISTICS 2

Minimum Credits: 3
Maximum Credits: 3
Foundations as well as recent developments in applied statistics will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2521 - TIME SERIES 1

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the theoretical aspects of time series analysis. In this course we discuss the probabilistic foundations of time series in both the time and frequency domains. Students should have a strong background in mathematical statistics, but the course does not assume a prior knowledge of time series analysis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2611 - THEORY OF MULTIVARIATE ANALYSIS 1

Minimum Credits: 3
Maximum Credits: 3
This course covers both classical and modern theoretical developments in multivariate statistical analysis. Topics include multivariate distributions, estimation, testing, classification, principal components, correlation analysis, dimensionality reduction, and factor analysis. Time permitting, statistics on manifolds and other special topics will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: STAT 2131 and 2132 and STAT 2631

STAT 2630 - INTERMEDIATE PROBABILITY

Minimum Credits: 3
Maximum Credits: 3
This course is the first half of a two term sequence in mathematical statistics intended for undergraduate students and graduate applied statistics majors. Topics to be covered include probability concepts, random variable, discrete and continuous variables, joint distributions, functions of random variables, and some sampling distributions
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2631 - THEORY OF STATISTICS 1

Minimum Credits: 3
Maximum Credits: 3
This is an introductory graduate course in the theory of statistical estimation. The following topics will be covered. The use of orthogonal transformations in statistical distribution theory, distribution of quadratic forms, the theory of linear estimation, the general theory of estimation and estimation from a decision theoretic point of view.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL

Minimum Credits: 3
Maximum Credits: 3
This course is the second half of a two term course. Topics to be covered include estimation, inference, linear models, and an introduction to bayesian estimation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2641 - ASYMPTOTIC METHODS IN STATISTICS

Minimum Credits: 3
Maximum Credits: 3
A careful study of some standard asymptotic techniques in statistics and their modern refinements. Topics include stochastic convergence, delta method, M-estimators, contiguity, local asymptotic normality, concepts of efficiency, projection and U-statistics, likelihood ratio tests, bootstrap, Bayes procedures along with some empirical process methods.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2650 - INTRODUCTION TO BAYESIAN STATISTICS

Minimum Credits: 3
Maximum Credits: 3
This course will give an introduction to Bayesian statistics. Topics to be covered include prior and posterior distributions, multi-level models, model checking and selection, stochastic simulation by Markov Chain Monte Carlo.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2651 - BAYESIAN ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Introduction to the foundations of Bayesian inference, its practical applications in diverse areas, and the computational algorithms developed for the Bayesian inference.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2660 - LINEAR REGRESSION

Minimum Credits: 3
Maximum Credits: 3

The topics to be covered include: fitting a straight line, examination of residuals, two independent variables, polynomial models, selection procedures, and model building.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2661 - LINEAR MODELS THEORY 1

Minimum Credits: 3
Maximum Credits: 3
This course will follow a co-ordinate free approach to the general linear model. As much as possible proofs will be done from a geometric perspective. Topics include matrix theory for statistics, estimation, hypothesis testing, distribution theory, generalized inverses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2691 - NONPARAMETRIC THEORY

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the statistical analysis of data when no parametric assumptions are made.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2711 - PROBABILITY THEORY 1

Minimum Credits: 3
Maximum Credits: 3
This course begins with an introduction to Lebasque integral. Then distribution functions, probability measures and random variables are introduced. Convergence concepts and topics from the laws of large numbers and random series are also covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2712 - PROBABILITY THEORY 2

Minimum Credits: 3
Maximum Credits: 3
This is the continuation of STAT 2711.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: 2711

STAT 2730 - STOCHASTIC PROCESSES

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to stochastic processes and its applications. The major topics are Markov chains, Poisson processes, Brownian motion, and branching processes.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Graduate students in statistics or applied statistics.

STAT 2751 - RELIABILITY THEORY 1

Minimum Credits: 3
Maximum Credits: 3
This course will cover basic concepts in reliability theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2811 - FOUNDATIONS OF STATISTICAL LEARNING AND AI FOR OMICS DATA

Minimum Credits: 3
Maximum Credits: 3
This course covers the analysis of high-dimensional, high-throughput 'omics' data, including transcriptomic, epigenomic (e.g., DNA methylation, chromatin architecture), microbiome, and genomic data, across both bulk and single-cell contexts. Special emphasis is placed on dimension reduction, cellular deconvolution and cell-type-specific analyses, multi-omic integration methods, and the development of disease risk prediction models.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2900 - INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
Under faculty supervision, the student will participate in a statistics project.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

STAT 2991 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

STAT 3001 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

STAT 3131 - TOPICS APPLIED STATISTICS 1

Minimum Credits: 3
Maximum Credits: 3

Foundations as well as recent developments in applied statistics will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (STAT 2131 or 2132) and (STAT 2630 or 2640)

STAT 3132 - TOPICS APPLIED STATISTICS 2

Minimum Credits: 3
Maximum Credits: 3
Foundations as well as recent developments in applied statistics will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: [(STAT 2131 and 2132) or (BIOST 2049)] and [(STAT 1631 and 1632) or (STAT 2630 and 2640) or (STAT 2631) or (BIOST 2043 and 2044)]

STAT 3341 - ADVANCED MODERN STATISTICAL COMPUTING 1

Minimum Credits: 3
Maximum Credits: 3
Topics include: nonparametric regression modeling, generalized additive models, robust statistical methods, general applications of randomization and resampling techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: STAT 2631

STAT 3611 - TOPICS MULTIVARIATE ANALYSIS 1

Minimum Credits: 3
Maximum Credits: 3
An introduction to biological 'omic' data and data analysis. We will consider SNP, bulk and single cell RNAseq, DNA methylation, microbiome, and metabolomic data. Statistical topics will include high dimensional factor analysis, multiple hypothesis testing, empirical Bayes, adjusting for latent confounds, missing data, and biological networks, among others.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 3691 - TOPICS IN ADVANCED STATISTICS 1

Minimum Credits: 3
Maximum Credits: 3
This is a PhD level topic course on multiple hypothesis testing, variable selection, and high-dimensional models. The course will start from multiple testing problems, and introduce a range of methods for controlling family-wise error rate (FWER) and false discovery rate (FDR). Several examples including needles in a haystack problem and sparse mixture models will be studied in detail. In the second part, we will formulate the variable selection problem for linear models as a multiple testing one, and build connections between model selection criterions and multiple comparison results for special design matrices. At the same time, we will also introduce the recently developed knockoff framework for FDR control and discuss its applications in genetics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 3692 - TOPICS IN ADVANCED STATISTICS 2

Minimum Credits: 3
Maximum Credits: 3
This is a PhD level topic course on statistics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 3694 - TOPICS IN ADVANCED STATISTICS 4

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 3901 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Strategic Planning & Policy

BSPP 2060 - INDEP STUDY STRATGY PLNNG CONTRL

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 2061 - INDEPENDENT SUDY IN STRATEGIC PLANNING 2

Minimum Credits: 1
Maximum Credits: 9
Self designed elective course in strategic planning.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 2110 - SCALING INNOVATION STUDIO

Minimum Credits: 3
Maximum Credits: 3
This course examines theory, conceptual frameworks, and tools for developing scalable commercialization strategies for new technologies. The analytical frameworks address elements of commercialization strategy that are equally critical to start-ups and corporate technology ventures. Students work in mentored teams with inventors and early-stage ventures to evaluate market pathways and scaling challenges. Emphasis is placed on discovery and validation-oriented research methods and AI-augmented analysis to develop evidence-based strategies addressing market size, adoption dynamics, ecosystem support, and competitive advantage.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

BSPP 2111 - COMMERCIALIZING NEW TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
This course covers theory, conceptual frameworks, and tools used to formulate strategies for commercializing new technologies. The analytical frameworks cover elements of commercialization strategy that are equally critical to start-ups and to corporate technology ventures. In addition, we discuss some of the key challenges that differ for start-ups versus established firms. The primary deliverable in the course is a professional quality project which evaluates the commercialization alternatives for an emerging technology. Your project team will be paired with a local inventor, unless you prefer to evaluate a technology of special interest to your team. Experienced entrepreneurs and experts in financing new technology ventures will also address the class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 2112 - LEADING ORGANIZATIONS TO INNOVATE SMARTER

Minimum Credits: 1
Maximum Credits: 1
This course addresses the critical role of a firm's top management in guiding a firm toward more positive innovation outcomes. We specifically focus on the role of executive leadership in developing a firm's capability for breakthrough innovation ' a primary source of sustained competitive advantage and economic growth. We distinguish between what leaders need to do during invention and innovation, and emphasize barriers that hinder established firms' capabilities to produce breakthrough innovations. We examine how strategic leaders can augment a firm's ability to 'innovate smarter' by better utilizing the diversity of expertise that resides within the organization and within the firm's partnerships. The concepts we'll discuss are grounded in decades of research on creativity and technological innovation, as well as strategic management, leadership, and teams. We'll discuss how strategic leaders apply these concepts today.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 2328 - THE BUSINESS OF HUMANITY - STRATEGIC MANAGEMENT IN THE ERA OF GLOBALIZATION, INNOVATION AND ESG

Minimum Credits: 3
Maximum Credits: 3
This course focuses on strategic management in business contexts of high uncertainty and extreme complexity created by the interaction of (i) the inevitability of increasing globalization, (ii) the importance of innovation to ensure sustainable competitive advantage and (iii) the emerging social and economic imperative of building business models that focus on shared value. The business of humanity project at the KATZ graduate school of business has researched the responses of businesses across the world to these challenges. The course will cover (i) the radically different strategic planning processes and analytical techniques, (ii) the new rules of strategy, (iii) the dynamic organizational structures and (iv) the new leadership models that are responsive to the imperative and potential of meeting fundamental human and societal needs. These processes, rules, techniques and models have been demonstrated to be effective in dealing with technological disruptions, extreme price-point pressures in growth sectors, rising societal expectations and wicked problems
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BSEO 2407 or BSPP 2409; PROG: Joseph M. Katz Grad Sch Bus
Course Attributes: MCSI - Sustainability Focused

BSPP 2409 - STRATEGIC MANAGEMENT

Minimum Credits: 1
Maximum Credits: 1
"Strategy" in the context of management, focuses on creating a harmonious relationship between separate units within an organization, and between a firm and its environment. The core strategic management course explores this classic concept of strategy and how it can be adapted to today's changing and turbulent environments. While the course adopts the perspective of a general manager (e.g. Head of a strategic business unit), it provides critical insight to functional managers who must align their departments' activities with the firm's overall objectives and approach to creating and capturing value (i.e. Its competitive strategy).The strategic management course employs a multi-method pedagogy. Students learn a set of perspectives, conceptual frameworks, and tools - drawn from industrial organization economics and the behavioral sciences and sociology, with which to understand the opportunities and challenges involved in developing world-class capabilities for competing effectively in globally-linked economies. Through case studies, we explore how a firm's competitive strategy shapes the way it engages customers, suppliers, competitors, and others comprising its value net. Through project assignments, we investigate how competitive advantage can be quantified using publicly available data. Together, the multiple modes of inquiry will provide insight into why competitive advantage is fundamental to a firm's long-term success; how the various activities in a firm's value chain can contribute to competitive advantage; and why, although industries support many competitive strategies, each firm tends to employ only one at a time.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (BACC 2401 and BECN 2401) and (BFIN 2006 or BFIN 2409 or BMKT 2411 or BMKT 2409); PROG: Joseph M. Katz Grad Sch Bus

BSPP 2411 - BUILDING & SUSTAINING SENIOR EXECUTIVE RELATIONSHIPS

Minimum Credits: 1
Maximum Credits: 1
This course will focus on the requisite personal capabilities that underpin Building and Sustaining Senior Executive Relationships - BASSER - both within an organization and externally. Of course, these capabilities also correlate with professional career advancement. The curriculum is based on a blend of research-based and empirical material. We will use exercises, cases, executive interviews, group discussions and simulations to move key concepts to the application world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BSPP 3010 - INDEP STUDY STRATGC PLNNG POLICY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BSPP 3011 - STRATEGIC PLANNING SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Analyzes the strategic planning process in terms of the varying combinations of subsystems which may be required for different organizational purposes. Research regarding both the design and evaluation of planning systems will be studied with the objective of developing improved models of the underlying processes.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BSPP 3012 - RESEARCH IN COMPETITIVE STRATEGY

Minimum Credits: 3
Maximum Credits: 3
This course draws on a growing body of theoretical and empirical research which examines relationships between an organization's environment, its strategy, and performance outcomes. Topics include theoretical concepts of the environment and their empirical counterparts, market definitions, strategic alliances, competitive information flows, competitive interactions and responses, industry evolution, and the role of environmental analysts. Special attention is given to competitive intelligence processes. There is an explicit balance of theoretical and practitioner material. The course complements the research in corporate strategy seminar by focusing on business level competitive dynamics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 3014 - RESEARCH IN CORPORATE STRATEGY

Minimum Credits: 3
Maximum Credits: 3
In this course we will focus on a core sub-field of strategy, corporate strategy, which has the following defining question: "what businesses should the firm compete in, and how should resources be allocated across those businesses?" Corporate strategy comprises an inter-related set of three key phenomena and associated research; value creation (e.G., Diversification and vertical integration), scope (e.G., Mergers and acquisitions), and execution (e.G., Role of the corporate office). While corporate strategy is often studied purely as a "content" field, we will adopt an integrative content-process orientation in this course. Our approach will also be evidence-based, in that we'll make a conscious attempt to understand and use systematic review tools, such as meta-analyses, to arrive at a sophisticated understanding of the corporate strategy literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 3016 - INNOVATION, FIRM STRATEGY AND PERFORMANCE

Minimum Credits: 3
Maximum Credits: 3
This seminar will cover contemporary research in the strategy field and examine antecedents, outcomes, and mechanisms behind strategic innovation choices, at the individual, firm, alliance/social network, and ecosystem levels of analysis. Innovation research in the strategy field is multidisciplinary and contributes to theoretical paradigms including the behavioral theory of the firm, resource-based theory, and the knowledge-based view of the firm. Students will develop a research paper on a topic of their own choosing, advancing sections of their paper through our weekly discussions and feedback. The seminar format is designed to strengthen skills in the fundamentals of scoping and problematizing an existing literature / research conversation, efficiently reviewing the literature, motivating the research study, and crafting a robust empirical design. Once students enroll, they will have an opportunity to share topics they are specifically interested in, and I will curate the readings list with their preferences in mind.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BSPP 3017 - STRATEGIC LEADERSHIP AND CORPORATE GOVERANCE

Minimum Credits: 3
Maximum Credits: 3
This course involves a critical review of theory and research on the upper echelons perspective, which encompasses the study of how CEOs, top executives, and boards of directors influence what firms do and how they do it. The course is intended primarily for doctoral students who expect to conduct research in strategic management, organizational theory, organizational behavior, or other related areas (political science, industrial/organizational psychology, sociology of organizations, etc.). Each week we will examine a different sub-area of the domain. Our approach will typically involve reading a few seminal works (or summaries/syntheses) about the topic as well as some representative empirical studies in the domain.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BSPP 3019 - SEMINAR IN ENTREPRENEURSHIP

Minimum Credits: 3
Maximum Credits: 3
Study of entrepreneurship research literature to develop an understanding of and appreciation for the key concepts, theories, issues, debates, contributions, and research streams in this literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BSPP 3099 - READINGS STRATEGC PLNNG & POLICY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

BSPP 3521 - STRATEGIC RESEARCH

Minimum Credits: 3
Maximum Credits: 3
This course will introduce the underlying theory and primarily focus on the practice of strategic planning. Strategic planning considers the organization as a whole, and its operating and general environment. Strategic planning embraces defining the organizational identity, vision, mission or concept of business, determining long-term objectives, developing organizational strategies and translating these into goals and programs of actions. The course will progress through the implications of organizational types and taxonomies of uncertainty on the processes and techniques of strategic planning. It will end with a review of the current literature in the area with the intent of identifying emerging challenges faced by organizations and developing strategic planning processes and techniques that respond to these challenges.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

BSPP 3522 - MANAGING IN UNCERTAINTY: ENTREPRENEURSHIP

Minimum Credits: 1
Maximum Credits: 1
In this course, students will develop a mental model of the entrepreneurship research literature, and show an understanding of and appreciation for the key concepts, theories, issues, debates (conceptual). Additionally, the course will assist students in strengthening their ability to apply research to identify, develop, and present research ideas (practical).
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

Strategy Envirnmt & Organiztns

BSEO 2012 - SOCIAL ENTREPRENEURSHIP

Minimum Credits: 1
Maximum Credits: 1

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.
Course Attributes: MCSI - Sustainability Focused

BSEO 2033 - MANAGING THE NATURAL ENVIRONMENT

Minimum Credits: 1
Maximum Credits: 1
This course focuses on the management of strategic and compliance issues related to the natural environment of the business firm.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BSEO 2034 - SUSTAINABILITY AND CORPORATE RESPONSIBILITY

Minimum Credits: 1
Maximum Credits: 1
This course will address such topics as managerial approaches to the ESG issues and opportunities that occur across business processes, sustainability and social responsibility as business opportunities, environmental management systems (the 14001 standards), social responsibility guidance (ISO 26000) and reporting, and methods of dealing with stakeholders concerned about the firm' ESG performance. It introduces students to sustainable business management practices and to the role of the private sector in global sustainability development and environmental initiatives. Throughout the course, the emphasis will be on real-world managerial experience and guidance, based on numerous current cases.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: MCSI - Sustainability Focused

BSEO 2315 - BUSINESS LAW

Minimum Credits: 3
Maximum Credits: 3
The primary objectives of this course are: (1) to identify the many types of business actions which require decision makers to analyze ethical issues; and (2) to teach students when, why, and how ethical issues should be made a part of the decision-making process.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: ACCT-MS or ACCTBA-MS

BSEO 2316 - BUSINESS LAW

Minimum Credits: 3
Maximum Credits: 3
The primary objective of this course is to discuss key topics of business actions and topics central to the objective of today's executive.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM

Minimum Credits: 1
Maximum Credits: 1
This course examines concepts, issues, and tools related to the management of ethics and social responsibility in business. Students learn how to recognize and respond to ethical problems, to understand their personal responsibilities as business managers, to evaluate various ethical frameworks, to apply a process of moral decision making to ethical problems, to grasp relationships between ethical behavior and organizational structure and processes and to manage the ethical and social problems and opportunities arising from dimensions of the business environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BSEO 2407 - STRATEGIC MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
At the end of the course, students will be able to: (1) do a strategic assessment of the firm and its environment (2) identify the various strategic choices a firm can make given the strategic assessment (3) implement processes and methods to enact strategic choices.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BACC 2401 and BMKT 2411 and BECN 2401 and BFIN 2006; PROG: Katz Graduate School of Business

BSEO 2506 - COMPETING EMERGING ECONOMIES

Minimum Credits: 1
Maximum Credits: 1
This course will introduce students to concepts and frameworks designed to help managers make decisions critical to formulating and implementing global strategies, such as Ghemawat's cage model and 3a global strategy framework, porter's national diamond model, and Khanna's work on institutional voids. Through a combination of case studies and country overviews, students will analyze specific companies, industries, and countries in order to develop recommendations pertaining to whether, when, and how to enter a particular country, and how to prepare for management challenges associated with implementing a firm's competitive strategy in a new country. The course will specifically introduce students to the opportunities and challenges associated with transferring competitive strategies established in developed markets to emerging economies, such as Brazil, China, India and Russia. Hands-on homework assignments will assure that students become familiar with valuable sources of information on emerging markets.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BSEO 2509 - BUSINESS AND POLITICS

Minimum Credits: 1
Maximum Credits: 1
Financial crises, the Covid 19 pandemic, and numerous recent events in industries as diverse as children's products, airliners, and citrus fruits have highlighted the increasing interdependence of business and government, as well as the means by which business gains strategic benefits from government regulation. The course begins with extended case studies on the Silicon Valley Bank collapse in 2023 and on the financial crisis that some call "the great recession" (and which someday may be called "The Panic of 2008," parallel to the other major financial panics in U.S. business history). The course compares public and private organizations, describes the regulatory system in the U.S., reviews the administrative procedures and performance of regulatory agencies, considers and assesses traditional as well as modern designs for regulation, and examines both regulatory failure patterns and the means by which firms gain strategic, competitive advantage through shaping government decisions and programs. In examining techniques of lobbying, the course focuses on the U.S. setting and identifies both effective and ineffective methods of lobbying. The course also covers issues management and crisis management. By the end of the course, students should have obtained a good working knowledge of the U.S. regulatory system, the major instruments of regulation, and the typical interactive patterns of regulators and regulated parties.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BSEO 2511 - MGMNT OF STRATEGIC ALLIANCES 1

Minimum Credits: 1
Maximum Credits: 1
Strategic alliances and cooperative relationships between two or more firms is rapidly becoming a common feature of a firm's competitive environment. The purpose of this course, therefore is to examine the nature of both domestic and international alliances, the reasons behind their formation, and the issues related to their management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BSEO 2521 - ENTREP AND NEW VENTURE INIT 1

Minimum Credits: 1
Maximum Credits: 1
Describes the entrepreneurial process from developing a framework for analyzing prospective new ventures to examining typical problems in the early life of new ventures as well as exploring some potential areas for future entrepreneurial activity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BSEO 2531 - ENTREP & NEW VENTURE INITIATION

Minimum Credits: 3
Maximum Credits: 3
Describes the entrepreneurial process from developing a framework for analyzing prospective new ventures to examing typical problems in the early life of new ventures as well as exploring some potential areas for future entrepreneurial activity.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BACC 2401 and BMKT 2409 and BFIN 2409; PROG: Katz Graduate School of Business

BSEO 2538 - STRATEGIC LEADERSHIP

Minimum Credits: 1
Maximum Credits: 1
This course covers leadership theory, with a particular emphasis on executive leadership. Course topics include the following: leadership skills development, charismatic and transformational leadership, leadership of organizational change, strategic vision, and contingency theories of leadership. The course involves a combination of theory, case studies, and guest lectures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BOAH 2401 or 2409; PROG: Katz Grad School of Business(PKATZ)

BSEO 2553 - STRATEGIC MANAGEMENT OF ACQUISITIONS AND DIVESTMENT

Minimum Credits: 1
Maximum Credits: 1

Given the frequency and magnitude of mergers and acquisitions (M&A) activity, most Pitt MBAS can expect their careers to be impacted by M&A transactions sooner or later - whether as analysts in the pre-merger, phase, as managers or consultants in charge of implementing the merger, or simply as professionals whose career trajectories are inevitably shaped by the event. In order to help you prepare for these roles, acquisitions and divestment will address the strategic and organizational challenges of integrating companies so as to realize the promise of value creation. Building on the premise that the real work of M&A begins after the deal is signed, this course will utilize current research findings, case studies, and practitioner experiences to equip you with a working knowledge of effective post-merger integration. At a time that most companies realize that M&A's have a poor track record of success precisely due to poor post-merger integration, the educational experience in this course will provide you with a valuable skill set. The course should be of special interest to students interested in management consulting careers, or who expect to have significant general management responsibilities in their jobs, or who want to be knowledgeable about M&A events that are likely to affect their careers sooner or later.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BSEO 2570 - FUNDAMENTALS OF MANAGEMENT CONSULTING

Minimum Credits: 1
Maximum Credits: 1
This course will be focused on the fundamentals of what is known in Strategy Consulting as the "delivery" portion of a strategy (problem-solving) project. All aspects of the consulting delivery process will be introduced, but primary attention will be given to those elements most unique and essential to strategy consulting delivery: Problem definition; work planning (including hypothesis generation and analytical tool selection); and client management (including executive communication). Students participating in a future Katz Consulting Field Study (KCFS) should consider this course a recommended prerequisite. More broadly, the consulting skill set is a valuable addition to your resume. Those planning a post-MBA/MS career in consulting, external or internal, will find this course beneficial. Consulting companies (global and boutique) are active recruiters of MBAs and MS graduates in areas as diverse as Strategy, IT, Supply Chains, Organizational Performance, Analytics and Project Management. Even students taking line management roles will find the strategy consulting skill set to be relevant for future short-term problem-solving or task force assignments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

BSEO 2570 - FUNDAMENTALS OF THE STRATEGY CONSULTING PROCESS

Minimum Credits: 1.5
Maximum Credits: 1.5
This course will be focused on the fundamentals of what is known in Strategy Consulting as the "delivery" portion of a strategy (problem-solving) project. All aspects of the consulting delivery process will be introduced, but primary attention will be given to those elements most unique and essential to strategy consulting delivery: Problem definition; work planning (including hypothesis generation and analytical tool selection); and client management (including executive communication). Students participating in a future Katz Consulting Field Study (KCFS) should consider this course a recommended prerequisite. More broadly, the consulting skill set is a valuable addition to your resume. Those planning a post-MBA/MS career in consulting, external or internal, will find this course beneficial. Consulting companies (global and boutique) are active recruiters of MBAs and MS graduates in areas as diverse as Strategy, IT, Supply Chains, Organizational Performance, Analytics and Project Management. Even students taking line management roles will find the strategy consulting skill set to be relevant for future short-term problem-solving or task force assignments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

BSEO 2578 - SUSTAINABLE BUSINESS STRATEGY

Minimum Credits: 1
Maximum Credits: 1
This course is designed to enhance your ability to understand current challenges and opportunities in sustainability worldwide. Sustainability is of great interest to multiple stakeholders including customers, employees, investors, regulators and activists. Much of the

recent attention to sustainability is attributable to its "business case" or the notion that when done right, sustainability initiatives can not only affect positive social or environmental change but also contribute to competitive advantage, reputational gains, etc., and overall to a company's bottom line in the process. Although this kind of - triple bottom line - thinking is powerful and would benefit both businesses and society immensely, achieving this symbiotic relationship between business, society and the environment requires a strategic understanding of when, why and how sustainability initiatives create value. The Sustainable Business course will provide you with the requisite knowledge so that you emerge as leaders who will leverage the power of business to create social and environmental value. The course will blend theory and practice in a way that emphasizes both critical thinking and experiential learning. This will be accomplished through multiple components. First, through case studies and articles, you will be exposed to theories and principles that can be applied to formulate, implement and evaluate sustainability initiatives through the entire value chain - from procurement to disposal. The second, interrelated component will highlight experiential learning. Via a series of projects and mini-workshops, you will analyze the sustainability performance of companies to discover firsthand the mechanisms by which sustainability initiatives yield both business and social returns.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: MCSI - Sustainability Focused

BSEO 2627 - WICKED PROBLEM INNOVATION

Minimum Credits: 3
Maximum Credits: 3
"Wicked Problem Innovation" is a new, innovative, cross-disciplinary course that brings together graduate students from Pitt Law, the Katz School of Business, and other units across the University of Pittsburgh to engage deeply in a selected acute problem that faces Pittsburgh and the broader world. "Wicked" problems are stubborn, complex societal and business challenges, like global climate change, income disparity, inclusive economic growth, and universal healthcare. These problems arise from a variety of causes and affect multiple stakeholder groups, each of which has a different idea of how the problem arises and what can be done to improve it. While it is likely not possible to "solve" these problems in a traditional sense, it is possible to make sustained progress in tackling them. Course participants will research the selected problem from legal, business, historical, and other perspectives, identify and consult with stakeholders, and ultimately design a process to improve progress on the selected problem. During the course, students will learn to work collaboratively with peers and instructors from a variety of disciplines, and will practice a host of practical skills, including interviewing witnesses and clients, negotiating outcomes, and actively problem solving across a range of subject matter areas. Additionally, students will gain substantial and deep contacts in local, state, and potentially national, government, nonprofit, and business communities. Students will come away from the course will critical skills in working collaboratively across subject matter boundaries and experience creating an innovative problem-solving process from the ground up.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

BSEO 2901 - STRATEGY, MISSION AND VALUES

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Business Administration (EMBA-MBA)

Study Abroad

FSX 2990 - STUDY ABROAD

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study

Grade Component: Grad SN Basis
Course Attributes: Non-Pitt Class

Summer Milestone Study - ARTSC

SMSA 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - DEMED

SMSN 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - EDUC

SMSG 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - ENGR

SMSH 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - GSPIA

SMSK 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - MED

SMSS 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - NURS

SMSP 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - PUBHL

SMSR 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - SCI

SMSJ 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and working full-time on their program's milestone requirements.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - SHRS

SMSI 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Summer Milestone Study - SOCWK

SMSL 3666 - SUMMER MILESTONE STUDY

Minimum Credits: 0
Maximum Credits: 0
This course is only offered in the summer term for doctoral students with appointments who are not eligible for the Full Time Dissertation course and are working full-time on milestones requirements for their program.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Print No Grade

Supply Chain Management

BUSSCM 1760 - DATA MINING

Minimum Credits: 3
Maximum Credits: 3
Data mining is the process of extracting useful information and knowledge from a set of data. Mining is typically done on data sets too large to be analyzed by hand, but the same techniques are applicable to small, complex data. This course is an introduction to the most popular methods used in managerial data mining, and provides experience in using commercial software to explore real data sets. Models considered include those from statistics, machine learning, and artificial intelligence, such as discriminate analysis, logistic regression, clustering, neural nets, tree/rule induction, and association rule modeling. This course is methods-oriented, as opposed to being methodology-oriented, so students learn about when and how to use techniques and how to interpret their output rather than the details about how those techniques work. A laptop computer is required.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade
Course Requirements: PREQ: STAT 1100 and BUSQOM 1080; PLAN: Accounting, Finance, General Management, Global Management, Marketing, Business Information Systems, Human Resources Management, Supply Chain Management, Undeclared CBA majors

Surgery

SURG 5100 - MD-OMS RESIDENCY (7 MONTHS)

Minimum Credits: 0
Maximum Credits: 0
This program is multi-disciplinary incorporating basic physiology, pharmacology, microbiology, histology, anatomy and physical diagnosis. This rotation permits the medical student oral and maxillofacial surgery resident to gain insight as to how the basic sciences effect the overall body with emphasis on the head and neck region. Early exposure to ambulatory patients stresses the underlying pathophysiologic process of the presenting disease. Student evaluation is based on several written examinations and participation in small group problem-based conferences.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 1

SURG 5323 - PLASTIC SURGERY PRECEPTORSHIP

Minimum Credits: 0
Maximum Credits: 0
This four-week elective will provide the student with a preliminary exposure to the specialty of plastic and reconstructive surgery. This preceptorship allows an opportunity to observe and have minor involvement in the clinical care of patients on the service. In addition to direct attending and resident interaction, education is obtained from weekly teaching conferences. Emphasis will be placed on the scope and interaction of plastic surgery with other specialties and the various methods of reconstruction available for each type of deformity. Areas to be experienced will include reconstructive techniques in traumatic, congenital, neoplastic and cosmetic deformity as well as the basic biology of wound healing and wound management
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

SURG 5345 - SURGERY CLERKSHIP REPEAT

Minimum Credits: 0
Maximum Credits: 0
This course will be registered when the necessity to record a student's unsuccessful makeup is required. The course will be used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

SURG 5360 - ORAL-MAXILLOFACIAL SURGERY

Minimum Credits: 0
Maximum Credits: 0
Four-week junior clerkship conducted as a resident in oral- maxillofacial surgery available only to the oral-maxillofacial surgical resident who is a student in the school of medicine. Responsibilities include: admission, first surgical assist, primary management of post-operative care, emergency room call for mf trauma, daily rounds with house staff and attending physicians, attendance at all postgraduate teaching rounds and conferences held by the department of plastic and oral-maxillofacial surgery.
Academic Career: Medical School
Course Component: Clinical

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

SURG 5371 - SURGERY AND PERIOPERATIVE CARE

Minimum Credits: 0
Maximum Credits: 0
Eight-week rotation with students participating in general surgery and anesthesiology. Goals of clerkship include developing skills to evaluate patients in the perioperative period and optimize their medical conditions in preparation for surgery. Students will learn natural history of common surgical diseases and proper operative management and post-operative treatment. The utilization of pathology and radiology services will be used to help determine correct diagnoses and therapeutic methodology. A brief exposure will be provided to pediatric and plastic surgery specialties.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

SURG 5372 - SURGERY AND PERIOPERATIVE CARE CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
Six-week rotation with students participating in general surgery. Goals of clerkship include developing skills to evaluate patients in the perioperative period and optimize their medical conditions in preparation for surgery. Students will learn natural history of common surgical diseases and proper operative management and post-operative treatment. The utilization of pathology and radiology services will be used to help determine correct diagnoses and therapeutic methodology. A brief exposure will be provided to pediatric and plastic surgery specialties. Registration must accompany registration in MSANE 5372
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

SURG 5373 - SURGERY CLERKSHIP 3RC

Minimum Credits: 0
Maximum Credits: 0
This clerkship covers the discipline of general surgery. Students are assigned to general surgery service and a surgical specialty service. Students apply their clinical skills under direct supervision of residents and faculty. They will learn how to appropriately assess, present, and manage surgery patients. Clinical teachings with residents and faculty will take place at the students assigned clinical site and throughout the various educational methods listed below.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

SURG 5375 - SURGICAL SPECIALTIES

Minimum Credits: 0
Maximum Credits: 0
Four-week course designed to teach the essentials, knowledge and skills in the management of common diseases in the specialties of otorhinolaryngology, orthopedics, ophthalmology and urology. Learning accomplished through didactic lectures, prepared written syllabi, case reports, multi-media computerized instruction and clinical experience in offices of university faculty. Assessment of student performance accomplished through a multiple-choice examination, objective evaluation of clinical skills, and estimation of clinical expertise in the ambulatory setting.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

SURG 5401 - SURGERY ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
Four-week clerkship, conducted as an acting internship in general surgery. Responsibilities: patient evaluating, primary management of pre- and postop care, night call for unit with primary responsibility for assessment of acute clinical problems and extensive daily operating room experience. Daily rounds with house staff and attendings. Attend postgrad teaching rounds and conferences held by the department of surgery.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5402 - EXTRAMURAL ACTING INTERNSHIP

Minimum Credits: 0
Maximum Credits: 0
Students will register for this course when participating in a surgery acting internship at an institution outside of the university of Pittsburgh school of medicine. This experience will not fulfill the required acting internship experience to meet graduation requirements.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Grad LG/SU5
Course Attributes: School of Medicine Year 4

SURG 5403 - SURGERY ACTING INTERNSHIP FOR MD/ORAL MAXILLOFACIAL PROGRAM

Minimum Credits: 0
Maximum Credits: 0
This four-week course is conducted as an acting internship on the endocrine service. Students eligible to register for this course will be participants in the professional medicine/oral maxillofacial surgery combined program (md/oms). Participants will have responsibility for patient evaluating, primary management of pre- and post-op care, night call for unit with primary responsibility for assessment of acute clinical problems and extensive daily operating room experience. There will be daily rounds with housestaff and attendings .Attendance at the postgrad teaching rounds and conferences held by the department of surgery is expected.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5410 - GENERAL SURGERY ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
Four-week clerkship offered at a private area medical facility student works directly with a surgical resident and attending surgeons. Responsibilities: preoperative diagnosis, intraoperative surgical assisting and post-op care. Daily rounds with house staff and attendings. Attend surgical conference and is requested in advance to participate by way of case presentation or prepared problem discussion. Student "night call" approximately every fourth night corresponding to the surgical resident on service.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5411 - SURGERY INTERNSHIP PREPARATION COURSE

Minimum Credits: 0
Maximum Credits: 0
This 4-week rotation was developed especially for 4th-year medical students matching into surgical specialties, including general surgery, vascular surgery, cardiothoracic surgery, plastic surgery, OB/GYN, and urology. Participants will have the opportunity to work with surgical specialists and residents in order to develop skill sets that are necessary for successful matriculation into a surgical internship. The course consists of interactive didactics, simulation, and technical skills practice. A wide range of topics will be covered, including management of emergencies on the surgical ward, discharging patients, dosing common medications, wound care, suturing, use of radiologic tests, placement of chest tubes and central lines, and many others. This course provides a unique opportunity for students to attain the tools needed for the transition into surgical internship with confidence, with the intention of improving patient safety, decreasing surgical intern anxiety, and improving surgical resident efficiency.
Academic Career: Medical School
Course Component: Clinical
Grade Component: Exchange MED SU5

SURG 5420 - COMMUNITY HOSPITAL CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0
Four-week elective provides student with exposure to general surgery as practiced outside the university environment, in suburban or rural community hospital. Elective is structured as a preceptorship. Student will evaluate patient problems, be involved in daily patient management, assist in operating room, and attend outpatient office hours with precepting surgeon. Room and board is provided at hospital outside Pittsburgh.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5430 - NEOPLASTIC DISEASE ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
Four-week elective in oncology. Through the national surgical adjuvant breast project headquartered at Scaife Hall, student will study in depth, contemporary theories of tumor biology from clinical and laboratory perspective. Outpatient clinics and/or exposure, but major focus is conducting cooperative clinical studies regarding the management of patients with breast or colon cancer.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5440 - PEDIATRIC SURGERY ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
Four-week elective tailored to fully integrate a student into a specific position of the house staff. Student serves as an intern, with participation in all clinics, rounds, conferences and capabilities. Time spent each week seeing patients. Special adaptations of program to particular requests can be made, including part pediatric medicine and part pediatric surgery. Will learn differences between childhood and adult diseases, take pediatric history and do complete physical.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5475 - MINIMALLY INVASIVE SURGERY: ROBOTICS, LAPAROSCOPY, AND SURGICAL SIMULATION

Minimum Credits: 0
Maximum Credits: 0
Minimally invasive surgery has changed patient care over about a half-century. Robotics and simulation have accelerated that pace in the last decade. This poses some challenges to surgeons in practice and residents in training to add technology in real time. Medical students' experience can be limited in this complex environment when they are expected to learn "on the job" in the operating room. This is even more acute when the robotic system assumes the traditional medical student operative tasks of retracting, suctioning, camera positioning etc. The goal of this elective is to increase medical student exposure to surgical robotics and simulation, prepare for real-time cases in the OR as a medical student, and provide tools to succeed early in surgical residency in robotics specifically and minimally invasive surgery in general.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

SURG 5482 - RENAL, PANCREATIC AND LIVER TRANSPLANTATION

Minimum Credits: 0
Maximum Credits: 0
This is a four (4) week elective for medical students interested in learning about renal, pancreatic or liver transplantation. The student will have an opportunity to participate as a member of a busy transplant team. They will be involved in the evaluation and treatment of a large number of patients referred here with hepatic or renal disease for consideration of resection or transplantation therapy, or patients with type i diabetes mellitus for pancreas transplantation. They will attend the various conferences and, if possible, pre-and post-transplant clinics. Students will be offered the opportunity to scrub in the operating room on both living and deceased donor transplants. There will be no mandatory call; however, students should be aware of the fact that many transplantations occur at night or on the weekends. The student can participate in the post-operative care of transplant patients, including experience in the surgical ICU. Both through selected reading materials that offer an introductory exposure to transplantation, and through participation in patient care and rounds, students will learn the basic principles of evaluation and management both pre- and post-transplantation, immune-suppression, and infectious prophylaxis.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5485 - BIOLOGICAL AND GENE THERAPY

Minimum Credits: 0
Maximum Credits: 0
This 4-week elective will provide an opportunity to study contemporary theories of tumor biology and tumor immunology both from a clinical and laboratory perspective. While outpatient clinics will be part of the experience, the major focus will be the rewards and challenges of conducting clinical studies regarding the management of patients with various tumors managed with biologic therapies.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5486 - SURGICAL SPECIALTIES

Minimum Credits: 0
Maximum Credits: 0
This is a four week course. The student may select two areas of special interest, and will spend two weeks on each selected specialty. Available specialties are; cardiothoracic surgery, orthopedics, neurological surgery, plastics & reconstructive surgery, urological surgery, vascular surgery, and magee surgical oncology. The student will gain clinical exposure through attending clinics, participating in daily inpatient rounds, and in the operating rooms. Instruction will be by the residents and attending surgeons on the selected services. Performance will be evaluated on a number of criteria including knowledge, patient evaluation and management planning, motivation, responsibility, and interpersonal actions. The purpose of this course is to allow students to explore possible areas of interest for which they might not get exposure in the standard curriculum. The student is expected to learn to perform a basic history and physical evaluation of patients as required by each specific service. Each student should be able to discuss the service specific approach to patient management.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5490 - ORAL-MAXILLOFACIAL SURGERY

Minimum Credits: 0
Maximum Credits: 0
Four-week clerkship conducted as a resident in oral-maxillofacial surgery available only to the oral-maxillofacial surgical resident who is a student in the school of medicine. Responsibilities include: admission, evaluation, first surgical assist, primary management of postoperative care, emergency room call for mf trauma, daily rounds with house staff and attending physicians, attendance at all postgraduate teaching rounds and conference held by the department of plastic and oral-maxillofacial surgery.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5650 - SURGICAL SPECIAL STUDIES

Minimum Credits: 0
Maximum Credits: 0
An individualized course of study may be arranged with the department of surgery to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5700 - SURGICAL LIFE SCIENCES

Minimum Credits: 0
Maximum Credits: 0
A four week elective combining anatomic dissection, imaging modalities, and clinical pathology in a systematic manner. The course will be divided into four areas, each lasting one week. Thoracic anatomy, digestive tract anatomy, musculoskeletal and gynecological/genitourinary anatomy. The course includes lectures in anatomy, pathology and imaging modalities and precepted anatomical dissections. Exposures will vary and include seeing patients and follow their evaluation and treatment.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5884 - HISTORY OF MEDICINE

Minimum Credits: 0
Maximum Credits: 0
Four-week elective. Student examines various aspects of the history of medicine, from the beginning of medical practice into the 1980s, read selected group of historical monographs and participate in in-depth discussions with members of a group of interested senior faculty, and write a short research paper.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

SURG 5885 - SURGICAL RESEARCH

Minimum Credits: 0
Maximum Credits: 0
Student will be given the opportunity to learn research techniques and to participate in research in progress in surgical laboratory or in special circumstances, to carry on an independent project. Attendance at seminars and discussion groups is encouraged.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

SURG 5900 - EXTRAMURAL GENERAL SURGERY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in general surgery may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Lecture
Grade Component: H/HS/S/LS/U

SURG 5902 - INDEPENDENT STUDY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

SURG 5905 - SURGERY ACTING INTERNSHIP FOR INTERNATIONAL STUDENTS

Minimum Credits: 0
Maximum Credits: 0
This four-week clerkship is conducted as an acting internship. The student can choose to work on either the GI, Trauma or Vascular Surgery Services. The student will function at the level of a first-year postgraduate in surgery. Responsibilities will include patient evaluation, primary management of pre- and postoperative care, and night call for the unit with primary responsibility for assessment of acute clinical problems and operating room experience. There will be daily rounds with the house staff and attendings. The student is expected to attend postgraduate teaching rounds and conferences held by the Department of Surgery. Students will rotate two weeks each on Presby and Shadyside Hospital Vascular Services.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

Swahili

SWAHIL 2909 - SPECIAL TOPICS IN SWAHILI

Minimum Credits: 3
Maximum Credits: 3
This course will be a Topics course, meaning that the specific content of the course will change each time the course is offered. The course

is at a graduate level so that graduate students interested in the offered topic can more easily take the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Swedish

SWE 2909 - SPECIAL TOPICS IN SWEDISH

Minimum Credits: 3
Maximum Credits: 3
This course will be a Topics course, meaning that the specific content of the course will change each time the course is offered. The course is at a graduate level so that graduate students interested in the offered topic can more easily take the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

Teaching, Learning and Leading

TLL 1704 - CURRENT ISSUES IN SECONDARY EDUCATION

Minimum Credits: 3
Maximum Credits: 3
What would the ideal high school look like? How would it provide an engaging, equitable and quality education to all adolescents? In Current Issues in Secondary Education: Reimagining the American High School we will explore current issues in U.S. high schools, such as systemic racism and unequal funding, and learn about innovative schools that are doing things differently. We will reflect on our own schooling experiences and collaborate to design a model high school.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: Letter Grade

TLL 2002 - INTRODUCTION TO URBAN EDUCATION

Minimum Credits: 3
Maximum Credits: 3
Students will explore the systemic issues unique to urban education historically as well as uncover how urban education is/can be a vehicle for social justice and equity in our country. The course will include the impact of policies, national movements, systemic racism, and their implications for students in urban schools over time in the united states as well as a deep understanding of the condition of students today with a focus on race, socioeconomic status, equity, etc.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2003 - UNDERSTANDING TEACHING THROUGH A SOCIAL WORKERS LENS

Minimum Credits: 3
Maximum Credits: 3
One critical key to being an effective teacher is being able to delve deep into seeing and understanding people's lived experiences. To do so well, requires that one adopt the 'lens' of a social worker in addition to that of a teacher. Diverse urban school students often have experiences that our predominately white, suburban, middle class teaching force haven't, the knowledge of which can assist teachers in better interpreting behaviors and contextualizing their work. Such topics as trauma, health, family dynamics, violence, and poverty are addressed. This course is a collaboration with the school of social work faculty.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2004 - RELATIONSHIP BUILDING: STUDENTS, FAMILIES AND COMMUNITIES

Minimum Credits: 3
Maximum Credits: 3
Students will learn ways to develop and nurture meaningful relationships with the students, families and communities they serve. This course provides opportunities and assignments designed to actively engage in the relationship development process as well as document it along with evidence of studying about demographics and historical content and contexts that provide the anchor for their work with and perspectives of the urban spaces in which they learn and educate.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2005 - URBAN SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This seminar series provides a deep dive into some of the most salient issues of teaching in urban schools. It is designed to take the students on a journey that begins in the summer with an examination of identity, their own as well as a lens in which to see and understand their students in personal and contextualized ways. The fall seminar takes their newfound understanding and wraps it into meaningful relationship building between the self and student as the foundation for developing classrooms as communal learning spaces for all to thrive. Doing such work in understanding identity and relationships with students in urban spaces includes an explicit look at power and privilege in powerful ways that helps teachers understand their and their students lived experiences in ways that lead to opportunities to more clearly see where inequities lie in our educational and broader systems. This then builds to be the foundation for the spring seminar that provides framing and support in becoming a change agent in educational institutions in ways that disrupt such aspects of the environment, such as systemic institutionalized racism.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

TLL 2006 - CULTURALLY RESPONSIVE TEACHING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2007 - STEAM: TRANSDISCIPLINARY LEARNING APPROACHES

Minimum Credits: 3
Maximum Credits: 3
This course focuses on STEAM-based instructional approaches, which includes the ways in which teachers structure the classroom environment, tasks, and resources to facilitate deep learning. These instructional approaches include problem-based, student-driven, authentic tasks, and technology integration, as well as support for equitable participation (the ways in which the classroom facilitates access and engagement in learning for all students, with specific attention to abilities and resources).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2008 - STEAM: INSTRUCTIONAL DESIGN

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the instructional content of STEAM, which includes subject-matter alignment (the ways in which teachers present material from multiple disciplines or content areas in clear and connected ways), discipline integration (the selection of material across disciplines - including concepts, methods, and approaches - as well as how they are synthesized to support deeper learning), and ways to employ problem-solving skills. These skills include cognitive skills (modeling, analyzing, interpreting), collaborative skills (communication, problem-solving), and creative skills (designing, creating) necessary for 21st century learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2009 - STEAM: ASSESSMENT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on assessment practices that support learning. This includes the iterative process of refining instruction and evaluating learning in real-world contexts using multiple forms of data. Assessment types explored include formative and summative assessment and ways to make assessments authentic, embedded, with regular feedback that drives adjustments to teaching. Another key component of this course is peer supports including peer review and self-reflection.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2010 - STEAM: IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
This course investigates the ways to implement STEAM teaching and develop collegial support outside of the classrooms. Participants will implement STEAM practices and critically reflect on ways to refine teaching. The course utilizes peer evaluation from other instructors, peer and instructor feedback, and encourages refining teaching practice during implementation of the unit.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2041 - INTRO TO EARLY CHILDHOOD ED

Minimum Credits: 3
Maximum Credits: 3
The course is a general introduction to the theoretical, political, economic, and social issues that are inherent in the conduct and development of services for young children. The primary thrust is intended to provide students with both an overview of current issues and a basis for assessment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2042 - LANGUAGE AND LITERATURE FOR THE YOUNG CHILD

Minimum Credits: 3
Maximum Credits: 3
An introduction to language and literacy for children birth through grade 4. Includes applied theories and stages of language development, transitions from oral to written expression, family literacy, and guidelines for the selection and use of quality literature.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2045 - YOUNG ENGLISH LANGUAGE LEARNERS

Minimum Credits: 3
Maximum Credits: 3
Prospective early childhood education teachers will identify, investigate and assess impacts of a variety of social agencies, organizations and current issues in early child hood education through planned interviews as well as class lectures, discussions and reports.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2047 - INTEGRATED CURRICULUM PRE-K-4

Minimum Credits: 3
Maximum Credits: 3
The second half of a two-semester course sequence in which pre-service teachers learn about young (pre-k through grade 4) children's thinking related to core ideas in mathematics and science and gradually, through a series of scaffolded tasks, develop pedagogical skills for designing and implementing math and science instruction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2086 - CURRICULUM IN SCHOOLS

Minimum Credits: 5
Maximum Credits: 5
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2091 - SUPERVISED RESEARCH - SCIENCE

Minimum Credits: 1
Maximum Credits: 3
The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

TLL 2093 - SUPERVISOR CURRICULUM AND INSTRUCTION INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
The practicum reviews the field based clinical experience of curriculum and instruction students for state certification.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

TLL 2097 - INTERNSHIP

Minimum Credits: 1
Maximum Credits: 12
Each candidate for an educational leadership certification in pa is linked with schools/ for 360 hours of university supervised and principal-mentored internship/fieldwork experiences over the 12-month lifecycle of the school. Mentors are from various geographical locations at all levels; elementary, middle, and secondary. Candidates register for one credit of internship for each of the four consecutive terms of the

k-12 principal program.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

TLL 2098 - DIRECTED STUDY - SCIENCE

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

TLL 2101 - PENNSYLVANIA SCHOOL LAW

Minimum Credits: 3
Maximum Credits: 3
The principal is the educational leader in the school building. As such, the principal is responsible for maintaining an enterprise that fulfills the legal requirements of the Pennsylvania school code of 1949 (amended) and the attend ant case law as interpreted by the state and federal courts. In this course, the aspiring principal will learn about local school boards, the organization and governance of education in Pennsylvania, the role of the federal government, and a variety of the legal responsibilities of the building administrators.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2115 - SUPERVISION AND TEACHER LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course focuses on skills and strategies school leaders need to know to supervise teachers and develop structures for on-going teacher learning and development. Students study the history of supervision and how it continues to evolve. They analyze their own district's induction and professional development plans and design supervision models appropriate for a differentiated teaching staff.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2117 - DIFFERENTIATED INSTRUCTIONAL PRACTICES

Minimum Credits: 3
Maximum Credits: 3
This course is designed to give practitioners a strong theoretical background in differentiated modes of instruction and the skills needed to work with teachers as they strive to improve and expand their pedagogy. Discussions and readings will explore classroom strategies that improve student achievement, the elements of effective instruction, instructional design related to state standards, and ways to use assessment to drive instruction. Finally, the course will discuss ways that school leaders can work with teachers to enhance their instruction and student learning.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2203 - LANGUAGE AND LANGUAGE SYSTEMS

Minimum Credits: 3
Maximum Credits: 3

This course provides an overview of literacy research and instructional approaches that relate to language and language systems with emphasis on the historical development of English, linguistic and sociocultural perspectives on second language learners and speakers of dialects, and instructional approaches for encoding and decoding.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2205 - SUPPORTING ADOLESCENT LITERACIES FOR READING SPECIALISTS

Minimum Credits: 3
Maximum Credits: 3
This course prepares reading specialist candidates to assess, diagnose, and intervene in adolescent literacy development across disciplines. Emphasis is placed on the use of formal and informal assessments, development of comprehensive literacy profiles, and the design of data-driven, targeted literacy plans for adolescent learners.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2208 - READING/WRITING METHODS 1: PRE K - GRADE 1

Minimum Credits: 3
Maximum Credits: 3
This course is intended for teacher candidates who are pursuing prek-4 certification. It is the first in a two-course sequence that focuses on classroom teaching methods for literacy. It is also part of a set of courses that focus on literacy development and instruction. Other courses in the set include reading/writing methods 2: grades 2-4, language and literature for the young child, and literacy assessment and instruction for children with disabilities in inclusive settings. Teacher candidates in reading/writing methods 1 will have opportunities to build their knowledge about specific aspects of literacy, including: (a) oral language development, (b) emergent literacy, (c) concepts about print, (d) comprehension, and (e) writing. In addition, candidates will learn about specific instructional approaches and resources for supporting students in developing those aspects of literacy in pre-kindergarten - grade 1.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2209 - READING WRITING METHODS 2: GRADE 2-4

Minimum Credits: 3
Maximum Credits: 3
This course is intended for teacher candidates who are pursuing prek-4 certification. It is the second in a two-course sequence and builds on concepts introduced in reading/writing methods 1. It is also part of set of courses that focus on literacy development and instruction. Other courses in the set include language and literature for the young child, and literacy assessment and instruction for children with disabilities in inclusive settings. Teacher candidates in reading/writing methods 2 will have opportunities to build their knowledge about specific aspects of literacy, including: (a) word study--decoding, spelling, and vocabulary, (b) comprehension, and (d) composition, including handwriting. In addition, candidates will learn about specific instructional approaches and resources for supporting students in developing those aspects of literacy in grades 2-4.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2211 - COMPREHENSION AND VOCABULARY

Minimum Credits: 3
Maximum Credits: 3
This course provides an in-depth consideration of reading processes related to comprehension and learning from text, and instructional approaches that support student text comprehension, including vocabulary instruction.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2216 - LITERACY ASSESSMENTS AND INTERVENTION MODELS

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of reading processes and assessments of those processes with a focus on phonology, fluency, vocabulary, and comprehension. The course also provides an introduction to the response to intervention model and its application in various contexts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2217 - LITERACY PRACTICUM WITH ELEMENTARY STUDENTS

Minimum Credits: 3
Maximum Credits: 3
This course engages candidates in working with students in kindergarten through grade 3 to assess students' literacy abilities in decoding, spelling, vocabulary, fluency, and comprehension, and to design instruction targeted to support students' literacy development. The course is also an opportunity for candidates to videotape and analyze their interactions with students.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

TLL 2218 - LITERACY PRACTICUM WITH ADOLESCENT STUDENTS

Minimum Credits: 3
Maximum Credits: 3
This course involves working with middle school students who are experiencing difficulties with reading. The course takes place at a school site for 3 weeks, 9:00-12:00, Monday through Friday, students meet at the University of Pittsburgh, 9:00-12:00, for three specific dates to prepare for the practicum sessions.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

TLL 2219 - DISCIPLINARY LITERACY

Minimum Credits: 3
Maximum Credits: 3
This course provides an introduction to the literacy development of adolescents with particular attention to the demands of discipline-specific reading and writing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2226 - SPECIAL TOPICS - WRITING

Minimum Credits: 1
Maximum Credits: 3
A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2228 - SUMMER INSTITUTE FOR TEACHERS

Minimum Credits: 6
Maximum Credits: 6
An intensive, teacher-centered, teacher-led professional development program in the teaching of writing, based on the highly successful national writing project model. Open to teachers in all grade levels (k-16) and all content areas.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

TLL 2230 - TEACHING AND LEARNING IN SECONDARY ENGLISH 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to secondary English language arts pedagogy, including lesson design. Drawing on critical theories of instruction, students learn to design and evaluate lesson plans. Teacher candidates will learn the characteristics of English classrooms, curriculum, and instruction that are inquiry-based, cognitively challenging, and engaging for youth. The course focuses on how to create lessons that are engaging, relevant, and aligned with state standards. This course also focuses on constructing a transformative learning environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2235 - THEORY AND PRACTICE IN TEACHING LANGUAGE, GRAMMAR AND USAGE

Minimum Credits: 3
Maximum Credits: 3
The purpose of this seminar is to teach students current best practices for the teaching of language, grammar and usage in multicultural and multilingual secondary English language arts classes. The course will introduce students to basic linguistic concepts and will help students understand how language and grammar are intertwined with all four language arts (reading, writing, listening and speaking). Students will practice developing language and grammar curriculum that is embedded in reading and writing instruction and developmentally appropriate, explaining grammar and usage concepts clearly and appropriately, and assessing students' understanding of language, grammar, and usage concepts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2239 - THEORY AND PRACTICE IN TEACHING NEW MEDIA AND LITERACIES

Minimum Credits: 3
Maximum Credits: 3
Teaching new literacies, multimodal forms of expression and technology in the English classroom will be the emphasis of the course. Students will follow a media literacy framework to learn theory into practice as they review and research current literature on digital tools such as wikis, blogs, social networking sites, and digital audio and video production applications. Methods for incorporating new literacies in the classroom will be explored and shared by the students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2240 - THEORY AND PRACTICE: ASSESSMENT IN ENGLISH EDUCATION

Minimum Credits: 3
Maximum Credits: 3
Il 2240 theory & practice: assessment in English education this course will be a survey of the range of assessment tools and practices

appropriate for use in evaluating student learning in the secondary English classroom. Students will explore the purposes, methods, and uses of classroom assessment as well as state and national assessments. Topics explored in this course will include standardized testing, formative and summative assessments, designing writing and project-based assessments and rubrics, providing feedback on student writing, analyzing the results of assessments in order to guide instruction, and other topics related to the design and use of assessments.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2243 - THEORY & PRAC IN TCHNG WRITING

Minimum Credits: 3
Maximum Credits: 3
This seminar critically studies various approaches to the teaching of writing from both theoretical and applied perspectives. Students are expected to have had some experience teaching writing.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

TLL 2246 - THRY & PRAC: MULTI-CULTURAL LIT

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide teachers with a multicultural philosophical perspective, criteria for selecting multicultural literature, and strategies and techniques for infusing literature from diverse cultures into a literature program.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

TLL 2250 - TECHNOLOGY IN FOREIGN LANGUAGE EDUCATION

Minimum Credits: 3
Maximum Credits: 3
A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Attributes: Asian Studies

TLL 2251 - INTRODUCTION TO FOREIGN LANGUAGE EDUCATION

Minimum Credits: 3
Maximum Credits: 3
A basic introduction course dealing with the most current issues in foreign language education in elementary, middle and secondary schools.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2252 - TEACHING AND LEARNING IN PK-12 WORLD AND HERITAGE LANGUAGE EDUCATION 1

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to introduce students to instructional practices that are essential for effective world language teaching. A practice-based approach is utilized to allow students to deconstruct, co-plan, and rehearse strategies that foster equitable development of target language and cultural proficiency.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

TLL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT

Minimum Credits: 3
Maximum Credits: 3
In this course, students become familiar with the most current language testing and assessment principles and procedures through discussion and hands-on practice. Topics covered include test usefulness, validity, reliability, practicality, impact, interactiveness, and so on. Student's practice creating tools ranging from multiple choice and short answer to portfolio and performance assessments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2254 - TEACHING & LEARNING IN K-12 FOREIGN LANGUAGE 3

Minimum Credits: 3
Maximum Credits: 3
In this course, students discuss a variety of issues that relate to the actfl national standards for foreign language learning. In addition, teaching techniques that address these issues are modeled and practiced.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

TLL 2255 - TECHNQ/PROCDR FOREIGN LANG TCH

Minimum Credits: 3
Maximum Credits: 3
The course will present strategies and techniques for teaching the four skills (listening, speaking, reading and writing), culture, and generic principles for effective proficiency-oriented instruction. The emphasis of this course is on practical applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2256 - ISSUES IN FOREIGN LANGUAGE ED

Minimum Credits: 3
Maximum Credits: 3
The course deals with current issues in foreign language teaching. Issues are determined by the current concerns and research in the field.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

TLL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS

Minimum Credits: 3
Maximum Credits: 3
This course will explore strategies for teaching English language learns (ell's) in formal and informal education settings. Students will be introduced to foundational theories and current research on the social and academic factors that influence ells learning experiences. The class will include a video component so students can observe instructional approaches for working with linguistically and culturally diverse ells.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies, Learning Sciences

TLL 2258 - TEACHING & LEARNING IN SECONDARY FOREIGN LANGUAGE 2

Minimum Credits: 4
Maximum Credits: 4
In this course, students discuss and practice a variety of teaching techniques and assessment tools that support the ACTFL national standards for foreign language learning. In addition, students are introduced to current theories of second language acquisition and apply these theories to explain and design effective instruction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2260 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to secondary social sciences pedagogy, including lesson design. Drawing on critical theories of instruction, students learn to design and evaluate lesson plans. Teacher candidates will learn the characteristics of social sciences classrooms, curriculum, and instruction that are inquiry-based, cognitively challenging, and engaging for youth. The course focuses on how to create lessons that are engaging, relevant, and aligned with state standards. This course also focuses on constructing a transformative learning environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies

TLL 2265 - ISSUES IN HISTORY EDUCATION

Minimum Credits: 3
Maximum Credits: 3
Students will explore the historical development of approaches to teaching us history and world history.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2268 - SOCIAL STUDIES METHODS PRE-K - 4

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide a theoretical background in social studies education and to exemplify the appropriate principles and practices necessary to deliver effective social studies instruction in pre-k through grade 4.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2269 - SPECIAL TOPICS: SOCIAL STUDIES

Minimum Credits: 3
Maximum Credits: 3
Students will research social studies topics of special interest. Content varies based on professional expertise and students' needs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2270 - INTEGRATED ART & MUSIC IN ELEMENTARY SCHOOL

Minimum Credits: 3
Maximum Credits: 3
To introduce preservice classroom teachers to art and music contents and processes with relevance to their expected role in integrating authentic arts learning experiences in their instruction. Emphasis placed on developmental aspects of children's' responsive and expressive skills in art and music.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2277 - COMPARATIVE AND GLOBAL PERSPECTIVES ON EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course, held on the campus of the University of cape town in cape town, South Africa, explores and compares the 20th century human/civil rights-related histories of the united states and South Africa, and examines implications these histories have had on the education systems (particularly in a context of social studies education) of each country. In their comparative survey of historical, social, and educational contexts, instructors will place special emphases on the philosophies, work, and legacies of key historical individuals including Mohandas K. Gandhi, Dr. Martin l. King, Jr., Nelson Mandela, among others. Study will incorporate a critical analysis of the universal declaration of human rights (1948), lectures by noted historical experts, visits to sites of historical significance, visits to schools and other learning environments, and group discussions of relevant texts and experiences.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2278 - PRACTICUM IN SECONDARY SOCIAL STUDIES

Minimum Credits: 1
Maximum Credits: 1
Teacher candidates engage in fieldwork in a secondary school site daily. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Teacher candidates will also be responsible for independent instruction. Teacher candidates will reflect critically and productively on their own instruction. Teacher candidates are responsible for timely submission of all required certification paperwork.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

TLL 2281 - LEADERSHIP SCHOOL LITERACY PROGM

Minimum Credits: 3
Maximum Credits: 3
This course examines theories about leadership of the school literacy program. Leadership skills are defined and applied. Leadership theory and research as related to literacy curriculum and instruction are discussed; example of how reading specialists and others (principals, teachers) can fulfill a leadership role as described. Course combines theory with practical application.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2282 - FOREIGN LANGUAGE IN ELEMENTARY SCHOOL

Minimum Credits: 3
Maximum Credits: 3
This purpose of this course is to introduce students to the various types of elementary foreign language programs, to review and apply instructional practices that are appropriate for young foreign language learners, and to discuss topics that are unique to teaching foreign language in K-8 school settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2290 - RESEARCH SEMINR FOR MED STUDENTS

Minimum Credits: 3
Maximum Credits: 3
The student proposes, carries out, and prepares a careful report of a study Germane to the student's professional role.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2291 - SUPERVISED RESEARCH - READING

Minimum Credits: 1
Maximum Credits: 6
The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

TLL 2296 - DOCTORAL DISSERTATION RESEARCH - LANGUAGE LITERACY AND CULTURE

Minimum Credits: 1
Maximum Credits: 9
The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Grad SN Basis

TLL 2298 - DIRECTED STUDY - READING

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2391 - SUPERVISED RESEARCH IN ENGLISH

Minimum Credits: 1
Maximum Credits: 6
The student works collaboratively with a sponsoring faculty member in carrying out a research project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2398 - DIRECTED STUDY IN ENGLISH

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2403 - TEACHER SUPERVISION AND EFFECTIVENESS

Minimum Credits: 2
Maximum Credits: 2
The course is designed to give practitioners a strong theoretical background in supervision and the knowledge and skills necessary to work with teachers as they strive to improve and expand their pedagogy. Students will learn about various theories and models of supervision and will apply them to the current school setting with an emphasis on improving student learning. The course is designed as a project-based learning experience.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to action research as a method of improving their practice. Students will learn what action research is, how it is carried out, and where it falls in the spectrum of research methodologies. The role of literature in supporting practitioners and their action research and how to develop a literature review will be addressed. Students will design an action research project on a topic relevant to their own practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2408 - POSITIVE BEHAVIOR SUPPORT

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2409 - MULTI-TIERED SYSTEM OF SUPPORT

Minimum Credits: 3
Maximum Credits: 3
In this course, students learn about Ci3T, a multi-tiered system of support or MTSS, "to address academic, behavioral, and social-emotional

domains for a comprehensive approach to student support and school improvement" (Lane, Oakes, & Menzies, 2014, p. 4). Through required readings and class assignments, students first develop an understanding of the core principles of Ci3T/MTSS and acquire many of the leadership skills necessary for implementation in the school environment: Understand a multi-tiered, preventative approach to schoolwide supports for all students. Gain knowledge about the foundational principles, critical components, and implementation procedures of CI3T/MTSS. Learn to use practical tools associated with effective implementation and evaluation of CI3T/MTSS. Understand how to use data to increase the fidelity and effectiveness of CI3T/MTSS practices in the school environment. Next, we study racial disproportionality in school discipline as an exclusionary practice before moving to preferred inclusionary practices, motivational interviewing, and coaching techniques. This is not a special education course on inclusion for students with disabilities. However, students with disabilities related to emotional and behavioral challenges especially benefit from the strategies we will focus on in this course: - coach teachers in evidenced-based Tier 1 and other classroom interventions - help teachers understand how to support students with mental health issues and mental health conditions - show teachers how to observe their own attitudes when faced with troublesome behaviors - guide teachers to understand classroom social dynamics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2410 - INSTITUTIONAL LEADERSHIP

Minimum Credits: 3
Maximum Credits: 3
The course is designed to give practitioners a strong theoretical background in supervision and the knowledge and skills necessary to work with teachers as they strive to improve and expand their pedagogy. Students will learn about various theories and models of supervision and will apply them to the current school setting with an emphasis on improving student learning. The course is designed as a project-based learning experience.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2412 - LEADERSHIP FOR INCLUSIVE SCHOOLS

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2413 - SCHOOL LAW

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students in the K-12 Principal Certification Program. The purpose of this course is to prepare students with the knowledge, skills, and dispositions to be transformational instructional leaders as practicing principals. In order for a school building to reach its potential as a place of learning, it is imperative that principals place the learning of students as the top priority of the school. This requires the principal to be the Lead Learner in the school. Concepts included in this course include instructional supervision, equitable learning environments, coaching for change, professional learning communities, professional development design, lesson and assessment design, and launching successful learning initiatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2414 - HEALTH, MENTAL HEALTH, & SAFETY

Minimum Credits: 3
Maximum Credits: 3
Within the leader as learner block in leadership initiative for transforming schools (lifts), a k-12 principal certificate program, the health,

mental health, and safety module will focus on creating the optimal conditions for teaching and learning. Aspiring school leaders will gain the knowledge and skills needed to conduct a school-wide mental health and safety audit. In addition, they will learn about implementing a crisis management plan and the role and responsibilities of a crisis management team.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2415 - INSTRUCTIONAL LEADERSHIP

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students in the K-12 Principal Certification Program. The purpose of this course is to prepare students with the knowledge, skills, and dispositions to be transformational instructional leaders as practicing principals. In order for a school building to reach its potential as a place of learning, it is imperative that principals place the learning of students as the top priority of the school. This requires the principal to be the Lead Learner in the school. Concepts included in this course include instructional supervision, equitable learning environments, coaching for change, professional learning communities, professional development design, lesson and assessment design, and launching successful learning initiatives.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2430 - TEACHING & LEARNING IN SECONDARY SCIENCE 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to secondary science pedagogy, including lesson design. Drawing on critical theories of instruction, students learn to design and evaluate lesson plans. Teacher candidates will learn the characteristics of science classrooms, curriculum, and instruction that are inquiry-based, cognitively challenging, and engaging for youth. The course focuses on how to create lessons that are engaging, relevant, and aligned with science standards. This course also focuses on constructing a transformative learning environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2433 - MATH METHODS FOR PreK-4 STUDENTS

Minimum Credits: 3
Maximum Credits: 3
This course investigates methods for teaching mathematics to elementary school children of diverse backgrounds. The course is intended to contribute to your development as a critical, equity-oriented, anti-racist, reflective, and effective elementary teacher of mathematics. We will use readings, assignments, projects, and our classroom discussions to facilitate your understanding of important issues related to equitable mathematics teaching and learning. We will focus on topics such as number sense, growth mindset, mathematics identity, equitable pedagogical and assessment practices, culturally relevant pedagogy, social justice pedagogy, and building relationships with students and their families. You will work in small groups, partnerships, and individually in class and for your assignments and projects. Our class community will support each other's progress toward the course learning goals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2434 - SCIENCE METHODS FOR PREK-GRADE 4 STUDENTS

Minimum Credits: 3
Maximum Credits: 3
How do teachers assist elementary children in doing science and understanding science concepts? What environment facilitates elementary children's understanding in science? What equitable and just methods can teachers employ to ensure all elementary children can access and engage with science? These are just a few of the questions we will be addressing over the course of this semester. You will explore these

ideas through thinking about yourself as a science learner; by demonstrating reflective teaching practices; and through examining how elementary science teaching and learning can be integrated across disciplines.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2445 - ASSESSMENTNT AND EVALUATION IN MATH EDUCATION

Minimum Credits: 3
Maximum Credits: 3
In this course we will examine current assessment practices in mathematics education, both historically and in terms of their forms and purposes in today's educational and political climate. Most importantly, however, we will focus on improving current assessment practices to support students' learning in the mathematics classroom. Based on an integrated view of assessment and instruction, students will be expected to employ ideas from the course to improve their own assessment practices.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2452 - DISCIPLINING ENVIROMENTAL EDUCATION: USING DIGITAL STORYTELLING TO UNPACK ENVIRONMENTAL ISSUES

Minimum Credits: 1
Maximum Credits: 1
In other parts of the world, such as Finland, environmental education is infused throughout the curriculum in history, science, technology, and math. This pop-up course serves as one way to provide a platform for Pitt students to experience Finnish nature schools in their backyard. The goal of the pop-up classes will be to provide a space for developing student projects at both the undergraduate and graduate levels. This course is geared for students interested in authoring visual content and testing the productive tensions of this new media. During the pop-up classes, we will establish a student-led AR/VR authoring club, training sessions for students, and work to amplify and circulate our content across our local and global communities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

TLL 2470 - REASONING AND PROVING IN SECONDARY MATH

Minimum Credits: 3
Maximum Credits: 3
This course focuses on addressing three overarching questions: 1) what is reasoning-and-proving? 2) How do secondary students benefit from engaging in reasoning-and-proving? 3) How can teachers support the development of students' capacity to reason-and-prove? Teachers explore these questions through engagement in a variety of activities that include: solving and discussing challenging mathematical tasks; analyzing narrative cases that make salient the relationship between teaching and learning and the ways in which student learning can be supported; examining and interpreting student work that features a range of solution strategies, representations, and misconceptions; and making connections to their own teaching practice.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2473 - MATH FOR ELEMENTARY TEACHERS

Minimum Credits: 3
Maximum Credits: 3
Students will improve their mathematics knowledge of concepts and skills in numeration systems, integers, rationales, geometry, probability/statistics, and other selected topics.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2474 - PROPORTIONAL REASONING IN MIDDLE SCHOOL MATHEMATICS

Minimum Credits: 3
Maximum Credits: 3
Focuses on developing teacher's ability to reason proportionally and capacity for designing instructional experiences that foster's child understanding of proportional relationships. Includes solving math tasks related to proportional reasoning and analyzing teaching and learning situations that highlight pedagogical approaches that support student learning in this domain.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2476 - TEACHING AND LEARNING IN SECONDARY MATH 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to secondary mathematics pedagogy, including lesson design. Drawing on critical theories of instruction, students learn to design and evaluate lesson plans. The course focuses on how to create lessons that are engaging, relevant, and aligned with mathematical standards. This course also focuses on constructing a transformative learning environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2484 - MATH PROBLEM SOLVING K-12

Minimum Credits: 3
Maximum Credits: 3
Students will become familiar with various theories of problem solving. They will solve challenging mathematical problems, discuss strategies, and identify ways to translate what they learn into their own mathematics classrooms.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2491 - SUPERVISED RESEARCH - MATH

Minimum Credits: 1
Maximum Credits: 3
The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

TLL 2495 - INTERNSHIP - MATH

Minimum Credits: 1
Maximum Credits: 9
School-based practicum for students seeking teacher certification and the master of arts in teaching degree. Requires placement for the entire school academic year under the supervision of a mentor teacher. Interns observe, analyze, and practice basic teaching skills while teaching math at the secondary level.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

TLL 2496 - INTERNSHIP - SCIENCE

Minimum Credits: 1
Maximum Credits: 9
School-based practicum for students seeking teacher certification and the master of arts in teaching degree. Requires placement for the entire school academic year under the supervision of a mentor teacher. Interns observe, analyze, and practice basic teaching skills while teaching science at the secondary level.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

TLL 2498 - DIRECTED STUDY - MATH

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out a study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2500 - FOUNDATIONS OF SPECIAL EDUC

Minimum Credits: 3
Maximum Credits: 3
Course provides an overview of the field of special education. It includes such topics as 1) identification; 2) placement; 3) programming; 4) inclusion; 5) advocacy; and other topics relating to individuals with disabilities, and gifted and talented individuals. The course examines the various philosophical views of exceptionality.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Learning Sciences

TLL 2501 - STUDENT W/DISAB IN ELEM CLSSRM

Minimum Credits: 3
Maximum Credits: 3
Course is an introduction to teaching students with disabilities in elementary general education classrooms. Course will provide students who plan to become educators with opportunities to (1) develop a knowledge base of the attitudinal issues regarding inclusive educational practices & a philosophical orientation towards effective inclusion support strategies, (2) increase interpersonal skills for working effectively with individuals and groups, and (3) increase technical skills in observing, planning, assessing, & evaluating for both behavioral & instructional challenges.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

TLL 2502 - STUDNT W/DISAB IN SECNDRY CLSSRM

Minimum Credits: 3
Maximum Credits: 3
Course is an intro to teaching students with disabilities in sec level general EDUC classrooms. Course will provide students who plan to become educators with opportunities to (1) develop a knowledge base of the attitudinal issues regarding INCL educational practices & a philosophical orientation towards effective inclusion support strategies, (2) increase interpersonal skills for working effectively with individuals and groups, (3) increase technical skills in observing, planning, assessing, & evaluating for both behavioral & instructional challenges, & adapting instruction & curricula.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

TLL 2503 - STUDENT TEACHING FOR DUAL CERTIFICATION IN SECONDARY SCHOOLS

Minimum Credits: 3
Maximum Credits: 3
Student teaching for dual certification in secondary schools teacher candidates engage in fieldwork five days a week in secondary school sites for 14 weeks. Teacher candidates will collaborate with both content area and special education mentor teachers to develop and implement a plan by which the teacher candidate will, by the end of the term, assume responsibility for the majority of provided instruction and classroom management. Assignments and weekly meetings are designed to support teacher candidates' ability to recognize and apply evidence-based practices with adolescents in the school context.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

TLL 2504 - STUDENT TEACHING SPECIAL EDUCATION

Minimum Credits: 1
Maximum Credits: 7
Teacher candidates engage in fieldwork five days a week in school sites with students with both high and low-incidence disabilities. Teacher candidates will collaborate with special education mentor teachers to develop and implement a plan by which the teacher candidate will, by the end of each experience, assume responsibility for the majority of provided instruction and classroom management. Experiences are designed to support teacher candidates' ability to recognize and apply evidence-based practices with students in the school context.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

TLL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS

Minimum Credits: 3
Maximum Credits: 3
This course will present information on the characteristics of and intervention approaches for children with autism spectrum disorders (ASDS). Introductory material will include diagnosis criteria and characteristics of ASDS. Current research on theories of etiology will be explored and analyzed. Screening tools and assessments specific to this population will be examined in detail. Intervention approaches (e.g., LBI/Discrete Trial, ABBLS, precision teaching, teach) will be described and analyzed in terms of basic premises, research base, associated curricula, and evaluative guidelines from the autism society of America and national institute of mental health. Representatives from local education and behavioral health systems serving children with ASDS will present services/intervention models available in the area.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2506 - SOCIAL AND COMMUNICATIVE INTERVENTIONS: AUTISM

Minimum Credits: 3
Maximum Credits: 3
The course will consider programming and strategies for facilitating the communication and social development of young children with autism. Communication strategies will include a focus on nonverbal children, echolalic, and verbal children. Strategies will include sign language, picture systems, developmental approaches, naturalistic teaching, and discrete trial formats. Social interventions will examine play, peer interactions, and peer relationships. For both areas, assessment tools and strategies; published curricula; and a range of intervention procedures will be covered.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 2505

TLL 2507 - EARLY INTERVENTION CONSULTATION

Minimum Credits: 1
Maximum Credits: 1
This module focuses on providing students with skills for consulting with families, childcare providers, related service personnel, other teachers and paraprofessionals, to assist them in carrying out interventions for young children with autism, in homes, inclusive classrooms, and the community. The class will place special emphasis on classroom-based services. The module emphasizes a collaborative approach to consultation. Communication and interpersonal skills, relationship-building, the inclusion of families in all consultations, and techniques for assisting others to carry out interventions are considered. Finally issues related to interagency collaborations with emphasis on strategies to overcome challenges that occur in the daily life of a consulting professional in a variety of settings will be investigated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT

Minimum Credits: 3
Maximum Credits: 3
The course focuses upon the application of applied behavior analysis principles to the instruction of students with dis abilities. These include individual, small group and class room-wide instruction. The course emphasizes the acquisition, fluency, maintenance and generalization of skills and providing positive behavior support for changing behaviors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2511 - CURR PRG DVLP-LOW INCDNC DISABS

Minimum Credits: 3
Maximum Credits: 3
This course addresses program and curriculum development for students with moderate/severe disabilities. Topics include the development of assessment, instruction/curricula for the following areas: personal management, social interaction, language communication, leisure, community, vocational, and functional academics.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2512 - ASSMNT INSTRUC-HIGH INCDNC DISAB

Minimum Credits: 3
Maximum Credits: 3
Course is designed to provide knowledge of assessment procedures for designing academic programs for children and youth with mild disabilities, with emphasis on assessment for teaching reading, written language and mathematics. Course includes assessment for eligibility for special education and ongoing assessment of instructional effective ness.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

TLL 2513 - INSTRNL METH-HIGH INCIDNC DISABS

Minimum Credits: 3
Maximum Credits: 3

This course explores the methods and procedures for developing literacy for students with learning disabilities, mild mental retardation, and behavioral disorders. The focus of the first 5 sessions is on learning to teach young students who have extraordinary difficulty; the next sections address the literacy needs of older students.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2514 - SUPPORTING STUDENTS WITH DISABILTIES IN INCLUSIVE CLASSROOMS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on understanding challenges faced by students with disabilities in inclusive settings and examines the responsibilities of educational professionals for all students. Students will develop skills in adapting instruction, ensuring access to curriculum, positive behavior support, and strategies for classroom management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2515 - SUPPORTING LITERACIES IN INCLUSIVE CLASSROOMS

Minimum Credits: 3
Maximum Credits: 3
Equitable instruction includes recognizing and honoring the literacies of all students while also supporting their development of new literacies. This course is designed to prepare pre-service secondary educators to: 1) support the literacies of students with disabilities; and 2) support the disciplinary literacies of all students.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2518 - POSITIONING, HANDLING AND MOBILITY: YOUNG CHILDREN WITH DISABILITIES

Minimum Credits: 1
Maximum Credits: 1
Focuses on knowledge and recognition of normal and abnormal gross motor development of children, aged birth to 5, with an emphasis on analysis and facilitation of movement, handling and positioning, adaptive equipment, and safety.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2519 - ORAL MOTOR AND FEEDING STRATEGIES: YOUNG CHILDREN WITH DISABILITIES

Minimum Credits: 1
Maximum Credits: 1
Provides an overview of medical, motor, sensory, psychological and social aspects of feeding children. The class reviews the development of normal oral motor and self-feeding skills and the impact that disabilities may have on these processes. Use of descriptive, criterion-referenced evaluations and clinical observations to identify a child's level of oral motor control will be reviewed. Students will have an opportunity to use assessment procedures and devise treatment plans to address oral motor and feeding needs of children.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM

Minimum Credits: 3
Maximum Credits: 3
General education classrooms are increasingly diverse and all teachers must be able to assess the literacy skills of and provide effective instruction to the children in their secondary classrooms for whom reading is a challenge. This course is designed to provide graduate students preparing to teach in general secondary education settings with an understanding of literacy assessment and instruction for children who are at risk or who have disabilities. Students will develop an understanding of assessment components included in a standards aligned system and be able to explain the differences between the various components and to articulate the proper use of each. Students will also gain an understanding of the components of reading, the challenges these pose for children with disabilities, and effective, research-validated methods for intervening. Students will select a child with a disability who is receiving reading instruction in a general education setting and demonstrate the ability to interpret standardized assessment, administer and interpret progress monitoring assessment, and successfully design an individualized, research-validated instructional plan for this child based on assessment data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2521 - PROACTIVE STRATEGIES FOR A POSITIVE CLASSROOM

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the support of all students with positive, proactive strategies in academic settings. The central theme will focus on the development and implementation of effective strategies that promote positive student outcomes, both academic and behavioral and improve interpersonal relationships. Evidence-based approaches as well as practices required by the Individuals with Disabilities Education Improvement Act will be emphasized.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2522 - ED STDNT EMOTIONAL DISTURBANCE

Minimum Credits: 3
Maximum Credits: 3
The course provides knowledge of curriculum content, teaching techniques and instructional materials for children and youth with emotional disturbance through a focus upon academic content areas and social skills. The utilization of instruction as therapeutic programming will be the central theme.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2523 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETNGS IN ELEM CLSSRMS

Minimum Credits: 3
Maximum Credits: 3
General education classrooms are increasingly diverse and all teachers must be able to assess the literacy skills of and provide effective instruction to the children in their elementary classrooms for whom reading is a challenge. This course is designed to provide graduate students preparing to teach in general elementary education settings with an understanding of literacy assessment and instruction for children who are at risk or who have disabilities. Students will develop an understanding of assessment components included in a standards aligned system and be able to explain the differences between the various components and to articulate the proper use of each. Students will also gain an understanding of the components of reading, the challenges these pose for children with disabilities, and effective, research-validated methods for intervening. Students will select a child with a disability who is receiving reading instruction in a general education setting and demonstrate the ability to interpret standardized assessment, administer and interpret progress monitoring assessment, and successfully design an individualized, research-validated instructional plan for this child based on assessment data.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2524 - LEVEL 2 STUDENT TEACHING PRACTICUM IN VISUAL IMPAIRMENTS

Minimum Credits: 1
Maximum Credits: 5
This course is required by the PA department of education for certification to become a teacher of students with visual impairments. Placements for this clinical experience are arranged by faculty in the Program in Visual Impairments and Blindness, and may be conducted in the student's home area. The approximate length of the placement is 14-weeks serving children who are blind or visually impaired ages three to 21-years.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

TLL 2525 - TECHNOLOGY FOR CHILDREN WITH VI

Minimum Credits: 3
Maximum Credits: 3
This course evaluates many facets of assistive technology for individuals who are blind or visually impaired. Coursework includes projects and a weekend workshop for direct experiences with adapted software, hardware, and peripheral devices.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2527 - LEVEL 1 OBSERVATIONAL PRACTICUM: VI

Minimum Credits: 1
Maximum Credits: 2
This clinical experience requires students to engage in observations of practitioners serving a wide range of needs of individuals who are blind or visually impaired.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

TLL 2529 - BRAILLE

Minimum Credits: 3
Maximum Credits: 3
This course places emphasis on reading and writing braille. It emphasizes proficiency in reading and writing contracted and uncontracted braille, as well as teaching pre-braille and braille readiness to individuals who are blind or visually impaired.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2530 - INTRODUCTION TO THE EYE AND LOW VISION

Minimum Credits: 3
Maximum Credits: 3
This course presents an overview on the anatomy and physiology of the eye. It also presents information about visual pathology and its effect upon learning and function.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2531 - EDUCATION OF CHILDREN WITH VI 1

Minimum Credits: 3
Maximum Credits: 3
This methods course reviews the concepts and philosophies of educating children who are blind or visually impaired. It presents information on serving the needs of children in public schools, with emphasis on the itinerant model of delivery. This methods course examines assessment, programming, instructional materials and methods, and their theoretical and research basis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2532 - EARLY INTERVENTION FOR CHILDREN WITH VI

Minimum Credits: 3
Maximum Credits: 3
This course provides an overview of the topics unique to children aged birth through five who are blind and visually impaired and their families. Focus will be on typical and atypical development as a basis for assessing the child's needs and designing appropriate interventions and family supports. The course includes individual and collaborative work in the areas of family-centered practices and collaboration among professional agencies across disciplines. Emphasis will be placed on assessment and intervention in the areas of sensory, cognitive, motoric, and communicative development as well as providing developmentally appropriate orientation and mobility.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2533 - ORIENTATION AND MOBILITY FOR THE TVI

Minimum Credits: 3
Maximum Credits: 3
This course is designed to prepare teachers of the visually impaired with the knowledge and skills to provide initial level sensory, cognitive, and motor skill development to children who are blind or visually impaired. Students will learn the basic skills of sighted guide and self-protective techniques including assessment and remediation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2535 - COMMUNICATION SKILLS FOR STUDENTS WITH VISUAL IMPAIRMENTS

Minimum Credits: 3
Maximum Credits: 3
This course is designed for SOE students in the Program for Visual Impairments, and will cover instruction, techniques, and strategies of literacy and communication skills for students with visual impairments. Topics will include instruction for children with visual impairments in the emergent literacy stage, instruction in formal literacy for students who use braille, supporting classroom instruction for students with low vision who use print and large print, and the use of specialized materials, methods, and technology for supporting literacy instruction for all students with visual impairments. Special topics will include instruction of students who are visually impaired and have additional disabilities, students who have CVI, and students who are dual media learners or who have been print readers now acquiring braille skills. Pre-Requisite course is IL 2529, Braille.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2540 - FOUNDATIONS OF ORIENTATION AND MOBILITY

Minimum Credits: 3
Maximum Credits: 3
This fully on-line course is taken prior to IL 2750. It integrates relevant aspects of the process of teaching O&M (I. E., Sensory, cognitive) to individuals who are blind or with visually impaired who may also possess additional disabilities. In addition the history, philosophy, and aspects of professional ethics are covered. Service delivery models are discussed along with O&M resources, supervision, and program

administration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2541 - PROGRAM DEVELOPMENT: ORIENTATION AND MOBILITY

Minimum Credits: 3
Maximum Credits: 3
This fully on-line is taken prior to IL 2752. This course builds upon the knowledge students acquired in IL 2540 to understand assessment and instructional strategies for teaching O&M to individuals who are blind or visually impaired who may also possess additional disabilities. Aspects related to research in the field of O&M are also presented.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2542 - WEB CURRNT ISSUES & TRENDS SP ED

Minimum Credits: 3
Maximum Credits: 3
This web-based course focuses on philosophical issues as well as research findings that impact on the education of persons with disabilities. Through critical analysis of assigned readings, the course facilitates a thorough understanding of various points of view on the education of students with disabilities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Online

TLL 2545 - EDUCATION OF CHILDREN WITH VI 2

Minimum Credits: 3
Maximum Credits: 3
This course builds on the concepts presented in IL 2531 for developing teaching methodologies and adaptation techniques for children who are blind or visually impaired who may also possess additional disabilities. Curricular and classroom adaptions and modifications are stressed with emphasis placed on teaching academic and functional skills.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2547 - NEMETH CODE/ABACUS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to provide instruction in the mathematical braille code (Nemeth code) as well as the Cranmer abacus. Students will be instructed in arithmetic computation and mathematical problem solving using both systems. Students will also learn instructional strategies to assist students who are blind or visually impaired to obtain mathematical literacy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2548 - SPECIAL TOPICS SPECIAL EDUCATION

Minimum Credits: 3
Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2552 - STUDENT TEACHING-SPECIAL EDUCATION IN SECONDARY SCHOOLS

Minimum Credits: 3
Maximum Credits: 3
Teacher candidates engage in fieldwork five days a week in secondary school sites with students with both high and low incidence disabilities. Teacher candidates will collaborate with special education mentor teachers to develop and implement a plan by which the teacher candidate will, by the end of each experience, assume responsibility for the majority of provided instruction and classroom management. Experiences are designed to support teacher candidates' ability to recognize and apply evidence-based practices with adolescents in the school context.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

TLL 2561 - PROGRMMNG IN EARLY INTERVENTION

Minimum Credits: 3
Maximum Credits: 3
Focuses on the development of curriculum and instructional strategies for children under five years of age with dis abilities and their implementation in a variety of settings, including inclusive classrooms, home-based programs, and clinical settings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2562 - ASESMNT YOUNG CHLDRN DISABLTY

Minimum Credits: 3
Maximum Credits: 3
Focuses on the identification and assessment of children with disabilities under five years of age and the use of assessment information to plan programs for children in partnership with families and other professionals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2563 - SEM: INCLUSION EARLY CHILDHOOD

Minimum Credits: 2
Maximum Credits: 3
This interdisciplinary course will cover the rationale, service delivery models, teaming components, family considerations, curriculum development, and instructional strategies for creating early childhood programs that meet the needs of children with and without disabilities. The course will include simulations in which students solve real life problems with individuals from other disciplines.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2564 - APPLIED BEHAVIORAL ANALYSIS 1: FUNDAMENTALS 1

Minimum Credits: 3
Maximum Credits: 3

This is the first in a series of five courses designed to meet the total academic requirements for board certification in behavior analysis. This course focuses on defining applied behavior analysis, selecting, assessing and evaluating behavior to change, and functional and experimental analyses of behavior change. The primary goal of this and the second course is to provide students with a complete, accurate, and contemporary view of applied behavior analysis, and how functional analysis can be used to understand socially significant behaviors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2565 - APPLIED BEHAVIORAL ANALYSIS 2: FUNDAMENTALS 2

Minimum Credits: 3
Maximum Credits: 3
This is the second of five courses meeting the total course requirements for board certification as a behavior analyst. This course focuses on the development of new behaviors, various clinical interventions for decreasing interfering behavioral, and maintaining behavioral changes. The instructor presumes that students have limited or no background experiences with applied behavior analysis. Some students will have already completed the fundamentals 1 course. The primary goal of this and the first course is to provide students with a complete, accurate, and contemporary view of applied behavior analysis, and how functional analysis can be used to understand socially significant behaviors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2566 - APPLIED BEHAVIORAL ANALYSIS 3: APPLICATIONS IN DEVELOPMENTAL DISABILITIES

Minimum Credits: 3
Maximum Credits: 3
This is the third of five courses meeting the total academic requirements for board certification as a behavior analyst. This course focuses on the application of principles and procedures covered in IL 2564 and IL 2565 to a wide range of behavior disorders in individuals with developmental disabilities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 2564 and 2565

TLL 2567 - APPLIED BEHAVIORAL ANALYSIS 4: EMOTIONAL BEHAVIORAL DISABILITIES OF CHILDREN AND ADOLESCENTS

Minimum Credits: 3
Maximum Credits: 3
This is the fourth of five courses meeting academic requirements for board certification as a behavior analyst. This course focuses on etiology, analysis, assessment and intervention for mental health disorders of childhood and adolescence with an emphasis on an applied behavior analysis of disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 2564 and 2565

TLL 2568 - APPLIED BEHAVIORAL ANALYSIS 5: CURRENT DEVELOPMENTS IN APPLIED BEHAVIORAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This is the fifth and final course meeting the total academic requirements for board certification as a behavior analyst. This course is specifically focused on a number of advanced topics, including verbal behavior, ethics, and parent training.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 2564 and 2565

TLL 2569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
The applied behavior analysis practicum provides students with intensive opportunities to learn and practice the various roles of a behavior analyst in a variety of different settings and to demonstrate competence as a beginning applied behavior analyst. Opportunities will include conducting assessment activities related to the need for behavioral interventions, designing, implementing and monitoring behavior analysis activities, overseeing implementation of behavior analysis programs by others, and other activities typically performed by a behavior analyst such as attending planning meetings and researching the literature to prepare a behavioral intervention. Each student will work closely with an assigned university supervisor and a mentoring professional from their individual placement site during the practicum. The practicum requires group seminar supervision, individual supervision, on-site observations, and small group supervision in amounts determined by the behavior analysis certification board (BACH) standards. The accompanying practicum seminar allows students to share experiences and knowledge gained in placement sites, as well as to seek support and ideas from classmates.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

TLL 2575 - TRANSITION PROCESSES AND SPECIAL EDUCATION PROCEDURES

Minimum Credits: 3
Maximum Credits: 3
Course covers critical information related to transition and special education services for students with disabilities in secondary settings
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2577 - BRIDGE COURSE: BCBA CURRICULUM EDITION 3 TO 4

Minimum Credits: 2
Maximum Credits: 3
This course is designed to update the competencies of edition 3 of the board certified behavior analyst curriculum to edition 4 of the curriculum so that individuals who took all or part of their ABA studies under edition 3 may sit for the national exam under the current edition 4. The course will address 10 topics such as direct instruction, incidental teaching, alternative and augmentative communication, MAND training, precision teaching. The required competencies (e.g. measurement and data analysis; change systems; implementation, management and supervision; intervention and behavior change considerations) will be distributed across each topic.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

TLL 2578 - APPLIED BEHAVIORAL ANALYSIS 6: ETHICS

Minimum Credits: 3
Maximum Credits: 3
This is one of six courses meeting the total academic requirements for board certification as a behavior analyst. This course focuses on ethical practices involving the application of principles and procedures covered in ABA I through ABA V. The ethical practices relate to working with individuals with autism spectrum disorders, developmental disabilities and other behavioral/emotional disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 2564 and 2565

TLL 2579 - TREATMENT FIDELITY AND COACHING: AUTISM

Minimum Credits: 3
Maximum Credits: 3
This course will present information on the strategies used to monitor and enhance the accuracy and the delivery of evidence-based interventions for children with autism spectrum disorder (ASD) and other disabilities. The course will focus on defining intervention and implementation fidelity, exploring examples of the documentation, planning and assessment of treatment fidelity for evidence-based interventions, and learning skills for peer, parent, and supervisory coaching.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL 2505

TLL 2581 - CRITICAL HISTORIES OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course provides a critical introduction to historical moments, movements, and concepts that have characterized education and schooling, primarily in the US. The course focuses on histories of both self-determined and colonial education, with attention to eras and movements (e.g., maternalism and the boarding or residential schools; Freedom Schools and the complexities of law and desegregation). Students will engage topics such as labor, migration, and militarism. Students will learn how these larger forces have shaped contemporary schooling. Students will also study historical examples of anti-/de-colonial and freedom-based collective educational work that transformed dominant educational practices and institutions and cultivated autonomous organizations and schools.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2582 - WORKING WITH FAMILIES

Minimum Credits: 3
Maximum Credits: 3
Course focuses on understanding family systems theory and its application to early intervention, including the development of individualized family service plans. Family centered practices, cultural, ethnic, racial, educational, and economic diversity among families, and accessing community resources will be covered.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2583 - CULTURES, KNOWLEDGE TRADITIONS, AND SOCIAL SYSTEMS OF SCHOOLING 1

Minimum Credits: 3
Maximum Credits: 3
This course introduces issues of freedom and liberation and considers frameworks of access, equity, and inclusion in relation to school contexts. We do this by providing an overview of sociocultural and sociopolitical aspects of education and inviting students to situate themselves and their own educational histories within a broader understanding of the role(s) of schools in society. Students will examine significant knowledge traditions (e.g., Black Radical Tradition, Indigenous Knowledge Systems, Feminisms, Queer, Borderland Epistemologies) and learn how the educational praxes of knowledge traditions and language shape sociocultural and sociopolitical systems. This course takes culture as a key conceptual component for understanding: the traditions themselves; how structural, systemic responses to these traditions create repressive conditions; and how cultural knowledge is used to shape liberatory systems. This study of culture will be anchored in schools and counterpart learning contexts and will help students understand the networks of systems and knowledges within which schooling operates.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2584 - CRITICAL PEDAGOGIES AND PRAXES

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to key critical pedagogical traditions and praxes for the secondary classroom. Students learn and practice lesson design and instructional scaffolding and sequencing. The course includes strategies for liberatory and just student and course evaluation. It also attends to critical praxis in relation to required state, district, and other assessments. Students consider and develop just classroom community-building approaches that move toward freedom and away from dehumanizing management and discipline frameworks.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2585 - TECHNOLOGY-BASED INTERVENTIONS: AUTISM

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the application of assistive technology to interventions for children with autism spectrum disorder (ASD) and other non-physical disabilities. The course addresses a) the principles of assistive technology (at), b) assessment of students for at, and c) the at continuum of low, mid, and high technology. A range of hardware (E.G., iPad, computers, specialized speech generating devices), software (E.G., iMovie, board maker), and interventions (E.G., Video modeling, alternative and augmentative communication strategies, academic skills) will be considered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 2505

TLL 2586 - AUTISM INTERVENTIONS IN SCHOOL AND COMMUNITY SETTINGS

Minimum Credits: 3
Maximum Credits: 3
This course is designed to prepare graduate students to teach school-aged students with ASD in a range school and community settings, with a particular focus on interventions and strategies appropriate for inclusive classrooms. Through readings, presentations, class discussions, and activities, students will acquire information and skills needed to implement evidence-based interventions approaches to assessment and intervention for students with ASD. As part of the final project, students will develop and deliver an assessment-based intervention for one of the suggested outcome areas.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 2505

TLL 2587 - SPECIAL TOPICS - INCLUSION

Minimum Credits: 3
Maximum Credits: 3
A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

TLL 2590 - RESEARCH SEMINAR IN SPECIAL EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course provides students with competencies necessary for utilizing and evaluating research in special education. Focus is on the critical analysis of research and examination of methodological and ethical considerations. Students in M/PD sections conduct single subject research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

TLL 2591 - LITERACY TUTORING

Minimum Credits: 1
Maximum Credits: 1
The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

TLL 2594 - INTERDISCIPLINARY LEADERSHIP SEMINAR DEVELOPMENTAL DISABILITY 1

Minimum Credits: 1
Maximum Credits: 3
This seminar provides the advanced master's or doctoral student with an opportunity to study and analyze with students and faculty from a variety of disciplines current issues affecting children with neurodevelopmental disabilities, their families, and their communities. Within a framework of family-centered and cross-cultural principles, the seminar examines issues related to advances in diagnosis, treatment, child development, service delivery, and policy/legislation. Leadership issues are also explicitly considered at the beginning and end of each term.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

TLL 2595 - CULTURES, KNOWLEDGE TRADITIONS, AND SOCIAL SYSTEMS OF SCHOOLING 2

Minimum Credits: 3
Maximum Credits: 3
This capstone course draws on the topics covered in Cultures, Knowledge Traditions, and Social Systems of Schooling I and other education coursework focused on developing equitable and just approaches to secondary teaching and learning. Advanced theoretical understandings of issues of cultures, knowledge traditions, and systems of schooling will be addressed, and students will be given opportunities to link these concepts to their own developing teaching praxis.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2596 - INTERNSHIP IN SPECIAL EDUCATION

Minimum Credits: 1
Maximum Credits: 3
An internship is proposed, then reviewed by faculty and implemented in varying types of special education settings.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

TLL 2598 - DIRECTED STUDY IN SP ED

Minimum Credits: 1
Maximum Credits: 6
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2690 - RESEARCH SEMINAR ONLINE

Minimum Credits: 3
Maximum Credits: 3
This is a required three-credit course for graduate level students in education. It offers opportunities for students to investigate research questions, collect and interpret data and present research documents. Overall, students will be expected to write and submit a research proposal, conduct the research described in the proposal, and use information in the proposal to write a research paper that describes their research. Students will also write an abstract of their research paper.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

TLL 2691 - SUPERVISED RESEARCH - EARLY CHILDHOOD

Minimum Credits: 1
Maximum Credits: 3
The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2698 - DIRECTED STUDY - EARLY CHILDHOOD

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

TLL 2700 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 3
A flexible curriculum oriented to special research topics of interest to faculty or current issues in or about the arts that are of concern to educators.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2701 - FIELD SEMINAR: PRIMARY PLUS

Minimum Credits: 1
Maximum Credits: 1
Students participate in district-based in-service activities and complete field-based assignments aimed at promoting an understanding of the

professional, personal, social, and political dimensions of schools.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2702 - ADVANCED PRACTICUM IN FOREIGN LANGUAGE

Minimum Credits: 3
Maximum Credits: 3
This course prepares students to enact equitable and justice-oriented teaching practices that address local and global cultural contexts in elementary, secondary, and post-secondary World and Heritage Language Education school settings. Through a practice-based approach, students gain advanced understandings of home and target language cultures and the role they play in World and Heritage Language teaching. The course views culture as a key conceptual component for understanding: addresses the cultural traditions themselves; how structural, systemic responses to these diverse traditions create repressive conditions for students and teachers; and how cultural knowledge is used to shape liberatory systems. Students apply their knowledge of local and global cultural contexts to plan, teach, and reflect on their own world language teaching and to advocate for revisions of unjust and oppressive systems.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade
Course Attributes: Asian Studies

TLL 2707 - FIELD SEMINAR IN EARLY CHILDHOOD EDUCATION

Minimum Credits: 1
Maximum Credits: 1
Students participate in district-based in-service activities and complete field-based assignments aimed at promoting an understanding of the professional, personal, social, and political dimensions of schools.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2710 - ADVANCED SOCIAL STUDIES METHODS

Minimum Credits: 3
Maximum Credits: 3
This course explores and examines theoretical discourses and advanced methods and materials for improving social studies instruction in the secondary (grades 7-12) social studies classroom. Course content, procedures, and activities focus on effective strategies for engaging and teaching learners from diverse backgrounds and developmental levels. Approaches include investigation and analysis of constructionist ideas, student empowerment, historical thinking, historiography, global citizenship, real-world connectedness, and various technologies as they apply to teaching and learning in the secondary social studies classroom.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2711 - SPECIAL TOPICS - FOREIGN LANGUAGE EDUCATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 2712 - HISTORICAL THINKING AND HISTORIOGRAPHY: SECONDARY SOCIAL STUDIES CLASSROOM

Minimum Credits: 3
Maximum Credits: 3
This online course is an examination of teaching strategies and techniques related to historical thinking and historiographical analysis in the secondary social studies classroom. Course participants will investigate recent research supporting historical thinking and historiographical analysis strategies and techniques, engage in various projects intended to increase their knowledge and skills in these strategies and techniques, and explore creative ways to enrich their own classroom instruction by getting students engaged in "doing" history.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Online

TLL 2722 - PRACTICUM IN FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 3
Prospective teachers experience the reality of teaching the foreign languages in a public school setting.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

TLL 2725 - PRACTICUM IN SECONDARY ENGLISH EDUCATION

Minimum Credits: 1
Maximum Credits: 1
Teacher candidates engage in fieldwork in a secondary school site daily. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Teacher candidates will also be responsible for independent instruction. Teacher candidates will reflect critically and productively on their own instruction. Teacher candidates are responsible for timely submission of all required certification paperwork.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

TLL 2729 - PRACTICUM IN K-12 FOREIGN LANGUAGE 1

Minimum Credits: 1
Maximum Credits: 1
In this course, students engage in 20 hours of fieldwork in one or two school sites weekly. Fieldwork includes tutoring individual students, supporting instruction in classrooms, collaborating with mentor teachers to design lessons, and careful observation of instruction. In addition to fieldwork, students engage in weekly assignments and meetings that support students' ability to apply theory and current methodology in school context and reflect critically on their own instruction. In this course, students engage in 20 hours of fieldwork in one or two school sites weekly. Fieldwork includes tutoring individual students, supporting instruction in classrooms, collaborating with mentor teachers to design lessons, and careful observation of instruction. In addition to fieldwork, students engage in weekly assignments and meetings that support students' ability to apply theory and current methodology in school context and reflect critically on their own instruction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

TLL 2740 - PRACTICUM IN SECONDARY MATHEMATICS

Minimum Credits: 1
Maximum Credits: 1
Teacher candidates engage in fieldwork in a secondary school site daily. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Teacher candidates will also be responsible for independent instruction. Teacher candidates will reflect critically and

productively on their own instruction. Teacher candidates are responsible for timely submission of all required certification paperwork.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

TLL 2750 - TECHNIQUES OF ORIENTATION AND MOBILITY 1

Minimum Credits: 3
Maximum Credits: 3
This first part of this two part methods course, which is offered on-campus in summer two, is designed to introduce the student to the elementary level travel skills (e.g., Use of human guidance) and procedures (e.g., Sensory development) used when teaching O&M to individuals who are blind or visually impaired who may also possess additional disabilities. Students begin their knowledge of teaching travel skills indoors and gradually transition to the introductory level outdoor environment. Students wear simulation materials designed to fully or partially occlude vision while traveling.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2751 - SPECIAL EDUCATION PROCEDURES AND TRANSITION PROCESSES

Minimum Credits: 3
Maximum Credits: 3
This course is designed for students entering the teacher preparation program in mental and physical disabilities. Instruction concerning how to prepare for instruction, write lesson plans, and implement lessons is provided. Field observations and micro-teaching experiences are also provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2752 - TECHNIQUES OF ORIENTATION AND MOBILITY 2

Minimum Credits: 3
Maximum Credits: 3
This second part of a two part methods course, which builds upon the knowledge gained in IL 2750, is offered on-campus in summer two. It introduces the student to developing instructional strategies for teaching more complex o & m travel skills (e.g., Use of public transportation systems) and procedures (e.g., Use of tactile maps) to individuals who are blind or visually impaired who may also possess additional disabilities who travel in a variety of indoor and outdoor environments. The course also covers teaching strategies for serving the o & m needs of children as well as adults through simulated teaching activities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2753 - ORIENTATION AND MOBILITY FOR DIVERSE POPULATIONS

Minimum Credits: 3
Maximum Credits: 3
The focus of this online course is on designing assessment and instructional strategies for various populations of individuals who are blind or visually impaired. Specific populations to be examined include: persons with low vision, individuals with dual sensory loss (deaf blindness), infants and preschoolers, school-aged students, individuals with cognitive impairments, students with cortical visual impairments, and dog guide users.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Online

TLL 2780 - AUTISM ENDORSEMENT PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
As part of this practicum course, students will get practical experience working with students with ASD of various age groups in different educational and community settings. They will also get an in-depth experience at their primary practicum placement by working closely with a mentor teacher and a University supervisor on a variety of application-based projects. All practicum activities will be completed at an approved practicum site (E.G., Autistic support classroom in a public school; general education classroom). Students will acquire competencies related to assessment, intervention, and collaboration with professionals, families, and community organizations. The practicum meetings will be used for group supervision and sharing of the experiences, ideas, and challenges with a team of peers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 2505 and 2586

TLL 2791 - SUPERVISED RESEARCH -FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 3
The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

TLL 2798 - DIRECTED STUDY - FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2800 - STUDENT TEACHING EARLY CHILDHOOD

Minimum Credits: 1
Maximum Credits: 10
Full-time practicum for teacher certification candidates. Provides opportunities to observe, plan, conduct, and evaluate instruction in the school setting and receive professional feedback from university supervisors and experienced master teachers.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

TLL 2803 - STUDENT TEACHING SEMINAR - PRIMARY PLUS

Minimum Credits: 1
Maximum Credits: 1
This course supports student teaching. Students work on topics such as instructional management, behavior management, lesson planning, addressing student needs for the department of education.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

TLL 2804 - STUDENT TEACHING - PRIMARY PLUS

Minimum Credits: 2
Maximum Credits: 5
This is a 14-week student teaching experience under the guidance of a mentor teacher and a supervisor from the university. Students are expected to learn to plan for and teach all four elementary subject areas for an extended period of time during the course of the term. Towards the end of the term, the student teachers are also expected to take on primary teaching responsibility for all subject areas by the end of the program.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

TLL 2822 - INTERNSHIP IN FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 10
Full-time practicum for teacher certification candidates. Provides opportunities to observe, plan, conduct, and evaluate instruction in the school setting and receive professional feedback from university supervisors and experienced master teachers.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SU3 Basis

TLL 2824 - STUDENT TEACHING SEMINAR

Minimum Credits: 1
Maximum Credits: 3
A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

TLL 2826 - STUDENT TEACHING SEMINAR-FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 2
A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Attributes: Global Studies

TLL 2828 - STUDENT TEACHING SEMINAR-SOCIAL STUDIES

Minimum Credits: 1
Maximum Credits: 2
A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SU3 Basis

TLL 2834 - SPECIAL TOPICS - FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 3
A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2842 - STUDENT TEACHING SEMINAR-MATHEMATICS

Minimum Credits: 1
Maximum Credits: 3
A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

TLL 2843 - STUDENT TEACHING SEM - SCIENCE

Minimum Credits: 1
Maximum Credits: 2
A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

TLL 2845 - PRACTICUM IN SECONDARY SCIENCE

Minimum Credits: 1
Maximum Credits: 1
Teacher candidates engage in fieldwork in a secondary school site daily. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Teacher candidates will also be responsible for independent instruction. Teacher candidates will reflect critically and productively on their own instruction. Teacher candidates are responsible for timely submission of all required certification paperwork.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

TLL 2850 - PRACTICUM - PRESCHOOL

Minimum Credits: 1
Maximum Credits: 3
This course involves direct contact with preschoolers with disabilities. Students are placed in various types of supervised community settings where preschoolers with dis abilities and their families are served. A seminar will be held weekly.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

TLL 2852 - PRACTICUM - INFANTS & TODDLERS

Minimum Credits: 1
Maximum Credits: 3

This course involves direct contact with infants and toddlers with disabilities. Students are placed in various types of supervised community settings where infants and toddlers with disabilities and their families are served. A seminar will be held weekly.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

TLL 2853 - STUDENT TEACHING - STUDENTS WITH HIGH INCIDENCE OF DISABILITIES

Minimum Credits: 2
Maximum Credits: 7
Teacher candidates engage in fieldwork five days a week in school sites with students with high incidence disabilities. Teacher candidates will collaborate with special education mentor teachers to develop and implement a plan by which the teacher candidate will, by the end of the experience, assume responsibility for the majority of provided instruction and classroom management. Experiences are designed to support teacher candidates' ability to recognize and apply evidence-based practices in the school context.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

TLL 2854 - STUDENT TEACHING WITH LOW INCIDENCE OF DISABILITIES

Minimum Credits: 3
Maximum Credits: 3
Teacher candidates engage in fieldwork five days a week in school sites with students with low incidence disabilities. Teacher candidates will collaborate with special education mentor teachers to develop and implement a plan by which the teacher candidate will, by the end of the experience, assume responsibility for the majority of provided instruction and classroom management. Experiences are designed to support teacher candidates' ability to recognize and apply evidence-based practices in the school context.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

TLL 2857 - LEVEL 3 INTERNSHIP ORIENTATION AND MOBILITY

Minimum Credits: 1
Maximum Credits: 6
Full or part-time clinical experience, minimum 350 clock hours of direct instruction is necessary to fulfill this course requirement. Students must be supervised by an on-site, full-time ACVREP certified O&M specialist, with supplemental support provided by university faculty. Placements are arranged by the vision studies program faculty. Students must be able to demonstrate teaching competence with a variety of individuals who are blind and visually impaired (i.e., ages, cognitive level), as well as teaching competence in a variety of environments (i.e., simple as well as complex travel settings) successfully in order to apply to take the national certification exam in O&M.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

TLL 2858 - STUDENT TEACHING SEMINAR - SPECIAL EDUCATION TEACHER PREPARATION

Minimum Credits: 2
Maximum Credits: 2
This weekly seminar is offered concurrently with the full-time student teaching requirement. The seminar permits teacher candidates to discuss and process situations and problems as they arise in the field and assists teacher candidates in the completion of program and student teaching requirements. A focus on the preparation of a professional portfolio prepares teacher candidates for the job search and interview process.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

TLL 2860 - PRACTICUM IN SPECIAL EDUCATION

Minimum Credits: 1
Maximum Credits: 1
Teacher candidates enage in field work in local schools. Teacher candidates will collaborate with a special education mentor teacher. Teacher candidates will be expected to observe, support student learning and plan and deliver evidence-based instruction for students with disabilties.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

TLL 2861 - PRACTICUM IN SECONDARY SPECIAL EDUCATION - SPECIAL EDUCATION TEACHER PREPARATION

Minimum Credits: 1
Maximum Credits: 1
Teacher candidates engage in fieldwork two days a week in secondary school sites. Teacher candidates will collaborate with a special education mentor teacher and will be expected to observe and support instruction. Fieldwork includes conducting and interpreting assessment and planning and delivering one-on-one and small group instruction for students with disabilities. Teacher candidates will follow guidance provided by the mentor teacher to support IEP implementation in appropriate areas. This practicum experience will support the completion of assignments from coursework as well as prepare teacher candidates for the full-time student teaching experience.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

TLL 2870 - TEACHING & LEARNING IN PK-12 WORLD AND HERITAGE LANGUAGE 2

Minimum Credits: 3
Maximum Credits: 3
In this course, students deconstruct, discuss, and practice a variety of planning, teaching, and assessment strategies that support the World-Language Readiness Standards. In addition, students are introduced to current theories of second language acquisition and apply these theories to explain and design effective instruction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2871 - TEACHING AND LEARNING IN SECONDARY ENGLISH 2

Minimum Credits: 3
Maximum Credits: 3
This course focuses on learning contexts to support secondary students' English teaching. Drawing on critical theories of instruction, teacher candidates learn to design and implement unit plans that support inquiry-based and relevant instruction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2872 - TEACHING AND LEARNING IN SECONDARY SOCIAL STUDIES 2

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to secondary social sciences pedagogy, including lesson design. Drawing on critical theories of instruction, students learn to design and evaluate lesson plans. Teacher candidates will learn the characteristics of social sciences classrooms, curriculum, and instruction that are inquiry-based, cognitively challenging, and engaging for youth. The course focuses on how to create lessons that are engaging, relevant, and aligned with state standards. This course also focuses on constructing a transformative learning

environment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2873 - TEACHING AND LEARNING IN SECONDARY SCIENCE 2

Minimum Credits: 3
Maximum Credits: 3
This course focuses on learning contexts to support secondary students' engagement in science practices. Drawing on critical theories of instruction, teacher candidates learn to design and implement unit plans that engage students in scientific practices that support inquiry-based instruction, high-leverage practices, and collaboration. This course also focuses on how to authentically assess students. Emphasis is placed on multiple knowledge types for assessment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2874 - TEACHING AND LEARNING IN SECONDARY MATH 2

Minimum Credits: 3
Maximum Credits: 3
This course focuses on learning contexts to support secondary students' engagement in mathematical practices. Drawing on critical theories of instruction, teacher candidates learn to design and implement unit plans that engage students in mathematical practices that support multiple ways of solving problems, high-leverage practices, and collaboration. Teacher candidates will learn the characteristics of science classrooms, curriculum, and instruction that are inquiry-based, cognitively challenging, and engaging for youth. This course also focuses on how to authentically assess students. Emphasis is placed on multiple knowledge types for assessment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2881 - INTERNSHIP-ENGLISH OR COM EDUC

Minimum Credits: 1
Maximum Credits: 9
School-based practicum for students seeking teacher certification and the master of arts in teaching degree. Requires placement for the entire school academic year under the supervision of a mentor teacher. Interns observe, analyze, and practice basic teaching skills while teaching English Language Arts at the secondary l
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

TLL 2882 - INTERNSHIP IN WORLD AND HERITAGE LANGUAGE EDUCATION

Minimum Credits: 1
Maximum Credits: 7
School-based practicum for students seeking teacher certification and the master of arts in teaching degree. Requires placement for the entire school academic year under the supervision of a mentor teacher. Interns observe, analyze, and practice basic teaching skills while teaching a world language at the secondary level.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Attributes: Global Studies

TLL 2883 - INTERNSHIP - SOCIAL STUDIES

Minimum Credits: 1
Maximum Credits: 9
School-based practicum for students seeking teacher certification and the master of arts in teaching degree. Requires placement for the entire school academic year under the supervision of a mentor teacher. Interns observe, analyze, and practice basic teaching skills while teaching social studies at the secondary level.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

TLL 2890 - ADVANCED TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 9
Course designed for students seeking additional field teacher certification. Includes a school-based practicum in accordance with the student's experience and interests.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

TLL 2891 - SUPERVISED RES - SOCIAL STUDIES

Minimum Credits: 1
Maximum Credits: 6
The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

TLL 2892 - PRACTICUM IN K-12 FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 1
Teacher candidates engage in fieldwork in a secondary school site daily. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Teacher candidates will also be responsible for independent instruction. Teacher candidates will reflect critically and productively on their own instruction. Teacher candidates are responsible for timely submission of all required certification paperwork.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

TLL 2898 - DIRECTED STUDY - SOCIAL STUDIES

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 2905 - TEACHING INFANTS, TODDLERS AND PRESCHOOLERS

Minimum Credits: 3
Maximum Credits: 3

This course provides the foundation for teaching infants, toddlers, and preschoolers, in group settings in centers outside the home. Topics include developmentally appropriate curriculum and instruction, program design and implementation, legal compliance and program enhancement, family and community relations, professionalism, and advocacy.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2906 - COMMUNITY RESOURCES SEMINAR: YOUNG CHILDREN AND FAMILIES

Minimum Credits: 2
Maximum Credits: 3
This interdisciplinary course focuses on the role of the professional in supporting families of young children with and without disabilities by linking them with formal and in formal community resources. The course explores rationale; family-centered principles; models and practices for sup porting families; and considerations in the development of community resources. It surveys available resources through guest speakers, on-site visits, and the development of a resource directory.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

TLL 2907 - COLLABORATIVE PARTNERSHIPS WITH FAMILIES AND THE COMMUNITIES

Minimum Credits: 3
Maximum Credits: 3
This course will focus on the role of the professional in supporting families of young children (pre-k - grade 4), including families of children with disabilities and other diverse characteristics. Students will learn about family systems, including how family characteristics affect the development of children, how to communicate, interact, and collaborate with families in school settings, and how to link families with formal and informal community resources.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 2928 - WEB LEGL & LEGISLTV FDS OF SP ED

Minimum Credits: 3
Maximum Credits: 3
This web-based course reviews the practical application of laws, regulations, court decisions, and public policy to the supervision of special education services and programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Online

TLL 2990 - RESEARCH SEMINAR FOR MAT INTERNS

Minimum Credits: 3
Maximum Credits: 3
The student proposes, carries out, and prepares a careful report of a study Germane to the student's professional role.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 3002 - CLASSROOM DISCOURSE

Minimum Credits: 3
Maximum Credits: 3
The purpose of this course is to introduce students to the theoretical underpinnings, methodological concerns, and pedagogical implications of the study of classroom discourse ' the study of who can say what to whom, when and where, for what purposes, under what conditions, and with what outcomes in a range of classroom contexts. The course critically reviews empirical research on classroom discourse (both recent and classical investigations), and covers the accepted methods for conducting research on classroom discourse including different approaches to collecting, recording, and analyzing both verbal and nonverbal discourse. A range of theoretical approaches to analyzing discourse are also covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3003 - RESEARCH INTERVIEWING

Minimum Credits: 3
Maximum Credits: 3
This course is designed to introduce doctoral students to the theories and methodologies of research interviewing in the social sciences. The course introduces students to aspects of research interviewing such as designing research questions that can be answered through interview data, identifying potential participants, creating interview protocols, transcribing interviews, coding interviews, and recognizing the role/bias of the interviewer. The course will also teach students how to critically analyze the representation and use of interview data in educational research. Students are expected to read published studies, collect and analyze data from interviews, and critically evaluate various approaches in light of their own research questions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3004 - IDENTITY IN EDUCATIONAL SETTINGS

Minimum Credits: 3
Maximum Credits: 3
Recent approaches to conceptualizing and studying identity in complex social environments will be reviewed through course readings and discussions. The historical background of this work will also be addressed. Particular attention will be paid to the identity development of students who are often marginalized in educational settings. Qualitative and interpretive methods for studying identity will also be covered. Students will be expected to actively participate in discussions and complete a term project (either a review of the literature or a small-scale study of identity formation).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3007 - CULTURE AND COGNITION

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to the field of cultural psychology and its perspective on the language and thinking of children, adolescents, and adults. Research conducted from a cultural psychology perspective will be reviewed and applied to the assessment of the thinking, speaking, and acting of people from diverse ethnic, racial, economic, and national backgrounds. Instructional practices that have been employed with multicultural populations will be reviewed and evaluated. Students will be expected to actively participate in discussions and complete several short papers and one in-class presentation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3008 - EDUCATIONAL POLICY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 3009 - HUMAN DEVELOPMENT LEARNING SCIENCES WRITING SEMINAR

Minimum Credits: 1
Maximum Credits: 6
The purpose of the writing seminar is to be a supportive scholarly community that assists everyone on their academic journey. One important function of the seminar is to be a place where students share and receive feedback on their writing (e.g., milestones, article drafts, policy briefs) and presentations (e.g., milestone defenses, conference presentations, job talks). The seminar is also intended to help students increase awareness of different strategies and approaches to writing, build writing habits, improve awareness of arguments you want to make in your scholarly work, learn how to provide productive feedback, and build knowledge for navigating graduate school and academia more broadly.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 3011 - THE STUDY OF TEACHING

Minimum Credits: 3
Maximum Credits: 3
Advanced graduate course for students interested in research on teachers and teaching. Covers mainstream and alternative paradigms, including behavioral, cognitive, and ethnographic modes of pedagogical inquiry. Offers a critical analysis of recent studies on the nature of expertise in teaching, and new approaches to teacher performance assessment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3012 - CRITICAL READING IN LANGUAGE LITERACY AND CULTURE 1

Minimum Credits: 3
Maximum Credits: 3
This course is part of a two-course sequence that provides opportunities for students to engage in thoughtful and critical ways with important texts related to language, literacy, and culture. Examining works by influential theorists and researchers, students will consider such fundamental questions as: how are discussions of language, literacy, and culture deeply rooted in broader social and political contexts? How do issues of language, literacy, and culture relate to education?
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

TLL 3013 - CRITICAL READINGS IN LANGUAGE, LITERACY, AND CULTURE 2

Minimum Credits: 3
Maximum Credits: 3
This course is the second in a two-course sequence that provides opportunities for students to engage in thoughtful and critical ways with important texts related to language, literacy, and culture. Examining works by influential theorists and researchers, students will consider such fundamental questions as: how are discussions of language, literacy, and culture deeply rooted in broader social and political contexts? How do issues of language, literacy, and culture relate to education?
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

TLL 3014 - THEORETICAL PERSPECTIVES IN LANGUAGE, LITERACY AND CULTURE 1

Minimum Credits: 3
Maximum Credits: 3
This course is the first in a two-course sequence that provides opportunities for students to investigate important theoretical perspectives informing research in language, literacy, and culture. Students consider fundamental questions such as: how do theories shape the choice of research questions and methodologies? And how do theories provide frameworks for analyzing data?
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3015 - THEORETICAL PERSPECTIVES IN LANGUAGE, LITERACY AND CULTURE 2

Minimum Credits: 3
Maximum Credits: 3
This course is the second in a two-course sequence that provides opportunities for students to investigate important theoretical perspectives informing research in language, literacy, and culture. Students consider fundamental questions such as: how do theories shape the choice of research questions and methodologies? And how do theories provide frameworks for analyzing data?
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3016 - PHD WRITING SEMINAR

Minimum Credits: 1
Maximum Credits: 1
This course is a writing workshop designed to provide LLC Ph.D. students beyond their first year of study with regular feedback on their academic writing, including research articles, grant proposals, and milestone documents.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

TLL 3020 - INFORMAL LEARNING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3021 - LEARNING SCIENCES AND EDUCATIONAL CHANGE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 3025 - CONCEPTUALIZING AND ASSESSING CHANGE

Minimum Credits: 3
Maximum Credits: 3
After decades of descriptive research that demonstrates associations between contextual factors and child and youth development, developmental and educational sciences are increasingly focused on identifying malleable contextual features that are responsive to

intervention efforts that improve learners' outcomes. Researchers will need to think carefully about the measurement of dependent and independent variables for generating research evidence demonstrating a longitudinal analysis of change. Understanding how to best derive causal inference from both experimental and non-experimental research is critical for translation of longitudinal evidence to policy or practice. The primary aim of the course is to consider how collection of longitudinal data influences how researchers engage in every facet of research design from sampling to analyses. There are three major objectives that guide the development of course materials and assignments: Students will gain experience designing correlational, experimental and longitudinal studies that provide strong causal inference; this design experience will ideally be applied to students' predissertation/thesis or dissertation work. Students will also learn critical evaluation and application skills, including how to recognize and critique research designs in multiple disciplines - i.e., learn to critique the quality of both studies of change and studies of contexts that support change. Students will gain experience with scientific writing through scaffolded assignments.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 3026 - THEORETICAL PERSPECTIVES ON LEARNING

Minimum Credits: 3
Maximum Credits: 3
This course introduces theories of learning, learning sciences, and how they may support human thriving. Throughout the course we explore tensions between views of learning as an individual versus social process. Specifically, we use sociocultural, situative, and cognitive theories to consider the characteristics of learning, where learning originates, how learning is constructed and mediated by social environments, the role of emotions and motivation in learning, and the intersection of learning and social change. We also consider disciplinary-based approaches to theory and knowledge construction. Additionally, throughout the course, we explore how theory can inform practice and design. We explore how learning is organized differently in different settings, which has direct implications for variation in what is learned, how it is learned, who learns it, and why.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

TLL 3080 - DIRECTED STUDIES - LSAP

Minimum Credits: 1
Maximum Credits: 6
Student pursues study of various topics under direction of faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

TLL 3081 - DOCTORAL DISSERTATION RESEARCH IN LSAP

Minimum Credits: 1
Maximum Credits: 18
Student plans and completes a doctoral dissertation under the guidance of the dissertation advisor.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Grad SN Basis

TLL 3088 - COMPETENT KNOWLEDGE MANAGEMENT AND UTILIZATION

Minimum Credits: 3
Maximum Credits: 3
Knowledge management considers knowledge as a strategic asset within emerging contexts. Using technologies and systems, KM deals with the policies, tools and practices that an organization uses to classify, produce, implement, and safeguard information. Contemporary school districts and non-profit organizations are increasingly dedicating resources to knowledge management in their educational, business, technology, and human resource operations. Knowledge management focuses on organizational goals such as improved student

performance, data management, organizational development and innovation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3091 - SUPERVISED RESEARCH - SCIENCE

Minimum Credits: 1
Maximum Credits: 6
The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

TLL 3093 - INTERNSHIP IN CENTRAL OFFICE ADMINISTRATION

Minimum Credits: 1
Maximum Credits: 3
Provides an opportunity for the student to gain practical experience and demonstrate the knowledge, skills, and competencies obtained during the process of the training program in educational administration. It also furnishes the context of reality within which the student may acquire additional knowledge skills, and competencies as theory translated in the working world of the school system.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SU3 Basis

TLL 3096 - CURRICULUM ISSUES IN MATHEMATICS AND SCIENCE EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course examines ideas that lie at the intersection of research in mathematics and science education, curriculum research, and education policy. Specifically, the course will focus on research that is or will become relevant for the new policy climate created by the common core state standards (CCSS) and the next generation science standards (NGSS). We will begin by examining the CCSS and NGSS, analyzing their similarities and differences from past standards, and chronicling the assessment and curricular activities that have followed in their wake. We will then identify ways in which research conducted during past standards-based eras (e.g., the first and second cycles of NCTM standards; state standards in the NCLB era) can inform the direction of state and district policies surrounding curriculum and assessments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3097 - SUPERVISED RESEARCH

Minimum Credits: 1
Maximum Credits: 6
Student demonstrates ability to apply research skills by planning and completing a research project under the direction of an appropriate faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 3098 - DIRECTED STUDY - SCIENCE

Minimum Credits: 1
Maximum Credits: 9

The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

TLL 3099 - DOCTORAL DISSERTATION RESEARCH - SCIENCE

Minimum Credits: 1
Maximum Credits: 15
The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

TLL 3101 - COMPETENT MANAGEMENT OF FISCAL RESOURCES

Minimum Credits: 3
Maximum Credits: 3
This is a required course for all students in administrative studies which reviews and analyzes major issues and the means for managing institutional resources in education. Emphasis is placed on fiscal, human, and physical resources in both basic and higher education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3102 - TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Practicum will entail curriculum planning; co-teaching; office hours; grading; weekly planning for course activities coinciding with course readings; and facilitating in-class discussions.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

TLL 3114 - COMPETENT MANAGEMENT OF STUDENT PERSONNEL SERVICES

Minimum Credits: 3
Maximum Credits: 3
Schools have a responsibility for students' health and safety while they are at school. Students who successfully complete this course will demonstrate their knowledge of research-based approaches to apply in accordance with Pennsylvania law in the areas of health, mental health, safety, and crisis management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

TLL 3116 - COMPETENT MANAGEMENT OF HUMAN RESOURCES

Minimum Credits: 3
Maximum Credits: 3
This course presents a review of organization theories as they apply to schools and universities. Topics include organizational typologies, competing models of organizational structure, organization-environment linkages, and the evaluation of organizational effectiveness.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

TLL 3248 - SPECIAL TOPICS-LANGUAGE AND LITERACY

Minimum Credits: 1
Maximum Credits: 3
A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

TLL 3291 - SUPERVISED RESEARCH-LANGUAGE, LITERACY, AND CULTURE

Minimum Credits: 1
Maximum Credits: 6
The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and preparation of a written report of a research project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

TLL 3295 - DIRECTED STUDY IN LANGUAGE, LITERACY, AND CULTURE

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out a study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 3296 - DOCTORAL DISSERTATION RESEARCH - LANGUAGE LITERACY AND CULTURE

Minimum Credits: 1
Maximum Credits: 9
The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.
Academic Career: Graduate
Course Component: Full Time Dissertation
Grade Component: Grad HSU Basis

TLL 3298 - DIRECTED STUDY - READING

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 3299 - DOCTORAL DISSER RES - READING

Minimum Credits: 1
Maximum Credits: 15
The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee,

completes the proposed study, and defends the completed draft in a dissertation final oral examination.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

TLL 3391 - SUPERVISED RESEARCH IN LLC

Minimum Credits: 1
Maximum Credits: 9
The student works collaboratively with a sponsoring faculty member in carrying out a research project.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

TLL 3398 - DIRECTED STUDY IN LLC

Minimum Credits: 1
Maximum Credits: 6
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

TLL 3399 - DOCTORAL DISSERTATION RES IN ENG

Minimum Credits: 1
Maximum Credits: 18
The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

TLL 3452 - DISCIPLINING ENVIRONMENTAL EDUCATION: USING DIGITAL STORYTELLING TO UNPACK ENVIRONMENTAL ISSUES

Minimum Credits: 1
Maximum Credits: 1
In other parts of the world, such as Finland, environmental education is infused throughout the curriculum in history, science, technology, and math. This pop-up course serves as one way to provide a platform for Pitt students to experience Finnish nature schools in their backyard. The goal of the pop-up classes will be to provide a space for developing student projects at both the undergraduate and graduate levels. This course is geared for students interested in authoring visual content and testing the productive tensions of this new media. During the pop-up classes, we will establish a student-led AR/VR authoring club, training sessions for students, and work to amplify and circulate our content across our local and global communities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

TLL 3460 - IDENTITY AND POWER IN STEM

Minimum Credits: 3
Maximum Credits: 3
In this course we will grapple with how identity and power are intertwined in the STEM field, through personal reflection, theoretical

discourse and scholarly practice. We will begin our scholarly journey at the personal level and then go on to explore the current context of STEM in terms of identity and power. Our collective inquiry will be focused on understanding who we are in STEM, through exploring our own understanding of STEM and wrestling with why we chose a path along this scholarly trajectory. Additionally, we will examine how STEM, as a field, is experienced across different intersections of identity (race, class, gender, ability, etc.). Finally, we will analyze the ways power operates within the systemic framing of STEM as a discipline, to develop a deeper understanding of our own paths in STEM education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3461 - JUSTICE AND STEM

Minimum Credits: 3
Maximum Credits: 3
In this course, we will explore the historical and socio-political context of STEM and grapple with how STEM can be relevant to education justice and liberation. We will begin our scholarly journey at the systemic level, and explore future possibilities for our field in terms of justice. Through this process, we will consider how our own practice can be transformed and how we can collectively shape the STEM field and conversations within it. We will engage with critical theories to build our analysis of STEM in a broader context of education and society. Our inquiry will be framed by principles of justice that work against status quo logics and toward collective liberation. We will follow our questions to discern ways that STEM is complicit in systemic injustices, and explore possibilities for more just STEM futures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3462 - STEM PEDAGOGIES

Minimum Credits: 3
Maximum Credits: 3
In this course we will wrestle with our approaches to and understanding of instruction and learning in STEM education. We will develop an aptitude for designing STEM pedagogy in connection with learning theories. Through this examination we will also grapple with how concepts from each disciplinary element of STEM (i.e. Science, Technology, Engineering and Math) are connected through interdisciplinary/transdisciplinary pedagogy. Finally, we will explore different knowledge traditions that can contribute to rich, critical and relational STEM educational discourse.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3463 - POLICY AND LEADERSHIP IN STEM

Minimum Credits: 3
Maximum Credits: 3
In this course we will consider how policy and leadership influence STEM education. Through this process, we will explore the regulatory and governing landscapes of STEM, and ask critical questions about the motivations and imaginations that shape these systems, from national policy agendas to classroom assessment criteria. Our inquiry will focus on grappling with our role as educators, and leaders in the STEM field, in order to develop a richer understanding of our agency and responsibility in determining the blueprint for STEM futures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3470 - IDENTITY AND POWER IN STEM

Minimum Credits: 3
Maximum Credits: 3
In this course we will grapple with how identity and power are intertwined in the STEM field, through personal reflection, theoretical discourse and scholarly practice. We will begin our scholarly journey at the personal level and then go on to explore the current context of

STEM in terms of identity and power. Our collective inquiry will be focused on understanding who we are in STEM, through exploring our own understanding of STEM and wrestling with why we chose a path along this scholarly trajectory. Additionally, we will examine how STEM, as a field, is experienced across different intersections of identity (race, class, gender, ability, etc.). Finally, we will analyze the ways power operates within the systemic framing of STEM as a discipline, to develop a deeper understanding of our own paths in STEM education.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3471 - JUSTICE AND STEM

Minimum Credits: 3
Maximum Credits: 3
In this course, we will explore the historical and socio-political context of STEM and grapple with how STEM can be relevant to education justice and liberation. We will begin our scholarly journey at the systemic level, and explore future possibilities for our field in terms of justice. Through this process, we will consider how our own practice can be transformed and how we can collectively shape the STEM field and conversations within it. We will engage with critical theories to build our analysis of STEM in a broader context of education and society. Our inquiry will be framed by principles of justice that work against status quo logics and toward collective liberation. We will follow our questions to discern ways that STEM is complicit in systemic injustices, and explore possibilities for more just STEM futures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3474 - COLLEGE SCIENCE TEACHING PRACTCM

Minimum Credits: 3
Maximum Credits: 3
Issues associated with higher education in the science disciplines are explored to develop a perspective for the college science instructor. Supervised teaching handout preparation, cognitive patterns of the adult, and evaluation of learning are studied.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

TLL 3475 - STEM PEDAGOGIES

Minimum Credits: 3
Maximum Credits: 3
In this course we will wrestle with our approaches to and understanding of instruction and learning in STEM education. We will develop an aptitude for designing STEM pedagogy in connection with learning theories. Through this examination we will also grapple with how concepts from each disciplinary element of STEM (i.e. Science, Technology, Engineering and Math) are connected through interdisciplinary/transdisciplinary pedagogy. Finally, we will explore different knowledge traditions that can contribute to rich, critical and relational STEM educational discourse.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3476 - POLICY & LEADERSHIP IN STEM

Minimum Credits: 3
Maximum Credits: 3
In this course we will consider how policy and leadership influence STEM education. Through this process, we will explore the regulatory and governing landscapes of STEM, and ask critical questions about the motivations and imaginations that shape these systems, from national policy agendas to classroom assessment criteria. Our inquiry will focus on grappling with our role as educators, and leaders in the STEM field, in order to develop a richer understanding of our agency and responsibility in determining the blueprint for STEM futures.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3491 - SUPERVISED RESEARCH - MATH

Minimum Credits: 1
Maximum Credits: 6
The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and in the preparation of a written report of a research project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

TLL 3498 - DIRECTED STUDY - MATH

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out a study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 3499 - DOCTORAL DISSERTATION RESEARCH - MATH

Minimum Credits: 1
Maximum Credits: 15
The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

TLL 3501 - WEB FINANCING SPECIAL EDUCATION

Minimum Credits: 1
Maximum Credits: 1
This web-based course is designed to provide prospective special education supervisors with an overview of the development and content of mandated special education plans for school districts and intermediate units and to link those plans to the development of a comprehensive special education budget.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Online

TLL 3509 - ADV SEMINAR: EARLY INTERVENTION

Minimum Credits: 3
Maximum Credits: 3
This course will acquaint students with the latest research in early education and will apply those findings to infants, toddlers and preschoolers with disabilities.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

TLL 3526 - PRACTICUM IN COLLEGE TEACHING

Minimum Credits: 1
Maximum Credits: 3
Students prepare and teach a course under the direct super vision of a faculty member.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

TLL 3536 - SINGLE SUBJECT RESEARCH

Minimum Credits: 3
Maximum Credits: 3
Course covers single subject research methodology applied in studies involving exceptional populations.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

TLL 3540 - DESIGN OF EDUCATIONAL SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
To develop successful educational innovations, a systems view must be taken, analyzing instructional goals, constraints and resources, considering alternative approaches to conveying ideas, motivating students, and guiding students to instructional objectives. Students will work in teams to enact an innovative educational design process with real projects and real clients. In the past, educational systems being (re)designed included museum exhibits, high school robotics units, afterschool digital literacy workshops, college lab courses, processes for selecting student assessments tools, and a professional development sequence for mathematics teachers. Throughout the process we will be learning about and addressing constraints from (1) organizational and policy contexts; (2) learning sciences; and (3) disciplinary content. The course will be interdisciplinary in that it will draw students with diverse backgrounds to form the design teams.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3541 - WEB INSTRNL PRACTICES SP EDUC

Minimum Credits: 3
Maximum Credits: 3
This web-based course focuses on the most current research on instructional practices for students with disabilities and prepares the prospective supervisor for what should be happening in special education classrooms and in the pro vision of special education services.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Online

TLL 3542 - WEB CURRNT ISSUES & TRENDS SP ED

Minimum Credits: 3
Maximum Credits: 3
This web-based course focuses on philosophical issues as well as research findings that impact on the education of persons with disabilities. Through critical analysis of assigned readings, the course facilitates a thorough understanding of various points of view on the education of students with disabilities.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Attributes: Online

TLL 3548 - SPECIAL TOPICS-SPEC EDUCATION

Minimum Credits: 1
Maximum Credits: 3
A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 3564 - APPLIED BEHAVIORAL ANALYSIS 1: FUNDAMENTALS 1

Minimum Credits: 3
Maximum Credits: 3
This is the first in a series of five courses designed to meet the total academic requirements for board certification in behavior analysis. This course focuses on defining applied behavior analysis, selecting, assessing and evaluating behavior to change, and functional and experimental analyses of behavior change. The primary goal of this and the second course is to provide students with a complete, accurate, and contemporary view of applied behavior analysis, and how functional analysis can be used to understand socially significant behaviors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3565 - APPLIED BEHAVIORAL ANALYSIS 2: FUNDAMENTALS 2

Minimum Credits: 3
Maximum Credits: 3
This is the second of five courses meeting the total course requirements for board certification as a behavior analyst. This course focuses on the development of new behaviors, various clinical interventions for decreasing interfering behavioral, and maintaining behavioral changes. The instructor presumes that students have limited or no background experiences with applied behavior analysis. Some students will have already completed the fundamentals 1 course. The primary goal of this and the first course is to provide students with a complete, accurate, and contemporary view of applied behavior analysis, and how functional analysis can be used to understand socially significant behaviors.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3566 - APPLIED BEHAVIORAL ANALYSIS 3: APPLICATIONS IN DEVELOPMENTAL DISABILITIES

Minimum Credits: 3
Maximum Credits: 3
This is the third of five courses meeting the total academic requirements for board certification as a behavior analyst. This course focuses on the application of principles and procedures covered in IL 2564 and IL 2565 to a wide range of behavior disorders in individuals with developmental disabilities.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3567 - APPLIED BEHAVIORAL ANALYSIS 4: EMOTIONAL BEHAVIORAL DISABILITIES OF CHILDREN AND ADOLESCENTS

Minimum Credits: 3
Maximum Credits: 3
This is the fourth of five courses meeting academic requirements for board certification as a behavior analyst. This course focuses on etiology, analysis, assessment and intervention for mental health disorders of childhood and adolescence with an emphasis on an applied behavior analysis of disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3568 - APPLIED BEHAVIORAL ANALYSIS 5: CURRENT DEVELOPMENTS IN ABA

Minimum Credits: 3
Maximum Credits: 3
This is the fifth and final course meeting the total academic requirements for board certification as a behavior analyst. This course is specifically focused on a number of advanced topics, including verbal behavior, ethics, and parent training.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
The applied behavior analysis practicum provides students with intensive opportunities to learn and practice the various roles of a behavior analyst in a variety of different settings and to demonstrate competence as a beginning applied behavior analyst. Opportunities will include conducting assessment activities related to the need for behavioral interventions, designing, implementing and monitoring behavior analysis activities, overseeing implementation of behavior analysis programs by others, and other activities typically performed by a behavior analyst such as attending planning meetings and researching the literature to prepare a behavioral intervention. Each student will work closely with an assigned university supervisor and a mentoring professional from their individual placement site during the practicum. The practicum requires group seminar supervision, individual supervision, on-site observations, and small group supervision in amounts determined by the behavior analysis certification board (BACB) standards. The accompanying practicum seminar allows students to share experiences and knowledge gained in placement sites, as well as to seek support and ideas from classmates.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

TLL 3571 - SUPERVISION AND FINANCING OF SPECIAL EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course reviews problems and practices in special education supervision. Emphasis is placed in increasing interpersonal skills and developing technical skills in observing, planning and evaluating instruction. The course is designed to provide prospective special education supervisors with an overview of the development and content of mandated special education plans for school districts and intermediate units and to link those plans to the development of a comprehensive special education budget.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Online

TLL 3577 - BRIDGE COURSE: BCBA CURRICULUM EDITION 3 TO 4

Minimum Credits: 2
Maximum Credits: 3
This course is designed to update the competencies of edition 3 of the board certified behavior analyst curriculum to edition 4 of the curriculum so that individuals who took all or part of their ABA studies under edition 3 may sit for the national exam under the current

edition 4. The course will address 10 topics such as direct instruction, incidental teaching, alternative and augmentative communication, MAND training, precision teaching. The required competencies (e.g. measurement and data analysis; change systems; implementation, management and supervision; intervention and behavior change considerations) will be distributed across each topic.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

TLL 3578 - APPLIED BEHAVIORAL ANALYSIS 6: ETHICS

Minimum Credits: 3
Maximum Credits: 3
This is one of six courses meeting the total academic requirements for board certification as a behavior analyst. This course focuses on ethical practices involving the application of principles and procedures covered in aba i through aba v. The ethical practices relate to working with individuals with autism spectrum disorders, developmental disabilities and other behavioral/emotional disorders.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 3564 and 3565

TLL 3579 - TREATMENT FIDELITY AND COACHING: AUTISM

Minimum Credits: 3
Maximum Credits: 3
This course will present information on the strategies used to monitor and enhance the accuracy and the delivery of evidence-based interventions for children with autism spectrum disorder (ASD) and other disabilities. The course will focus on defining intervention and implementation fidelity, exploring examples of the documentation, planning and assessment of treatment fidelity for evidence-based interventions, and learning skills for peer, parent, and supervisory coaching.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL or TLL 2505

TLL 3585 - TECHNOLOGY-BASED INTERVENTIONS: AUTISM

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the application of assistive technology to interventions for children with autism spectrum disorder (ASD) and other non-physical disabilities. The course addresses a) the principles of assistive technology (at), b) assessment of students for at, and c) the at continuum of low, mid, and high technology. A range of hardware (E.G., iPad, computers, specialized speech generating devices), software (E.G., iMovie, board maker), and interventions (E.G., Video modeling, alternative and augmentative communication strategies, academic skills) will be considered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3590 - RESEARCH SEMINAR IN SPECIAL EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course provides students with competencies necessary for utilizing and evaluating research in special education. Focus is on the critical analysis of research and examination of methodological and ethical considerations. Students in M/PD sections conduct single subject research.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

TLL 3591 - SUPRVSD RESEARCH IN SPECIAL EDUC

Minimum Credits: 1
Maximum Credits: 9
The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and in the preparation of a written report of a research project.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

TLL 3592 - SUPERVISION PRACTICUM IN SP ED

Minimum Credits: 1
Maximum Credits: 3
The student under faculty supervision works with prospective, beginning, or experienced teachers in the development of their professional supervision skills. This practicum may be completed in conjunction with the professional sequence of coursework in supervision at approved educational sites.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

TLL 3593 - RESEARCH PRACTICUM IN SPEC EDUC

Minimum Credits: 1
Maximum Credits: 3
Course is a field-based internship in research methodology. Purpose of the course is to provide opportunities for students to get hands-on experience and direct supervision in the development, implementation and dissemination of educational research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

TLL 3594 - INTERDISCIPLINARY LEADERSHIP SEMINAR DEVELOPMENTAL DISABILITY 1

Minimum Credits: 1
Maximum Credits: 3
This seminar provides the advanced master's or doctoral student with an opportunity to study and analyze with students and faculty from a variety of disciplines current issues affecting children with neurodevelopmental disabilities, their families, and their communities. Within a framework of family-centered and cross-cultural principles, the seminar examines issues related to advances in diagnosis, treatment, child development, service delivery, and policy/legislation. Leadership issues are also explicitly considered at the beginning and end of each term.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

TLL 3595 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
Students will address selected topics for study.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TLL 3596 - INTERNSHIP IN SPECIAL EDUCATION

Minimum Credits: 1
Maximum Credits: 3
An internship is proposed, then reviewed by faculty and implemented in varying types of special education settings.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

TLL 3598 - DIRECTED STUDY IN SP ED

Minimum Credits: 1
Maximum Credits: 6
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 3599 - DOCTRL DISSER RES - SPECIAL ED

Minimum Credits: 1
Maximum Credits: 15
The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

TLL 3702 - SPECIAL PROJECT FOREIGN LANGUAGE EDUCATION PHD

Minimum Credits: 1
Maximum Credits: 3
A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern in foreign language education. This course is designated for students to pursue independent research in foreign language education under the supervision of appropriate faculty member.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Attributes: Asian Studies

TLL 3791 - SUPERVISED RESEARCH - FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 6
The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and preparation of a written report of a research project.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis

TLL 3798 - DIRECTED STUDY - FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the

faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 3799 - DOCTORAL DISSERTATION RESEARCH - FOREIGN LANGUAGE

Minimum Credits: 1
Maximum Credits: 15
The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

TLL 3891 - SUPERVISED RES - SOCIAL STUDIES

Minimum Credits: 1
Maximum Credits: 6
The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and preparation of a written report of a research project.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TLL 3898 - DIRECTED STUDY - SOCIAL STUDIES

Minimum Credits: 1
Maximum Credits: 9
The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

TLL 3899 - DOCTRL DISSER RES-SOCIAL STUDIES

Minimum Credits: 1
Maximum Credits: 15
The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

TLL 3928 - WEB LEGL & LEGISLTV FDS OF SP ED

Minimum Credits: 3
Maximum Credits: 3
This course reviews the practical application of laws, regulations, court decisions, and public policy to the supervision of special education services and programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Telecommunications

TELCOM 2010 - COMPUTER NETWORKING LABORATORY

Minimum Credits: 3
Maximum Credits: 3
The objective of this lab-based course is to gain knowledge of fundamental computer networking issues through hands-on experiments with network equipment and services. The sequence of labs start at the physical layer and progress up the protocol stack to the application layer. Topics covered are signal generation and analysis at the physical layer, ethernet and wlan performance and management, ip address planning and management, ip router configuration including RIP, OSPF,BGP, MPLS protocols, TCP connection control, stateful packet filtering, network monitoring and management, signaling protocols for voip services, and web-based services configuration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2011 - TELECOMMUNICATIONS SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Exposure to the latest issues in the telecommunications industry and research through talks by invited experts.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2100 - FUNDAMENTALS OF TELECOMMUNICATIONS

Minimum Credits: 3
Maximum Credits: 3
Fundamentals of network technology based on a layered protocol stack. Telephone network and internet architecture. Summary of upper layer protocols (HTTP, SMTP), transport protocols (UDP, TCP), and network protocols (IP). Analysis of link layer protocols and their performance. Overview of local area networks (CSMA/CD and CSMA/CA). Introduction to cables and signals.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2110 - NETWORK DESIGN

Minimum Credits: 3
Maximum Credits: 3
Methods and techniques for the design of computer/telecommunication networks. Management and business perspectives on network design, estimation of traffic demand and application requirements, network cost analysis, topological design, capacity assignment, graph theory and optimization based design algorithms, virtual network design, network design tools, wireless network design issues, availability analysis and survivable network design.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: TELCOM 2000 or 2100 or INFSCI 1070 or (PLAN: Telecommunications TELCOM-MST/TCOMM-MST or Telecommunications Certificate TELCOM-AC/TCOMM-AC or Info Science PHD w/TELE option PHDTEL-TR)

TELCOM 2120 - NETWORK PERFORMANCE

Minimum Credits: 3
Maximum Credits: 3
Introduction to techniques for performance modeling and analysis of computer systems and communication networks. Analysis of measurements, discrete event simulation and queuing theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: TELCOM 2000 or 2100 or INFSCI 1070 or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2125 - NETWORK SCIENCE AND ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
This course explores networks as a primary metaphor and mechanism for a variety of information-related phenomena. The advancement of interconnected information and communication technologies has made networks one of the dominant ways of analyzing the use and flow of information among individuals, institutions, and societies. The course starts with the basics of graph theory and moves to understand network structures such as social networks, ecological webs, it and infrastructure systems, telecommunications networks, and market distribution and allocation structures. As a prerequisite, students should have a command of mathematics through linear and matrix algebra at the Undergraduate level.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/ TELE option (PHDTEL-TR)

TELCOM 2250 - COMMUNICATION SYSTEMS THEORY

Minimum Credits: 3
Maximum Credits: 3
The class Communication Systems Theory is a mix of primarily theory and some applications toward (i) understanding how modern communication links work (ii) building upon the theoretical foundations from signals and systems, stochastic processes and abstract algebra to see how they support the development of modern communications and (iii) applying these foundations for analyzing the performance of communication links.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

TELCOM 2310 - APPLICATIONS OF NETWORKS

Minimum Credits: 3
Maximum Credits: 3
Foundational principles, architectures, and techniques employed in computer networks. Protocols and mechanisms used in the internet TCP/IP protocol suite, including the operation of both wide-area and local-area networks. Special emphasis on analysis of network and transport layer protocols.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: CREQ; TELCOM 2200; or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2321 - WIDE AREA NETWORKS

Minimum Credits: 3
Maximum Credits: 3
Basic principles of broadband networks. Protocols suitable for broadband networks, with emphasis on atm. Other technologies, such as frame relay and SMDS. Design issues for high speed networks including network characterization, application performance guarantees, traffic policing and congestion control.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (NFSCI 1071 or TELCOM 2310) and TELCOM 2100; CREQ: TELCOM 2120; PROG: School of Information Science or Sch Computing and Information

TELCOM 2326 - ADVANCED TOPICS IN DATABASE MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Advanced graduate course on database systems. Key issues that typically arise in the context of large-scale enterprise database management in heterogeneous wide-area environments including distributed and non-relational database systems, networK-centric data management, web-based information systems, heterogeneous databases, information integration, and wireless data management.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: INFSCI 2710 or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2700 - INTRODUCTION TO WIRELESS NETWORKS

Minimum Credits: 3
Maximum Credits: 3
For students with a basic background of telecommunications who are not for telecom majors. Principles of wireless communications and how they differ from wired communications. Fundamental concepts including: transmission and mitigation techniques (e.g., Modulation and coding, propagation, interference and antennas) for wireless systems, multiplexing techniques, wireless system architectures, mobility management, security, protocols and location technology. Systems include: cellular phone networks (e.g., Cdma2000, umts), wireless local area networks (e.g., Ieee 802.11G), personal area networks (e.g., Bluetooth), fixed point broadband wireless (e.g., WiMAX) and satellite systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (TELCOM 2000 or 2100 or INFSCI 1070) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2727 - APPLICATION DEVELOPMEMT FOR MOBILE DEVICES

Minimum Credits: 3
Maximum Credits: 3
Focus on information system applications that run on top of wireless infrastructure such as multimedia messaging, mobile inventory control, location aware services including wireless technologies (gsm, cdma2000, umts, 802.11, Bluetooth), mobile information systems and applications (m-business, location-based services, wireless crn), wireless information system challenges and architectures (security, reliability, mobility, power conservation, gateways, proxies), mobile application protocols (SMS, ems, mms, wap), thin and thick client mobile application development (wml, vxml, Java, j2me, j2ee, .Netcf, c#), and business case studies of mobile applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: [(INFSCI 0017 or 0015 or CS 0401) and INFSCI 1052] or [PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Information Science PHD (ISCI-PHD)]

TELCOM 2810 - INFORMATION SECURITY AND PRIVACY

Minimum Credits: 3
Maximum Credits: 3
Fundamental issues and first principles of security and information assurance (confidentiality/privacy, integrity, authentication, identification, authorization, availability, access control). Business issues of risk analysis and management of resources. Issues in information systems security; analysis, design, and coding of information systems/ networks for security; techniques for building secure organizational systems; e-commerce related security issues; policy, legal and ethical issues in security.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2811 - INNOVATING FOR PUBLIC IMPACT

Minimum Credits: 3
Maximum Credits: 3
This course will teach students how to build products and services using lean methods. This will be done by solving real-world military and intelligence community problems. The course uses the lean launchpad platform for entrepreneurship. This is a highly customer-centered hypothesis-test approach to developing a mission modes, and is particularly well-suited for technology startups. It incorporates customer needs and user testing to build a minimum viable prototype. At the conclusion of the course, students will be able to understand the problems/needs of searching for product-market fit; understand all the stakeholders, deployment issues, costs, resources, and ultimate mission value; deliver minimum viable products that match customer needs in an extremely short time; produce a repeatable model that can be used to launch other potential technology solutions. This course was formerly titled HACKING FOR DEFENSE.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

TELCOM 2813 - SECURITY MANAGEMENT AND COMPUTER FORENSICS

Minimum Credits: 3
Maximum Credits: 3
Security management in information systems and networks. Intrusion detection systems, anomaly detection, network forensics, application logging, auditing and data management, contingency planning, digital immune systems; alarm and responses; security standards; ethical and legal issues in information; cyber-evidence.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (TELCOM 2810 or 2821 or INFSCI 2150) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2820 - CRYPTOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
Principles of number theory, cryptographic algorithms and cryptanalysis. Steganography, block and stream ciphers, secret key encryption (des, res, re-n), primes, random numbers, factoring, and discrete logarithms. Public key encryption (rsa, Diffie-Helman, elliptical curve cryptography, n'tru); key management, hash functions (md5, sha-1, ripemd-160, HMAC).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (TELCOM 2000 or 2100 or INFSCI 1070) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2821 - NETWORK SECURITY

Minimum Credits: 3
Maximum Credits: 3
This course introduces students to the principles, technologies, and best practices for protecting data and communications across modern networked environments. The course explores the design and operation of secure network architectures, threat models, and defense mechanisms that safeguard confidentiality, integrity, availability, and authenticity. Topics include cryptographic foundations, secure network protocols, authentication and access control, firewalls, intrusion detection and prevention, and emerging issues in network security.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (TELCOM 2810 or 2820 or INFSCI 2150) and (TELCOM 2000 or 2100 or IS 1070) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2825 - INFORMATION SYSTEMS AND NETWORK INFRASTRUCTURE PROTECTION

Minimum Credits: 3
Maximum Credits: 3
Techniques for the protection and survivability of information systems and networks. Critical infrastructure definition, risk management, vulnerability and risk analysis, fault and attack trees, availability analysis, traffic restoration schemes and survivable network design and management techniques; critical infrastructure simulation, CIP policy and legal issues, SCADA systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: (TELCOM 2000 or 2100 or 2810 or INFSCI 1070 or 2150) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2921 - INDEPENDENT STUDY IN NETWORKING

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2922 - INDEPENDENT STUDY IN COMMUNICATION SYSTEMS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2923 - INDEPENDENT STUDY: COMPUTER COMMUNICATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2924 - INDEPENDENT STUDY: TELECOMMUNICATIONS ADMINISTRATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2925 - INDEPENDENT STUDY: TELECOMMUNICATIONS ECONOMICS AND POLICY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2926 - INDEPENDENT STUDY: HUMAN COMMUNICATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2927 - INDEPENDENT STUDY IN WIRELESS COMMUNICATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2928 - INDEPENDENT STUDY SECURITY ASSURED INFORMATION SYSTEMS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2931 - SPECIAL TOPICS IN NETWORKING

Minimum Credits: 3
Maximum Credits: 3
Selected relevant subjects in networking, either as a traditional course or as a survey of new literature. Content varies depending on student and instructor interest.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2937 - SPECIAL TOPICS IN WIRELESS NETWORKS

Minimum Credits: 3
Maximum Credits: 3
Selected relevant subjects in wireless telecommunications, either as traditional course or as survey of new literature. Content varies depending on student and instructor interest.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Science; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2940 - PRACTICUM

Minimum Credits: 1
Maximum Credits: 3
For students who desire experience in applying the knowledge and skills acquired in their course work and laboratory sessions. Students are responsible for arranging a practicum with a business or organization.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

TELCOM 2941 - MASTER'S THESIS

Minimum Credits: 3
Maximum Credits: 6
The thesis is a report of original, theoretical, or laboratory work suitable for publication.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

TELCOM 2982 - TELECOMMUNICATIONS COOPERATIVE PROGRAM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

Theatre Arts

THEA 1392 - SPECIAL TOPICS IN PERFORMANCE

Minimum Credits: 3
Maximum Credits: 3
This course covers a specialized topic in Theatre Arts. Topics vary every semester. Current course descriptions can be found in the notes section.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

THEA 2000 - RESEARCH AND THESIS MASTER'S DEGREE

Minimum Credits: 1
Maximum Credits: 12

Individual research designed by the MA students in connection with their Master's Degree Thesis.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

THEA 2100 - PEDAGOGY AND PROFESSIONALIZATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

THEA 2110 - SECONDARY EMPHASIS - PEDAGOGY

Minimum Credits: 1
Maximum Credits: 3
The student will focus on an area of specialization designed to supplement foundational performance pedagogy. Under supervision and advisement from faculty, the student will choose an area of specialization (which may include voice, movement, advanced acting techniques, stage combat, directing, etc.) Based on their own present experiences and create a strategy and timeline for completion of chosen goals. The quantity of knowledge and experience to be achieved will be discussed between the advisor and student at the beginning of the course. The student will meet with their advisory on a regular basis and write a research or response paper summarizing and analyzing their experience.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

THEA 2120 - PRODUCTION MENTORSHIP

Minimum Credits: 1
Maximum Credits: 6
The student will serve as actor, director, coach or other supportive function of a main-stage production at the University of Pittsburgh. This role will include active mentorship and teaching of undergraduate performers. Under supervision and advisement from faculty, the student will create a syllabus outlining their own research questions for their mentorship role on the production and how it may inform their own pedagogical practices. The student will write a research or response paper summarizing and analyzing their experience.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

THEA 2135 - COURSE DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Course content to be decided between teacher and student.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

THEA 2145 - DIRECTED STUDY-DRAMATURGY

Minimum Credits: 1
Maximum Credits: 3
Faculty directed supervision in the study of the dramaturgy in the theatre.
Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad Letter Grade

THEA 2147 - TECHNIQUES PERFORMANCE PEDAGOGY

Minimum Credits: 3
Maximum Credits: 3
Techniques in Performance Pedagogy is designed for graduate students to address the unique needs of teaching theatre performance at the college level. Students will examine various Stanislavski-based training methods and compare those methods with physical and/or ensemble-based methodologies as they apply to university training programs (in a BA, BFA or MFA program). Students will formulate their own style and teaching philosophy as they develop lesson plans, create innovative pedagogical exercises, conduct warm up sessions, coach acting scenes and develop methods of grading performance work. In addition, students will create a sample master class in order to be competitive on the academic job market.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

THEA 2149 - PROFESSIONAL ORIENTATION

Minimum Credits: 1
Maximum Credits: 3
Experimental learning credits based outside of the university. Focus on some aspect of performance that substantiates the pedagogical experience.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

THEA 2150 - DIRECTED STUDY-ACTING

Minimum Credits: 1
Maximum Credits: 3
Faculty directed supervision in the study of the theory, preparation and execution of acting in the theatre.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

THEA 2155 - DIRECTED STUDY - PEDAGOGY

Minimum Credits: 1
Maximum Credits: 3
Faculty directed supervision in the study of the theory and practice of education in the theatre.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

THEA 2156 - DIRECTED STUDY - PLAYWRITING

Minimum Credits: 1
Maximum Credits: 3
With a mentor, students design an individualized plan of study focused on developing their knowledge and skills of playwriting.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

THEA 2160 - DIRECTED STUDY-DIRECTING

Minimum Credits: 1
Maximum Credits: 3
Faculty directed supervision in the study of the theory, preparation and execution of directing in the theatre.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

THEA 2161 - DIRECTING 1

Minimum Credits: 3
Maximum Credits: 3
Graduate directing supervised by faculty member.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

THEA 2168 - NEW PLAY PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
New Play Practicum is a course in critiquing and revising student scripts, testing them in rehearsal for pacing and blocking and motivation, and then trying them before an invited audience. It provides opportunity to write, direct, act, and critique. The course benefits from those who are both writers and performers but an ideal grouping would be as much as four writers, four directors, and six to eight performers.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Capstone Course

THEA 2170 - DIRECTED STUDY-SET, COSTUME, LIGHTS

Minimum Credits: 1
Maximum Credits: 9
Faculty directed supervision in the study of theory, preparation, and execution of design for the theatre.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

THEA 2187 - DIRECTED STUDY - OBSERVATIONS IN PERFORMANCE PEDAGOGY

Minimum Credits: 1
Maximum Credits: 3
Directed Study - Observations in Performance Pedagogy
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

THEA 2194 - DIRECTED STUDY - CAREER DEVELOPMENT IN PERFORMANCE PEDAGOGY

Minimum Credits: 1
Maximum Credits: 3
Directed Study - Career Development in Performance Pedagogy
Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad Letter Grade

THEA 2200 - DIRECTED STUDY-HISTORY,LITERATURE,CRITICISM,THEORY

Minimum Credits: 1
Maximum Credits: 12
Faculty directed supervision in the study of history, literature, criticism and theory of the theatre.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

THEA 2202 - THEORIES OF THEATRE AND DRAMA

Minimum Credits: 3
Maximum Credits: 3
This course covers a specialized topic in Theatre Arts. Topics vary every semester. Current course descriptions can be found in the notes section.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

THEA 2205 - WORLD THEATRE: 500 BCE TO 1640

Minimum Credits: 3
Maximum Credits: 3
World Theatre 500 BCE to 1640 is the first in a three-part world theatre history sequence designed to explore the development of dramatic forms, theatre practices, and performances from the 5th century BCE to today. World Theatre 500 BCE to 1640 investigates histories of theatre and performance (scripts, embodiment, design, audiences, conventions, cultural functions, etc.) within local and global social, artistic and political contexts. The course focuses on evidence and interpretation as well as historical causation. Within each survey section, we will analyze and compare representative case studies to better understand performance as a practice and as a site of history making, with particular attention to questions of race, gender, sexuality, and class. Throughout the semester, we will explore a variety of theatre and performance forms, including Roman comedy, early Sanskrit drama, medieval commemorative drama, and Japanese theatre forms including Noh and Kabuki, among others. We will investigate world theatre history from a historiographical perspective. This means that we will examine our material not only for content, but also for how it conveys that content. In our exploration of how theatre history is crafted, we will develop critical historical skills and tools, including how to ask historical questions, assess primary sources, critique narratives, and clearly communicate our historiographical ideas and arguments. Students will produce historical knowledge about theatre and performance with respect to questions of racial, gender, sexual, and class diversity throughout the semester.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Medieval & Renaissance Studies, West European Studies

THEA 2206 - WORLD THEATRE: 1640 - 1890

Minimum Credits: 3
Maximum Credits: 3
World Theatre 1640 - 1890 is the second in a world theatre history sequence designed to explore the development of dramatic forms, theatre practices, and performance from the fifth century B.C.E. to today. We will discuss histories of theatre and performance (scripts, design, audiences, conventions, cultural functions, etc.) within contexts of social, artistic, economic, and political events, both local and global. The survey is split into five sections that focus on key themes, questions, and narratives in world theatre history. Within each section, we will analyze and compare representative case studies to better understand performance as a practice and as a site of history making. We also will question how theatre and performance helps produce, reinforce, and challenge understandings of race, gender, class, and sexuality throughout the world. Throughout the semester, we will explore a variety of theatre and performance forms, including seventeenth century French comedy, bunraku, Beijing opera, indigenous performance in the Americans, transatlantic anti-slavery

performances, melodrama, and realism among others. We will investigate world theatre history from a historiographical perspective. This means that we will examine our material not only for content, but also for how it conveys that content. We will question how the construction of theatre history impacts the perspectives and performances included and excluded in our narratives as well as reflects and generates ideas about race, gender, sexuality, and class. In our exploration of how theatre history is crafted, we will develop critical historical skills and tools, including how to ask historical questions, assess primary sources, critique narratives, and clearly communicate our historiographical ideas and arguments. In the process, we will reflect on our own roles in the production of historical knowledge, especially in relation to race, gender, class, and sexuality.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Medieval & Renaissance Studies, West European Studies

THEA 2207 - WORLD THEATRE: 1890-PRESENT

Minimum Credits: 3
Maximum Credits: 3
World Theatre 1890-present is the third in a world theatre history sequence designed to explore the development of dramatic forms, theatre practices, and performance from the fifth century B.C.E. to today. We will discuss histories of theatre and performance (scripts, design, audiences, conventions, cultural functions, etc.) within contexts of social, artistic, economic, and political events, both local and global. The survey will focus on representative case studies that will help us examine broader themes, questions, and narratives in world theatre history. We also will question how theatre and performance helps produce, reinforce, and challenge understandings of race, gender, class, and sexuality throughout the world. Throughout the semester, we will explore a variety of theatre and performance forms, including avant-garde performances in Europe, indigenous performance in the Americas, political theatre in South Africa, musical and dance performances in Japan, and hip-hop performance in the United States, among others. We will investigate world theatre history from a historiographical perspective. This means that we will examine our material not only for content, but also for how it conveys that content. In our exploration of how theatre history is crafted, we will develop critical historical skills and tools, including how to ask historical questions, assess primary sources, critique narratives, and clearly communicate our historiographical ideas and arguments. In the process, we will reflect on our own roles in the production of historical knowledge, especially in terms of generating understandings of race, gender, class, and sexuality.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

THEA 2216 - ADVANCED THEORY AND METHODOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course covers a specialized topic in Theatre Arts. Topics vary every semester. Current course descriptions can be found in the notes section.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

THEA 2220 - PLAYWRITING 2

Minimum Credits: 3
Maximum Credits: 3
Playwriting II advances beyond and builds upon the craft exercises and 20 page one acts of Playwriting I to workshop students' ongoing projects. This work might take the form of a brace or trio of one acts, an hour long portion of a full length play, or other projects to be approved by the instructor. Workshop method. Revision required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

THEA 2980 - COMPREHENSIVE EXAM PREP

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

THEA 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
The instructor and the student will work together concerning the course content.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

THEA 2991 - PROFESSIONAL INTERNSHIP-PLAYWRITING

Minimum Credits: 1
Maximum Credits: 6
Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis

THEA 2992 - PROFESSIONAL INTERNSHIP-DRAMATURGY

Minimum Credits: 1
Maximum Credits: 6
Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis

THEA 2993 - PROFESSIONAL INTERNSHIP-DIRECTING

Minimum Credits: 1
Maximum Credits: 6
Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis

THEA 2994 - PROFESSIONAL INTERNSHIP-ACTING

Minimum Credits: 1
Maximum Credits: 6
Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.
Academic Career: Graduate

Course Component: Internship
Grade Component: Grad LG/SNC Basis

THEA 2995 - PROFESSIONAL INTERNSHIP-DESIGN

Minimum Credits: 1
Maximum Credits: 6
Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis

THEA 2996 - PROFESSNL INTERNSHIP-STAGE MANAGEMENT

Minimum Credits: 1
Maximum Credits: 6
Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis

THEA 2997 - PROFESSIONAL INTERNSHIP-THEATER BUSINESS MANGEMENT

Minimum Credits: 1
Maximum Credits: 6
Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis

THEA 2998 - PROFESSIONAL INTERNSHIP-TECHNOLOGY

Minimum Credits: 1
Maximum Credits: 6
Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad LG/SNC Basis

THEA 3000 - DISSERTATION RESEARCH PHD DEGREE

Minimum Credits: 1
Maximum Credits: 12
Individual research designed by the Ph.D. student in connection with his or her dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Turkish

TURKSH 0200 - TURKISH 2

Minimum Credits: 3
Maximum Credits: 3
This course builds on the foundations established in TURKSH 0100: Turkish 1, guiding students toward greater proficiency in spoken and written Turkish while further developing the linguistic and cultural competencies essential for becoming a confident world language speaker. Students will expand their everyday vocabulary and deepen their command of speaking, listening, reading, and writing through a communicative, proficiency-based approach aligned with ACTFL guidelines. Cultural learning remains central to the curriculum, with continued attention to the diverse traditions, social norms, and practices that shape language use in the Turkish-speaking world. Each session features learner-centered activities and clearly defined learning objectives designed to strengthen communicative competence across a range of everyday situations for real-world communication. This course can be applied towards the minor in Turkish.
Academic Career: Undergraduate
Course Component: Lecture
Grade Component: LG/SNC Elective Basis

TURKSH 2909 - SPECIAL TOPICS IN TURKISH

Minimum Credits: 3
Maximum Credits: 3
This course will be a Topics course, meaning that the specific content of the course will change each time the course is offered. The course is at a graduate level so that graduate students interested in the offered topic can more easily take the course.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Urology

URLGY 5321 - UROLOGIC ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
This four-week elective is intended for the less experienced medical student to provide a hands-on experience in a surgical specialty. Students will be exposed to the urology service working closely with both attending and resident staff. Time will be spent in the outpatient clinic, operating room, and on the inpatient floors to provide exposure to all aspects of the practice of urologic surgery. The focus is on urologic oncology but students will also have exposure to patients with a wide range of general urologic diseases. The course objectives are: to learn to take a urologic history and perform a focused urologic physical examination; to develop experience in the performance of basic urologic procedures, possibly even to include cystoscopy; to become familiar with the proper evaluation and treatment of common urologic diseases such as prostate cancer, bladder cancer, benign prostatic hyperplasia, and urolithiasis; and to develop expertise in the role and interpretation of a wide array of imaging studies utilized in urology.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

URLGY 5465 - INTRODUCTION TO UROLOGY

Minimum Credits: 0
Maximum Credits: 0
This two-week elective is designed to give a broad overview of Urology. Students will attend weekly conference, observe different types of urologic surgery, observe the urology consult service, and attend outpatient clinic where they will have the opportunity to hone their skills in the male genitourinary exam. Students will see all subspecialties of Urology including general, oncology, endourology, pediatrics, and female pelvic reconstructive surgery.
Academic Career: Medical School

Course Component: Clinical
Grade Component: S/U Basis

URLGY 5470 - UROLOGICAL SURGERY (ADULT)

Minimum Credits: 0
Maximum Credits: 0
Four-week clinical clerkships in urology. Rotations through more than one hospital may be elected. The clerkship stresses inpatient and outpatient experience as an acting intern.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

URLGY 5471 - PEDIATRIC UROLOGICAL SURGERY

Minimum Credits: 0
Maximum Credits: 0
Four-week clinical elective. Student closely involved in evaluation and care of both inpatient and outpatient. Weekly pediatric urology/pediatric surgery/radiology conference will be attended in addition to weekly conferences. Student may participate in lab research.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

URLGY 5475 - INTROUCTION TO ROBOTIC SURGERY UROLOGY ELECTIVE

Minimum Credits: 0
Maximum Credits: 0
This two-week elective is designed to give an overview of Robotic Surgery across multiple specialties, with emphasis in Urology. Students will attend a weekly conference to discuss minimally invasive surgical cases in Urology, attend didactic lectures discussing robotic surgery technology and discuss the rationale behind utilization of robotic surgery. Additionally, students will complete a robotic surgery simulator curriculum and observe different types of robotic urologic surgery, general surgery, gynecologic surgery, and thoracic surgery.
Academic Career: Medical School
Course Component: Clinical
Grade Component: S/U Basis

URLGY 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

URLGY 5810 - UROLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0
This four-week elective will allow the student to gain valuable experience in urological surgery. The student will be given the opportunity to learn research techniques and to participate in research in progress.
Academic Career: Medical School
Course Component: Directed Studies

Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

URLGY 5899 - INDEPENDENT STUDY IN UROLOGY

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

URLGY 5900 - EXTRAMURAL UROLOGIC SURGERY

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in urologic surgery may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Vietnamese

VIET 2909 - SPECIAL TOPICS IN VIETNAMESE

Minimum Credits: 3
Maximum Credits: 3
This course will be a Topics course, meaning that the specific content of the course will change each time the course is offered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CMMATH 0801 - ADVANCED TOPICS IN DISCRETE MATHEMATICS

Minimum Credits: 4
Maximum Credits: 4
The purpose of cross-registration through the Pittsburgh Council of Higher Education (PCHE) is to provide opportunities for enriched educational programs by permitting undergraduate and graduate full-time students at any of the ten participating colleges and universities to take courses at any other PCHE institution.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMSB 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON

Minimum Credits: 3
Maximum Credits: 3
This course will introduce students to a selection of popular python packages used in bioinformatics and computational and systems

biology. Students will be graded on programming assignments. Each assignment will explore a different sub-discipline of computational biology and introduce students to a new python package. There will be two 1.5 hour lectures a week which will often include an in-class practical exercise. There are weekly programming assignments and a final project and presentation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CMSB 2080 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific research project in the dissertation laboratory prior to admission to candidacy for the doctorate.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

CMSB 3090 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a dissertation for a doctoral degree.
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad SN Basis

DUACCT 0812 - NON-PROFIT AND GOVERNMENTAL ACCOUNTING

Minimum Credits: 3
Maximum Credits: 3
THE PURPOSE OF CROSS-REGISTRATION THROUGH THE PITTSBURGH COUNCIL OF HIGHER EDUCATION (PCHE) IS TO PROVIDE OPPORTUNITIES FOR ENRICHED EDUCATIONAL PROGRAMS BY PERMITTING UNDERGRADUATE AND GRADUATE FULL-TIME STUDENTS AT ANY OF THE TEN PARTICIPATING COLLEGES AND UNIVERSITIES TO TAKE COURSES AT ANY OTHER PCHE INSTITUTION.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2078 - SPACE ENGINEERING PROJECT

Minimum Credits: 3
Maximum Credits: 3
In this course, students work in teams to solve real-world engineering problems in space technologies through a mentored design project. Students are provided with mission-driven design requirements and are charged with the development and testing of a functional prototype or system component. In addition to technical skills, students develop professional competencies, including communication and teamwork, through regular interaction and meetings with industry or research mentors.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ECE 2184 - NEUROMORPHIC SYSTEMS DESIGN

Minimum Credits: 3
Maximum Credits: 3

Neuromorphic electronic engineering takes its inspiration from the functioning of nervous systems to build more power efficient electronic sensors and processors. Event-based neuromorphic systems are inspired by the brain's efficient data-driven communication design, which is key to its quick responses and remarkable capabilities. This cross-disciplinary course establishes how sensor and compute building blocks are combined to build architectures and construct complete systems with applications. These include vision and auditory sensors as well as neuronal processing and learning circuits that implement models of nervous systems. Techniques for building scalable systems are considered throughout the course, including methods for running spiking neural networks on Intel's Loihi platform, extensive discussions of communication and interfacing, and making systems that operate in the real world.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2251 - MICRO AND NANO DEVICE FABRICATION LABORATORY

Minimum Credits: 3
Maximum Credits: 3
The goal of this course is to enable students to design basic photonic integrated circuits by providing them with an intuitive understanding of core photonic components (e.g. waveguides, couplers, resonators, etc.) as well as a solid grasp of the tools needed to simulate multi-component designs. By the end of the course, students should understand the steps needed to take a PIC design from original concept to fabrication at a foundry. This includes such topics as: on-chip filtering/routing using ring resonators and Bragg gratings; methods for optimizing bandwidth and on/off-chip coupling efficiency using edge and grating couplers; integrated high-speed silicon PN modulator design and optimization; integrated high-speed germanium PIN photodetector design and optimization; full photonic circuit simulation using the S-parameter method.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ECE 2273 - EXTREME ENVIRONMENT ELECTRONICS

Minimum Credits: 3
Maximum Credits: 3
This course teaches the tools, techniques, and design methodologies for building microelectronic circuits that operate reliably in extreme environments, with an emphasis on high-radiation environments. Students first grasp the fundamentals of widely used digital and mixed-signal circuits tailored for standard settings, then delve into advanced versions engineered for challenging environments such as space, avionics, high-energy physics, medical, and nuclear applications. The course combines lectures, hands-on labs using professional CAD tools, case studies, and a culminating design project.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSPRM 2100 - FUNDAMENTALS OF PRECISION AND REGENERATIVE MEDICINE

Minimum Credits: 4
Maximum Credits: 4
Fundamentals of Precision and Regenerative Medicine will be a team-taught course designed to reinforce core concepts in precision and regenerative medicine, including pharmacogenomics, rare diseases, gene therapy and genetic engineering, oncology, computational biology and AI, regenerative medicine, stem cells, biomaterials and regulatory concerns. This course will serve to strengthen and extend undergraduate level coursework in this area, which is covered only to a limited degree in most undergraduate programs.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSPRM 2200 - LABORATORY RESEARCH ROTATION

Minimum Credits: 3
Maximum Credits: 3

This lab is designed to introduce the student to relevant laboratory methods as well as the layout and conceptualization of experiments. The course will serve to acquaint the student with the laboratory process, and to facilitate his/ her selection of a lab for dissertation research. Students are required to register for and complete rotations through three different laboratories, thereby ensuring broad exposure to method and practice.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

MSPRM 2300 - PROMINENT MANUSCRIPTS IN PRECISION AND REGENERATIVE MEDICINE

Minimum Credits: 1
Maximum Credits: 1
Students will focus on how to read and analyze scientific literature, with an emphasis on current papers in precision and regenerative medicine.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSPRM 2400 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in precision and regenerative medicine.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

MSPRM 3000 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad Letter Grade

QCLBSCI 0713 - INFORMATION SOURCES AND SERVICE: SCIENCE AND TECHNOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course aims to provide students with an understanding of the processes by which scientific and technical information is created and communicated, and the role the various components of the process play in the transfer of information. Patterns of communication, the structure of the literature, and the information needs and uses of various clienteles (including the lay public) are emphasized. The course does not assume a prior background in the sciences or technology. At the conclusion of the course students will be able to: 1. Define and/or explain the basic terminology of the field and the role of science and technology in society. 2. Describe the generation, organization, structure and use of science and technology information. 3. Identify and describe the diversity of user information needs and the broad spectrum of science and technology information sources for both specialized and lay audiences. 4. Use a variety of sources to answer reference questions in representative areas of the sciences and technology. 5. Select and evaluate information sources to meet the needs of users. 6. Identify and discuss trends and issues in science and technology as they relate to science reference librarianship.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade